

A BUDGET MODEL FOR SMALL MANUFACTURING
COMPANIES

By

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PREFACE

In the study I have been concerned with the development of a flexible computerized budget model for a small manufacturing company that will provide students and managers with a useful planning tool.

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CHAPTER I

INTRODUCTION

One of management's most important and vital functions is the utilization of scarce resources to achieve the immediate and long-run goals of an organization. Comprehensive budgeting, as presented in management, finance, and accounting textbooks, should provide management with an essential and powerful tool to plan, coordinate, and control the activities of an organization to achieve these ends.¹ The budget,² unfortunately, often falls far short of this role and all too often managers regard the budget as a "necessary evil" rather than a powerful aid to the most crucial decisions of top management.³ This managerial attitude has probably evolved for various reasons.

First, the cost and time involved in preparing the budget using conventional manual techniques, results in an inflexible management tool.⁴ If top management does not like the "look" of the budget, little facility is available to explore the consequences of different alternatives. If, for example, top management wants to investigate the simple alternative of increasing the selling price of product Red by five dollars, it will be necessary to revise the sales budget (in dollars of revenue), the projected income statement, the cash budget, and the projected balance sheet. If the change in selling price is anticipated to affect projected unit sales of product Red, then it will also be necessary to revamp the sales budget (in units), the production

budget, the materials budget, the raw materials purchase budget, the labor budget, and the overhead budget. In many cases, therefore, the cost and time involved in modifying the budget to reflect an alternative solution is perceived by managers to exceed the benefits.

As modern organizations continue to increase in complexity, management decisions have far-reaching consequences and involve potentially large risks. Managers cannot afford to operate on a hunch, intuition, or guesswork but must better predict the consequences of their decisions, correctly choose among alternative solutions, and respond quickly to changing economic conditions. Therefore, as Ansoff and Brandenburg point out, there is a great need for an improved budget model that is flexible and will allow managers to vary assumptions with little cost or loss of time.⁵ Some large firms have gained this flexibility by building computerized budget models to meet the needs of their particular firms.⁶ "With a computerized budget model the input variables are easily changed, and within minutes the revised version of the budget is printed out by the computer."⁷ However, most small manufacturing companies do not have such models available.⁸

A second reason why managers are disillusioned with the budget as a useful management tool is that the environment in which they operate is always changing--and probably at a faster rate than ever before. "The usefulness of financial budgets depends mainly on the degree to which they are flexible to changes in [environmental] conditions."⁹ The typical budget is frequently inaccurate and out of date soon after it is completed and as Richard Mattessich states: "The 'revision of a budget' under conventional conditions is a nightmare of the controller or budget director . . ."¹⁰

Apart from the fact that such revisions cause considerable expenses, the calculations involved are sufficiently elaborate and are time consuming enough to create a delay of weeks or months. Thus, the revised budget may become available at a time when it is already obsolete and when a new revision is called for--a process rarely leading to a satisfactory solution and ultimately defeating the purpose of budgetary control.¹¹

Mattessich contends that a computerized budget model would overcome the problem of delay of information and obsolescence of data due to recomputation.¹²

The third, and perhaps most important reason managers regard the budget as a necessary evil is that they fail to understand the potential of the budget as a management tool.¹³ In part, this problem can be traced to their early introduction to the budgetary process in university management, finance, and accounting courses. The typical textbook uses "highly simplified examples"¹⁴ which bear little resemblance to "real world situations."¹⁵ Using conventional manual techniques, students tend to become "bogged down" with the mechanics of the budget and therefore often fail to gain an understanding of the budget as a plan of action to achieve the goals of a real "live" manufacturing company. The time involved in revising the budget does not encourage students to experiment with numerous alternative solutions and therefore too many of these future managers and management consultants finish their university programs with little feeling for how a change in one or more of the budget variables can affect the outcome of the plan. Richard Mattessich contends that a computerized budget model could considerably lessen the limitations of present textbook examples by providing a more realistic illustration of a budget system.¹⁶ Such a model would also be amenable to experimentation in laboratory courses.¹⁷

Objective of Study

The objective of this study was to design a flexible, computerized, budget model for small manufacturing companies that provides decision makers (students and managers) with meaningful information at minimum cost and loss of time. This model was built so that it could be readily adapted to a classroom situation thus providing students with a flexible tool for experimenting and assessing the impact of changes in the basic budget variables. The budget model was also built to help the managers of small manufacturing companies plan and coordinate the activities of their companies in order to achieve their short-run financial goals.

Significance of the Study

The needs of two particular groups of users were considered in designing the model. The primary group consists of students studying the budgetary process in management, finance, and accounting courses. A teaching tool is needed to supplement existing textbooks and permit future managers and management consultants (students) to manipulate the basic variable(s) of the budget and analyze its impact on the plan of action. This experimentation with a complex of "real world" type example should allow students to look beyond the mechanics of the budget and hopefully gain an understanding of the budget as a useful planning tool.¹⁸

The second group of users considered in this study were the managers of small manufacturing companies. These individuals require a tool that permits them to experiment with alternative courses of action and that allows them to update their plan, in the form of budgets, as

environmental conditions change. As Mattessich points out:

. . . budget simulation is by no means reserved to the industrial giants, but is applicable to small-scale or medium-sized enterprises which have no electronic computers available at their own premise. In such cases, the help of an intermediary--like a consulting firm, independent data processing center, etc.--will be indispensable.¹⁹

The Budget: A Planning Tool

The term "budget" is used by different people to mean somewhat different things. Therefore, this section will clarify and explain how the term is used in this study.

Purpose of Budget

The most comprehensive use of the term "budget" is exemplified by the following definition by Eric Kohler:

1. Any financial plan serving as an estimate of and a control over future operations.
2. Hence, any estimate of future costs.
3. Any systematic plan for the utilization of manpower, material, or other resources.²⁰

Thus, the budget serves two purposes: (1) it serves as a plan indicating how scarce resources are to be acquired and used over some future operating period and (2) it may also serve as a control tool, containing criteria of cost or performance which may be compared with actual data of operations.

Although both planning and control are major functions of management and are not mutually exclusive, this study deals only with the planning aspects of the budgetary process.

Planning

Planning is usually regarded as a basic function of management.²¹ In fact, some authors contend that ". . . the essence of management is planning, and all other functions are derived from planning."²²

Koontz and O'Donnell refer to planning as ". . . the selection of future courses of action for the enterprise as a whole and for each department within it."²³ These authors go on to state that "The purpose of every plan and all derivative plans is to facilitate the accomplishment of enterprise objectives."²⁴

At all levels of an organization managers plan in advance what has to be done, who has to do it, when it has to be done, and how it is to be done. Their success depends upon how well they plan because planning is the bridge from where the manager or firm is to where the manager or firm wants to go.

Donnelly, Gibson, and Ivancevich distinguish the following four distinct and interrelated phases of the management planning function:

- Phase 1--Establishing goals and fixing their priority.
- Phase 2--Forecasting future events which can affect goal accomplishment.
- Phase 3--Making the plan operational through budgeting.
- Phase 4--Stating and implementing policies which direct activities toward the desired goals.²⁵

In Phase 3 above, the budget is used as a fundamental planning instrument to purposefully direct the activities of an organization toward its desired objectives.

Type of Budget

Budgets may be divided into two main classes: (1) capital budgets and (2) operating budgets. Capital budgets are "directed toward

proposed expenditures for 'project' activities and often require special financing."²⁶ For example, planning a new plant or a new product would involve capital budgeting. Operating budgets, on the other hand, "are directed toward planning and controlling 'program' activities."²⁷ The sales budget, the production budget, and the overhead budget are examples of operating budgets. This study is concerned only with the construction of operating budgets as an aid to management decisions.

Planning Horizon of Budget

Budgets are often classified according to the length of the planning horizon. Short-range budgets are plans of action for a relatively short period of time (usually one year). As D. H. MacAllen points out, the manager or planner accepts the environment as it is today and considers the physical and human resources currently available as fixed. The problem thus becomes one of trying to meet the immediate market of supply and logistics.²⁸ For example, the plant manager attempts to maximize the efficiency of the firm's existing plant in planning for the current year (i.e., the manager does not consider changing plant capacity).

Long-range planning or budgeting, on the other hand, covers a period of time that is long enough so that physical and human resources are flexible. In this type of planning management has the opportunity to anticipate future plans and has greater freedom of action to resolve them in an orderly fashion.²⁹ For example, the decision to build a fully automated plant affects production capacity 10 to 20 years in the future.

Both short-range and long-range budgeting are essential if the goals of the organization are to be achieved. However, this study is

concerned only with the short-range budgetary process.

Definition of Budget

For purposes of this study the term "budget" will be defined as a comprehensive, coordinated plan of action for the operations of a small manufacturing company for a specific (relatively short) period of time expressed in dollars.

As the definition implies, it is important that the budget include the activities of all the organization's subunits or divisions. For example, the budget would be useless if it failed to recognize and plan for the research and development activities of the organization.

It is also important that the activities of each subunit be coordinated with the activities of all other subunits in the organization. The budget would be useless, for example, if the sales budget reflected a plan to sell 900,000 units of product Red while the production department can only produce 100,000 units.

Choice of Budget Model

Starr defines a model as "a simplified representation of reality."³⁰ Models are useful in that they permit us to solve complex problems by focusing on only a portion of the key features of the real world instead of every detail. In constructing models, only the relevant variables, and frequently only the relevant variables that have a major impact on the decision situation, are considered. There are many forms of models in use. The particular form selected should depend upon the purpose.³¹ In this section, the budget model selected for this study is outlined.

Optimization vs. Case-Study Model

In designing the budget model it was necessary to choose between an optimization (algorithmic) model and a case study (heuristic) model.

Optimization Model. Optimization models utilize algorithms to select one alternative out of available alternatives which satisfies the constraints and maximizes or minimizes the objective function.³²

"Whether relatively simple or extremely complex, 'an algorithm guarantees optimal solutions to any complete set of data and any problem as posed by the model'."³³ Techniques such as linear programming, quadratic programming, calculus, and queuing theory are examples of optimization models utilized by operations researchers. Such models require that a single predetermined objective be expressed as a value function which can be maximized or minimized. The objective value function for a budget model could be expressed in various forms: maximization of contribution or loss, maximization of net profit or loss, maximization of gross profit or loss, or even maximization of cash or liquid funds. An optimization model can maximize only one value function at a time.

Case-Study Model. A case-study (heuristic) model on the other hand searches for a satisfactory solution rather than an optimum solution. A case-study model is a simulation model which allows the decision maker to view the implications of two or more possible courses of action. The user searches through alternative courses of action on a trial and error basis until an alternative is found that is expected to produce the desired goals (i.e., a satisfactory solution).

A case-study model was selected for this study for the following reasons.

1. Human problem solvers do not typically optimize.³⁴ This statement is supported by the work of Simon,³⁵ March and Simon,³⁶ Newell and Simon,³⁷ and others. Simon's work will be reviewed below.

According to economic and statistical theory, a rational decision maker will choose that course of action, from all possible courses of action, which will maximize expected payoff (utility). This model makes three important demands on the decision maker. It assumes that (1) all the alternatives are considered, (2) that all the consequences of each alternative are known, and (3) that the decision maker has a complete utility ordering. In Simon's words these demands are "powers of prescience and capacities for computation resembling those we usually attribute to God."³⁸

Simon's concept of bounded or limited rationality is based on the fact that human beings have physical and psychological bounds or limits in generating alternatives, processing information, and solving problems. Therefore, they require simplified models that extract the main features of the problem without capturing all of its complexity. Satisficing is used instead of maximizing or optimizing by human problem solvers in order to simplify the decision process. In choosing, human beings search for alternatives until they find a course of action that is "good enough"--that satisfies. They are happy to find a needle in the haystack rather than searching for the sharpest needle in the haystack.

From the above it can be seen that the case-study (heuristic) model is consistent with human problem solving.

2. Optimization models are built upon certain basic assumptions. For example, a linear programming model assumes there is a linear relationship between the variables. If the problem to be solved violates

these assumptions (i.e., budget variables are nonlinear) then completely unreliable solutions may result. "The temptation of fitting problems to available techniques will usually inhibit the careful modeling of behavioral systems and impede future progress because the foundations are unstable."³⁹

3. Optimization models require a predetermined objective function to be maximized. Unfortunately, accounting is not an exact science and "the notion of profit maximization itself is vague . . ."⁴⁰

. . . to put it bluntly, we do not know precisely what to maximize, nor would we know where the maximum is located. If some experts of traditional budgeting believe in their ability to minimize costs, maximize profits, or optimize the product-mix, they are deceived by the vagueness of their own conceptual apparatus. The optimization concepts have a precise mathematical meaning and should not be confused with notions like 'reducing costs,' 'increasing profits,' or 'improving the product-mix' to satisfactory levels.⁴¹

As Mattessich points out, ". . . this 'satisficing procedure' might be all we can ever expect from budgetary control."⁴²

4. The case-study model should be easier to develop. Optimization models typically require a great deal of analysis and mathematical calculations. Because of this, the case-study model should cost less to develop than an optimization model.

5. The case study model is generally easier for students and managers to understand. The statements produced by the case-study model are those with which they are familiar--Sales Budget, Production Budget, etc. The solution using an optimization model is generally unfamiliar to management and in many cases difficult for them to interpret and use. Furthermore, the details that caused the result are not spelled out (the black box approach). As Hinkle and Kuehn point out,

. . . the computer, perhaps, unfortunately has made it easy for individuals to use analytic methods that they do not understand and models that do not fit the problem. Every model that is not a reasonably true representation of reality introduces distortions, and the best safeguard against such distortions is a sound knowledge of the technique being used and its assumptions as well as experience in applying it.⁴³

Thus, the cost involved in training management to use an optimization model would probably be greater.

6. The cost of operating an optimization model may be considerably more than that of a case-study model. Hinkle and Kuehn give an example of a small- to medium-size warehousing problem--using heuristics and an IBM 704 computer they reached a solution in less than one minute.⁴⁴ On the other hand, if the same problem had been solved using integer programming it would have probably taken at least three months to reach a solution if the computer had sufficient capacity to store the problem.⁴⁵

. . . the availability of machine time clearly becomes a crucial factor in the choice among models and methods of solution. . . . Sizable savings in computational time and cost are possible with heuristic programming, savings that are further enhanced by larger machines.⁴⁶

7. There is a danger that users may be less critical of the output of an optimization model than the complexities of the planning process require. As Alfred North Whitehead has said, "there is no more common error than to assume that, because prolonged and accurate mathematical calculations have been made, the application to some known fact of nature is absolutely certain."⁴⁷

Deterministic vs. Probabilistic Model

In designing the model it was also necessary to decide whether the model would be deterministic or probabilistic.

Deterministic Model. A deterministic model is one in which "for a specific set of input values, there is a uniquely determined output that represents the solution of a model under conditions of 'certainty'."⁴⁸ For example, Contribution Margin = Revenue minus Variable Costs.

Probabilistic Model. A probabilistic model is one in which probability distributions are specified for inputs or processes. Such models generate a range of values and associated probabilities for one or more output variables.

A deterministic model was selected for this study for the following reasons:

1. A deterministic model is easier to develop and should, therefore, cost less to install than the probabilistic model.
2. In many cases it will be easier for managers to understand a deterministic model because conventional manual techniques are deterministic--therefore, it should cost considerably less to train managers to use a deterministic model.
3. It is generally easier to secure the variables for the deterministic model and, therefore, such a model should cost less to operate.
4. A deterministic model with a sufficient number of cases can be used to produce information similar to the probabilistic model.

Other Characteristics of the Model

In addition, the model used in this study possesses the following characteristics. The model is predictive--a model that indicates that ". . . if this occurs, then that will follow . . . [such models] relate

dependent and independent variables and permit trying out 'what if' questions."⁴⁹ In addition, the model is symbolic. "Symbolic models use symbols to describe the real world."⁵⁰ Finally, the model is dynamic-- a model that has time as an independent variable.⁵¹

Assumptions of Model

As previously stated, the purpose of this study is to develop a budget model to be used as a planning tool. As McFarland has stated:

. . . costs and revenues relevant to the decision are . . . incremental costs and revenues . . . Other costs and revenues which are not changed in total amount by the decision proposed are irrelevant to it because they do not affect the comparison.⁵²

Therefore, in this study a direct cost approach is assumed, i.e., only those costs (variable or fixed) that can be traced to a planning segment, are identified with that segment.⁵³ It is also assumed that companies using the budget model produce discrete products; they do not produce joint products.

Methodology

The method of study included (1) library research, (2) the development of a conceptual framework for the budget model, and (3) the development of the computerized budget model.

1. Library research. The relevant organization, management, and accounting literature was reviewed for the following reasons: (a) to provide the writer with a comprehensive background in the theory and techniques related to the study, (b) to determine the essential characteristics of a budget model as a planning tool for a small manufacturing

company, and (c) to provide a basis for the formulation of the conceptual framework.

2. Conceptual framework. The conceptual framework for the budget model was developed as follows: (a) the typical small manufacturing company was defined as a formal organization and as a system, (b) a generalized model of a typical small manufacturing company was developed, (c) the role and functions managers perform within such organizations were studied and (d) a theoretical model for the management planning function and the budgetary process was developed.

3. Computerized budget model. The computerized budget model was developed as outlined below, in three phases. The first involved the careful definition of the output of the budget by examining contemporary accounting and budget textbooks to determine the kinds of budget schedules usually produced.

During the second phase, the computerized budget model was developed. The program was written in COBOL (Common Business Oriented Language) and every effort was made to document the model so that a student or manager unfamiliar with COBOL programming would be able to understand the model's operation. The model was designed to make data input as easy as possible for the user and to allow the user to change the basic variables with a minimum of time and effort. This flexibility allows users to investigate the implications of alternative courses of action and update the budget as environmental conditions change.

The final phase involved testing the model. Because of limited financial resources, this researcher was unable to secure budget data from actual small manufacturing companies. Therefore, realistic hypothetical data were developed to include every conceivable real world

situation. The researcher began with a very simple textbook example and after the budget schedules had been verified, the data was elaborated upon to include every conceivable modification. The budget schedules (budget model output) were tested at every step for accuracy. As a result of this evolutionary process, it is probable that the data input cards included more unusual conditions and constraints than the typical data of several actual small manufacturing companies.

Limitations of Study

One of the main limitations of this study is that a simple model is used to explain a complex real world situation. Yet, simplicity has value. As Hinkle and Kuehn have pointed out,

It may be easily surmised from reading current management literature that model builders feel compelled to increase the complexity of all models on the assumption that intricacy is positively correlated with usefulness. While this premise is valid for some systems, we believe that it is a mistake to ignore simpler approaches which frequently will serve as well or almost as well. Furthermore, elaborate models are likely to be useful only when they are the result of a long-term program of research and development.⁵⁴

Another limitation of this study is that other models have been developed and successfully applied by some large companies who were willing to expend the resources necessary to develop them. However, such models are not publicly available for educators and the managers of small companies.

Organization of Study

This study contains an introductory chapter setting forth the problem, the objective, significance, and limitations of the study. The

second chapter reviews and summarizes the relevant literature relating to organization and management theory and previous budget models.

The third chapter establishes a theoretical framework for the small manufacturing company and the role and function managers perform within such organizations. The systems approach is utilized to integrate the ideas and concepts of organization and management theorists. In Chapter IV, the management planning function is discussed in detail as a basis for developing a framework for the budgetary process and the budget model which is discussed in Chapter V.

In Chapter V, the budget case-study model, a decision model, is discussed: the characteristics of the computer program, its input, and its output. The final chapter summarizes the study.

Appendixes to the study include (a) a detailed users manual for the budget model, (b) a computer printout of the computer program, and (c) examples of the various budget schedules.

FOOTNOTES

¹Other terms used in the same context are "profit planning and control," "managerial budgeting," and "business budgeting and control."

²The term "budget" is used here in the general sense to refer to the complete set of operating and financial budgets necessary to plan, coordinate, and control the activities of an organization to achieve its goals. A more specific definition of the term "budget" will be presented in a later section of this dissertation.

³Charles T. Horngren, Cost Accounting: A Managerial Emphasis (Englewood Cliffs, 1972), p. 123.

⁴H. Igor Ansoff and Richard C. Brandenburg, "A Program of Research in Business Planning," Management Science, 13 (Feb., 1967), p. 226.

⁵Ibid.

⁶For example, Sun Oil Company has developed a complex corporate financial model. For details see George W. Gershefski, "Building a Corporate Financial Model," Harvard Business Review, 47 (July-August, 1969), pp. 61-72.

⁷Richard Mattessich, Accounting and Analytical Methods (Homewood, 1964), p. 356.

⁸Quite likely the managers of these firms perceive that the financial resources necessary to build such a model exceed the benefits. The working version of the Sun Oil Company model took 13 man-years to complete (10 man-years of analytical time and three years of programming time). An additional 10 man-years were required to educate the managers on how to use the model.

⁹James H. Donnelly, James L. Gibson, and John M. Ivancevich, Fundamentals of Management (Dallas, 1975), p. 59.

¹⁰Richard Mattessich, Simulation of the Firm Through a Budget Computer Program (Homewood, 1964), p. 2.

¹¹Ibid.

¹²Cf. Ibid. "Theoretically, a change of the pertinent input data . . . and a few minutes of computer time is all that is needed to produce the revised budget. In actual practice, minor complications may arise because of the procurement of the new input data which might create some delay; and, in case a computer is not available at the premise, a few days of waiting time should be taken into account. Nevertheless, a week should be the maximum time requirement for making available the revised budget--a time span that hardly endangers the up-to-dateness of the data, and one which is incomparable with the long delays of budget revision presently incurred."

¹³Hornsgren, p. 123.

¹⁴Mattessich, Simulation of the Firm Through a Budget Computer Program, p. 3.

¹⁵The typical textbook investigates an unrealistically simple situation where one or two products, requiring one or two raw materials, are sold in one or two sales districts (for example, see Hornsgren, pp. 121-159). Of course the simple examples are useful in familiarizing the student with the necessary computations.

¹⁶Mattessich, Simulation of the Firm Through a Budget Computer Program, p. 3.

¹⁷There have been a number of management games developed. See, for example, James L. McKenney, Simulation Games for Management Development (Boston, 1967). However, the emphasis of such games is the interaction effects between the firms in the game and general economic conditions. The games do not emphasize how the change in one or more of the budget variables affects the plan of action (as expressed in the budget) for the organization.

¹⁸This does not imply that the mechanics are not important.

¹⁹Mattessich, Simulation of the Firm Through a Budget Computer Program, p. 28.

²⁰Eric L. Kohler, A Dictionary for Accountants (Englewood Cliffs, 1975), p. 74.

²¹Henri Fayol in his classic work, General and Industrial Administration, listed five managerial functions: "planning, organization, command, coordination, control." Many writers since Fayol have attempted to derive a universal set of management functions and although the list has been lengthened and shortened by various authors, the planning function is virtually always included.

²²Donnelly, Gibson, and Ivancevich, p. 66.

²³Harold Koontz and Cyril O'Donnell, Principles of Management: An Analysis of Managerial Functions (New York, 1972), p. 113.

²⁴Ibid., p. 114.

²⁵Donnelly, Gibson, and Ivancevich, p. 47.

²⁶Kohler, p. 74.

²⁷Ibid.

²⁸D. H. MacAllan, August, 1962, quoted in Long-Range Profit Planning (New York, 1964), pp. 10-11.

²⁹Ibid., p. 11.

³⁰Martin K. Starr, Management: A Modern Approach (New York, 1971), p. 31.

³¹Robert G. Murdick and Joel E. Ross, Information Systems for Modern Management (Englewood Cliffs, 1971), p. 378.

³²Cf. Charles L. Hinkle and Alfred A. Kuehn, "Heuristic Models: Mapping the Maze for Management," California Management Review, 10 (Fall, 1967), p. 61: "To the mathematician an 'algorithm' is a specific computation procedure for numerical manipulation--a method of writing and performing any of the four basic mathematical operations. An example of a multiplication algorithm is $q \times r = s$. . . the formula for the present discounted value of a stream of future earnings

$$\sum_{n=0}^{\infty} \frac{1}{(1+i)^n} p(n)$$

is an algorithm. The stochastic equation $\widehat{MS}_{i,t} = \sum_{j=1}^k P_{ji} MS_{j,t-1}$ used to predict market shares in some exponential models is an algorithm."

³³Ibid.

³⁴Not all theorists agree with this concept. For example see Fritz Machlup, "Theories of the Firm: Marginalist, Behavioral, Managerial," American Economic Review, 57 (March, 1967), pp. 1-33.

³⁵H. A. Simon, Models of Man (New York, 1957).

³⁶James G. March and Herbert A. Simon, Organizations (New York, 1958).

³⁷Allen Newell and Herbert A. Simon, Human Problem Solving (Englewood Cliffs, 1972).

³⁸Simon, p. 3.

³⁹Hinkle and Kuehn, p. 67.

⁴⁰Mattessich, Simulation of the Firm Through a Budget Computer Program, p. 8.

⁴¹Ibid.

⁴²Hinkle and Kuehn, p. 60.

⁴³Ibid., p. 67.

⁴⁴Ibid.

⁴⁵Ibid.

⁴⁶Ibid.

⁴⁷Alfred North Whitehead quoted in Hinkle and Kuehn, p. 68.

⁴⁸Murdick and Ross, p. 381.

⁴⁹Ibid., p. 379.

⁵⁰Ibid., p. 380.

⁵¹Ibid.

⁵²Walter B. McFarland, Concepts for Management Accounting (New York, 1966), p. 48.

⁵³A planning segment is defined as any part of a business entity that is separately recognized for planning purposes.

⁵⁴Hinkle and Kuehn, p. 60.

CHAPTER II

LITERATURE REVIEW

Introduction

As discussed in Chapter I, the purpose of this study is to design a flexible computerized budget model for small manufacturing companies that will (1) provide students, future managers, and management consultants with a tool for developing the budget and assessing the impact of changes in the basic budget variables and (2) provide the managers of such firms with a tool for planning and coordinating the activities of their companies in order to achieve their short-run financial goals. The foundations or basic building blocks for this budget model were developed as follows.

First, since the budget model was designed for small manufacturing companies, formal organizations, it was essential to have a basic understanding of the behavioral characteristics of such organizations.¹ Further, since the comprehensive budget is "generally accepted" as an essential and powerful management tool, and management is inherently involved in organized human activity, it was essential to have an understanding of the role and functions managers perform within small manufacturing companies.² Therefore, the relevant organization and management theory literature was reviewed and is discussed briefly in the first section of this chapter.

Second, since the systems approach permits the integration of the numerous and diverse ideas, concepts, and approaches to the study of organizations and management, the relevant systems theory literature was reviewed. This literature is discussed briefly in the second section of this chapter. Third, since (a) models are the basic operating tool utilized by systems analysts, (b) the comprehensive budget is the best approximation of a formal model of the total organization, and (c) the purpose of this study is to design a computerized budget model, the literature relating to budget models was reviewed. The third section of this chapter summarizes the results of this analysis and the final section of this chapter summarizes the literature reviewed.

Organization and Management Theory

In order to establish a setting in which the budgetary process can be examined, the relevant literature pertaining to organization and management theory is discussed briefly in this section.³ Essentially, organization theory focuses on the human organization while management theory focuses on the process of acquiring and efficiently and effectively utilizing scarce human, material, and financial resources.

What is an Organization

Organizations pervade our society and their importance cannot be denied:

. . . the need for organizations--both formal and informal--lies both in the psychological and social needs of human beings and their desire to accomplish objectives. In a complex world, those significant things which can be accomplished by a single person become increasingly rare. Moreover, even those things which could be done by an individual cannot be efficiently done in such a fashion. This is reflected in our

tendency toward increased specialization in virtually every field of human endeavor.⁴

Organizations are of many types, ranging from families; to informal work groups; to formal organizations such as General Motors, the Teamsters Union, the U. S. Department of Agriculture, the U. S. Navy, and the United Nations. It is frequently convenient to consider organizations as falling on a continuum ranging from individual activity on one end to highly formalized organization on the other end with a wide variety of organizations in between.

Organizations have numerous properties, both physical and abstract. For example, Ford Motor Company has many physical assets but also has many relational and social aspects that cannot be seen. In spite of these complexities, however, organizations have certain common elements:

. . . organizations are (1) goal oriented, people with purpose; (2) psychosocial systems, people working in groups; (3) technical systems, people using knowledge and techniques; and (4) an integration of activities, people coordinating their efforts.⁵

For the most part, organization and management theorists have been concerned with formal large-scale organizations. The fundamental justification for formal organizations is effectiveness and efficiency.

. . . an organization is differentiated from other systems by its purposeful behavior--its pursuit of objectives. Some goals can be achieved only by the concerted action of a group of people who make use of nonhuman resources. When multiple goals are involved, problems of resource allocation come into play. For instance, the group must allocate their time, energies, and other resources to those activities where the greatest effect can be produced with the least expenditures, since a scarcity of resources is an economic fact of life. No organization or individual possesses adequate resources to pursue all of its or his possible goals at the highest level of intensity; to assign an individual to one task is to make him unavailable for other tasks, to spend limited money on increased salaries to preclude the possibility of using it in the hiring of additional workers. Thus, the basic economic question of the allocation of scarce resources is at the heart

of the need for formal organizations. This is so because even though the natural tendency of human beings to organize might well lead to the same allocation of resources as is attained via a formal organization structure, it would do so very, very slowly. For an enterprise to function and prosper in an organized world, it must organize itself and seek efficiency.⁶

Organization Defined

Defining the term "organization" has been the focus of much controversy between organization and management theorists. Organization theorists view an organization as a mechanism for promoting human collaboration, that is, for facilitating interpersonal relations. The following definitions have been formulated by scholars in the field:

1. ". . . a system of consciously coordinated personal activities or forces."⁷
2. ". . . any cooperative system in which people are able to communicate with each other and are willing to contribute action toward a conscious common purpose."⁸
3. ". . . a mechanism having the ultimate purpose of offsetting those forces which undermine human collaboration."⁹
4. ". . . a coalition having a series of more or less independent goals imperfectly rationalized in terms of more general goals."¹⁰

Management theorists, on the other hand, contend that an organization is the formal, rational framework defining the roles and environment within which people perform in order to achieve or accomplish the known objectives of the enterprise. The following definition by Mundell is an example:

Organization is the pattern of authority and responsibility between and among people, aiding them in acting in an integrated and orderly fashion. The purpose of formally setting forth this pattern of relationships is to assist people in understanding the role they must play to perform the work of the plant in the most economical manner consistent with social restrictions. The usual way of portraying the pattern of relationships between and among people takes two forms: the first an organization chart, and the second, an organization manual.¹¹

Given the above definitions, organization will be defined for purposes of this study as: ". . . a system of structural interpersonal relations [such that] . . . individuals are differentiated in terms of authority, status, and role with the result that interaction is prescribed."¹² This definition incorporates both the interpersonal and structural aspects of organizations. It is also assumed that the term "organization" will refer to an administered organization as opposed to organizations used broadly to refer to any group of persons associated together. As Anthony has pointed out, administered organizations possess the following four characteristics:

- (1) they exhibit sustained collective action,
- (2) they are integral parts of a larger system,
- (3) they have specialized, delimited goals, and
- (4) they are dependent upon interchange with the larger system.¹³

Importance of the Management Function

Because organizations pervade our society, and management is inherently involved in organized activity, it is not surprising that the management activity is important to everyone. In fact, as Max Ways has stated: ". . . what industrialization was to the nineteenth century, management is to the twentieth. Almost unrecognized in 1900, management has become the central activity to our civilization."¹⁴ Another author,

Peter Drucker, has referred to management as "the most important activity in our society."¹⁵ From the above statements, it is obvious that the topic of management has received considerable attention from university scholars, practitioners, and the public at large. What, then, is management?

Management Defined

The term "management" is used in different contexts to mean different things. L. Urwick, for example, quotes a sentence wherein the word "management" is used five times with five quite different meanings.¹⁶ Used in the general sense, nearly everyone manages, that is, everyone makes decisions allocating their time and energy to carry out actions to get things done. For example, the housewife manages her household, students manage their study time, children manage their allowances, and all wisely or unwisely manage their time. In the words of Joseph McGuire: "People who don't manage are either too young, too old, or are found in institutions for the incompetent."¹⁷

For purposes of this study, however, management will be used in a more specific sense, that is, as it relates to coordinating human effort to achieve the goals of a formal organization. Used in this context, the following definitions of management have been proposed by scholars in the field: ". . . management refers to 'activities undertaken by one or more persons in order to coordinate the activities of others in the pursuit of ends which could not be achieved by any one person'."¹⁸

McGuire stated:

'Management' involves the coordination of human and material resources toward objective accomplishment . . . Management is the primary force within organizations which

coordinates the activities of the subsystems and relates them to the environment.¹⁹

"Essentially, management is the process whereby these unrelated resources [people, machines, and money] are integrated into a total system for objective accomplishment."²⁰ According to the American Accounting Association: "Basically, the task of management can be described as that of allocating the system's resources to its subsystems such that its goals are achieved."²¹ Koontz and O'Donnell stated:

. . . it is the task of the manager to establish and maintain an internal environment in which people working together in groups can perform effectively and efficiently toward the attainment of group goals.²²

Given the above definitions, management will be defined for purposes of this study as the effective and efficient utilization of scarce economic resources such as information, materials, money, labor, and facilities, in order to achieve the immediate and long-run goals of a small manufacturing company.²³ Management refers to the coordinated group effort of the entire management team, effectiveness refers to the degree to which a goal or objective is attained or an end met,²⁴ and efficiency refers to the optimum relationship between input and output.²⁵

Evolution of Organization and

Management Thought

Management has been practiced throughout history. Humans in all ages have encountered physical, biological, and psychic limitations in attaining many of their personal goals and have therefore found it advantageous to join together in groups in order to accomplish these goals.²⁶ The literature of ancient civilization refers to such managerial functions as planning, staff assistance, division of labor,

control, and leadership.²⁷ The beginnings of organization and management theory can also be traced back to ancient civilizations:

. . . the antecedents of modern organization and management theory are numerous and impressive. There is hardly a major philosopher, historian, or biographer who has not written of the management of organizations; among the more notable are Aristotle, Thucydides, Caesar, and Aquinas. Writings of the Egyptians extending as far back as 1300 B.C. indicate a relatively sophisticated knowledge of management and its use in the administration of the bureaucratic states of that time. It is also evident that the affairs of the Greek and Roman empires could not have been conducted in such efficient fashion without an understanding and use of some principles of administration. The church, the army, and the state had to be managed.²⁸

Unfortunately, until recent times, there was no effort to accumulate such knowledge and develop a theory of organization and management.

Koontz and O'Donnell give several possible reasons for this delay.²⁹

1. For centuries business was regarded as a degrading occupation. Aristotle referred to retail trade as ". . . a kind of exchange which is justly censured, for it is unnatural and a mode by which men gain from one another."³⁰ Adam Smith referred to certain managers as ". . . an order of men, whose interest is never the same with that of the public, who have generally an interest to deceive and even to oppress the public . . ."³¹ As Koontz and O'Donnell state: "Indeed, one can say that only in the past half century has the businessman begun to hold a place of respect."³²

2. Economists, who have made major contributions to organization and management theory, were until recently primarily concerned with political economy and the non-managerial aspects of business (macro-economics). "The modern treatment of the economics of the individual firm [micro-economics] is largely a development of the past three decades."³³

3. Political scientists have also made major contributions to modern organization and management thought but like the economists were until recently primarily concerned with policy making at the national and international level.

4. Until recently there was a tendency to compartmentize the disciplines within the broad field of social science. Some of the most important advancements in modern organization and management theory has resulted from the research of sociologists and psychologists.

5. In the past managers themselves tended to discourage the development of organization and management theory. "Too often their emphasis has been on technology, price, and the balance sheet--an orientation hardly conducive to the understanding of, and inquiry into, the job of the manager."³⁴

Modern Organization and Management Theory

The following milestones in the development of modern organization and management theory are frequently highlighted by scholars in the field:

1. Frederick W. Taylor, who was largely responsible for 'scientific management' and for the beginning of the modern management movement.
2. Henri Fayol, the 'universalist' whose universal managerial functions became the forerunner of the management process school, the most prevalent among today's managers.
3. The Hawthorne Experiments, which ushered in a new era of concern for people in organizations. This extraordinary event resulted in the Neoclassical theory of organizations and the 'human relations' approach to management.
4. The electronic computer, which is profoundly affecting the manner in which firms are managed and organized. It is also accelerating the systems approach.

5. Modern organization theory, a development of very recent years characterized by the behavioral movement, an interest in interdisciplinary approaches to organizations, and a conceptual--analytical--empirical approach embodied in the behavioral sciences.³⁵

Each of these milestones will be discussed briefly below.³⁶

Frederick W. Taylor. Frederick W. Taylor's research and writings have made major contributions to modern management thought and practice. His famous work, The Principles of Scientific Management, was published in 1911 at a time in United States history when business was expanding at a tremendous rate as new products and new markets were being created.³⁷ Labor, however, was in short supply and management tried to offset this shortage by (1) substituting capital for labor and (2) using labor more efficiently.³⁸ Taylor's book resulted directly from the waste he had observed and deplored as foreman of the Midvale Steel Company:

. . . Taylor believed that this great waste was due to ignorance of what constituted a 'fair day's work' . . . Taylor's personal dislike for waste caused him to rebel at what he interpreted as inefficient management practice which was based largely on hunch, rule of thumb, conventional wisdom, and ignorance. Taylor believed that ignorance on the part of both management and labor accounted for the great waste of resources.³⁹

Taylor's concern with waste and inefficiency lead to his observation of the lathe workers under his supervision. He identified each element of the worker's job and measured everything that was measurable (time and motion studies). Taylor was convinced that:

. . . the key to harmony was to discover the 'one best way' to perform a task, determine the optimum daily pace of the task, train workers to do the task in the prescribed way and at the prescribed pace, and reward successful completion of the task . . . if workers and managers know what is expected and know the positive consequences of achieving mutual experiences,

a close harmony between management and labor should result
 . . .⁴⁰

Taylor, who was primarily concerned with applying the scientific method at the lower levels of management, i.e., the shop level, proposed the following as the functions of managers:

1. Scientific determination of each element of a man's job.
2. Scientific selection and training of workmen.
3. Collaboration of management and labor to accomplish work in accordance with the scientific method.
4. Equal division of responsibility between managers and workers, with managers planning and organizing the work.⁴¹

Undoubtedly, Taylor's major contribution to modern management theory was his insistence that scientific methods were appropriate. His ideas also formed the conceptual framework for advances made by other management theorists: the use of standards for budgetary control, the separation of planning from execution, the functional organization, and the exception principle.⁴²

Henri Fayol. Henri Fayol's classic work, Administration Industrielle et Generale, published in French in 1916, resulted from his observations during 50 years as managing director of a large French coal-mining company. His book was translated into English in 1929 but was not generally available in the United States until 1949.⁴³ Fayol's contribution to modern management theory and practice "cannot be over-emphasized."⁴⁴ As Koontz and O'Donnell state:⁴⁵

. . . Fayol's monograph, with its practical and clear approach to the job of the manager and its perception of the universality of management principles, discloses an extraordinary insight into the basic problems of modern business management . . . one regrets that few serious students of business management [before 1949] had the advantages of Fayol's analysis.⁴⁶

Indeed, "the fact that this book was not widely available . . . until

1949 indicates the delay in the development of a modern management theory."⁴⁷

In his book, Fayol classified the activities of all industrial enterprises (regardless of size) into six groups: (1) technical (production); (2) commercial (buying, selling, and exchange); (3) financial (search for optimum use of capital); (4) security (protection of property and persons); (5) accounting (including statistics); and (6) managerial (planning, organization, command, coordination, and control).⁴⁸ Fayol contended that the first five activities were known and, therefore, devoted most of the book to the sixth. As he observed, the most important ability of the worker is technical and as an individual moves up through the organization hierarchy, the relative importance of managerial ability increases until at the highest levels managerial ability becomes the most important skill.

Fayol's major contribution to management theory was to derive a conceptual framework for management analysis composed of 14 general principles of management and five elements of administration. Fayol's management principles⁴⁹ were "to guide the thinking of managers in resolving concrete problems"⁵⁰ and were universal, that is, principles of management apply not only to business but also to religious, military, political, philanthropic, and all other types of organizations.

Fayol also believed that management was universal; all managers at all levels of any type of organization performed essentially the same tasks or "elements of administration." According to Fayol, these elements are:

1. Planning includes all those activities of a manager which result in a course of action. The manager should make the

best possible forecast of future events that affect the firm and draw up an operating plan that guides future decisions.

2. Organizing includes all activities which result in a structure of tasks and authority . . .
3. Commanding is directing the activities of subordinates
4. Coordinating activities are those which bind together all individual efforts and direct them toward a common objective . . .
5. Controlling activities are those which assure that actual activities are consistent with planned activities . . .⁵¹

Fayol devoted a large part of his book to a discussion of these elements or functions of management and ". . . his observations are, on the whole, still valid, after more than five decades of study and experience of others in the field."⁵²

Henri Fayol's conceptual framework was derived from his personal managerial experiences and although some theorists have criticized his work for lacking logical clarity,⁵³ it is still widely in use today, and has ". . . provided a platform upon which modern management theory has developed."⁵⁴ In fact, Henri Fayol is commonly referred to as the father of modern management.⁵⁵

The Hawthorne Experiments. Early management theorists accepted the concept of economic man, which assumed individuals are rational and pursue economic objectives. Therefore, early theorists hypothesized that a system of rewards (e.g., wage incentives) and sanctions would result in increased productivity and ". . . if the industrial engineer could properly design a job and if management could devise the right kind of incentive, then productivity would be maximized."⁵⁶

A new approach to the study of management, the Human Relations approach, began when a group of Harvard University researchers were invited to the Hawthorne plant of Western Electric to conduct studies,

investigating the effects of illumination, rest periods, length of work day, wage incentives, fatigue, and monotony on employee satisfaction and productivity.⁵⁷

. . . the sequence or chain of reactions began when management experimentally increased the amount of light at the workplace. The observed reaction was greater productivity. Management reacted by increasing the light again; worker response was further increased productivity. When the experiment was con-
sidered concluded and management removed the new lights, the surprise was that the workers reacted by further increasing productivity.⁵⁸

Researchers found that the productivity of workers was greatly influenced by the human factors, that is, ". . . the way workers feel about their interaction with others in the group, their attitudes, and their sense of recognition by peers and superiors."⁵⁹ In fact, human factors have a much greater influence on productivity than wage incentives, sanctions, and physical working conditions.⁶⁰ The study showed that workers who felt isolated and anonymous because their jobs were insignificant and contributed negligibly to the final product, were likely to be poor producers.⁶¹

The Hawthorne studies have made a major contribution to organization and management theory. Although their methodology has been the subject of much criticism, their focus on the human aspects of the workplace opened the door for other researchers, including psychologists and sociologists, to study the human behavior in organizational settings.

The Electronic Computer. "What the Industrial Revolution was to the nineteenth century, the computer will be to the twentieth, which may very well come to be known as the century of the computer revolution."⁶²

The computer has opened up new areas of management thought and enlarged the scope of management and organization theory, including management sciences, systems theory, etc. Quantitative tools such as linear programming, modeling, simulation, and so forth, have made possible a new approach to the solution of management problems and achievement of organization goals. "The increasing availability, understanding, and use of the computer have made it possible to turn heretofore theoretical mathematical models into everyday, here-and-now, practical decision aids."⁶³ The advent of the computer was, of course, crucial to the successful completion of this dissertation.

Modern Organization Theory. During the late 1940's and early 1950's, the literature relating to organization and management theory began to reflect exciting new dimensions which have continued at an accelerated rate. Some of the changes that have become evident are highlighted below.

1. The literature began to reflect a conceptual, analytical, and empirical approach to the study of organization and management. Prior to this time most of the literature was descriptive, that is, it was based largely on experience and observation (for example, the writings of Taylor and Fayol).

2. An interdisciplinary and cross-disciplinary approach became evident in the literature. Authors of other disciplines began to express an interest in the study of business organizations. Similarly, organization and management theorists began to utilize the concepts and theories of a number of other disciplines such as anthropology, biology, geography, economics, mathematics, philosophy, political science,

psychology, and sociology.⁶⁴ As a result, the body of knowledge relating to organization and management theory was greatly enriched.

3. The literature also began to reflect the interest of researchers in the processes involved in organized activity. Theorists began to realize that the managerial functions of planning, organizing, controlling, etc. could not be performed effectively without considering the social system of the organization.⁶⁵ Researchers began and continue to study:

. . . the effect of different social systems, goals and environmental factors on the administrative process. Study is directed to: (a) identifying the individuals and groups who achieve the power to give direction to the organization, and (b) the conditions under which power is made effective.⁶⁶

It was observed that ". . . an inextricable relationship exists between organizational (not necessarily managerial) goals and the social system."⁶⁷

The increased awareness of the behavioral sciences lead to research on such behavioral topics as motivation, leadership, groups, organizational design, and organizational change and development. Sociologists, social psychologists, and psychologists have made major contributions to our understanding of the human organization and management process.

4. Finally, the literature reflects an interest in the techniques of decision making. Researchers have become interested in the decision-making process as well as decision models and mathematical techniques.

Current Organization and Management Thought

As outlined above, modern organization and management theory is a development of relatively recent years. Because of the importance of formal organizations and the management function in our society, many

practitioners and scholars have contributed to a growing body of knowledge. The current literature represents the viewpoints of a wide, diverse group of authors, covering a wide range of topics.⁶⁸

. . . what was formerly the province of the practitioner, later to be shared with management scholars, has now become fair game for a variety of persons interested in quite a number of related disciplines. The psychologist, the sociologist, the anthropologist, the statistician, the mathematician, the economist, and the political scientist are just a few of those who espouse particular and specific approaches to the study of management.⁶⁹

Although this diversity has greatly enriched the literature, it has also ". . . resulted in much confusion as to what management is, what management theory and science are, and how management should be studied."⁷⁰

Therefore, numerous scholars have attempted to classify the numerous approaches according to their similarities into schools of management.⁷¹

A review of the current management textbooks, however, indicates that each author uses a slightly different classification. For example, Haynes and Massie use (1) quantitative, (2) managerial economics and managerial accounting, (3) universals of management, (4) scientific management, (5) human relations, and (6) behavioral sciences.⁷²

Koontz and O'Donnell use (1) operational, (2) empirical, (3) human behavior, (4) social system, and (5) management process.⁷³ Other authors use their own unique classifications.⁷⁴ Table I, page 39, outlines the schools of management presented by Koontz and O'Donnell.

A review of the existing literature and analysis of the various schools of organization and management theory, emphasizes the fact that good management practice can utilize all the schools of organization and management thought; that is, each school has something to offer to further the understanding of the organization and the management process.

TABLE I
SCHOOLS OF MANAGEMENT

School	Characteristics
Operational	Management can best be studied by focusing on the managerial tasks of planning, organizing, staffing, directing, and controlling.
Empirical	Management can best be studied through experience, sometimes with intent to draw generalizations, but usually merely as a means of transferring knowledge to the student. Case studies are utilized with this approach.
Human Behavior	Advocates of this approach contend that since managing involves getting things done with and through people the study of management should focus on the individual and his motives as a socio-psychological being. They emphasize that human relations is an art that the manager should understand and practice.
Social System	This school is closely related to the human behavior school. Advocates of this school contend that the study of management should focus upon the organization as a social system, that is, a system of cultural interrelationships.
Decision Theory	Management can best be studied by concentrating on rational decisions--the selection, from among possible alternatives, of a course of action. Decision theorists may deal with the decision itself, with the persons or organized group making the decision, or with an analysis of the decision process.
Communication Center	Management can best be studied by viewing/accepting the manager as a communications center and building the knowledge of managing around this concept. See role of manager as that of receiving information, storing, and processing it, and disseminating it.
Mathematical	Management can best be studied by a system of mathematical models and processes. The most widely known of these theorists are the operations researchers.

Source: Compiled from a discussion of schools of management by Harold Koontz and Cyril O'Donnell, Principles of Management: An Analysis of Managerial Function (New York, 1972), pp. 34-42.

For example, advocates of the management process or operational school approach the study of management by focusing on the nature of the managerial tasks: planning, organizing, controlling, and so forth. Since these entrepreneurial functions must be performed if management is to successfully achieve the objectives of the organization, students will benefit by studying the literature of those who espouse this approach. Advocates of the human relations school subscribe to the study of management by focusing on interpersonal relationships, motivation, leadership, and the like. Few will deny that the successful manager must have a knowledge of these topics and concepts as well and, therefore, students will benefit from studying the literature of those who follow this approach. Similar justifications can be made for each of the other schools of organization and management thought.

Like the widely differing and often contentious denominations of the Christian religion, the various patterns of management analysis all have essentially the same goals and deal with essentially the same world.⁷⁵

Need for Integrated Framework for
Organization and Management
Thought

Since each of the numerous approaches or schools is based on concepts and ideas relevant to the study of formal organizations and the management process, there is a need for a framework that permits a synthesis of all of them. Advocates of the systems approach to organization and management contend their theory is:

. . . the logical one to integrate the various ways of looking at management and also to provide a method for combining the research results of other viewpoints into a total theory of organization and management.⁷⁶

The systems approach permits the analysis of the subsystems of organizations to management, the interrelated variables, constraints, and parameters. Further, all theories can be explained in terms of the systems approach. Therefore this approach is compatible with the numerous schools of organization and management thought.

While systems theory is not a panacea, it has led to an increased sophistication and understanding of formal organizations and the management process.⁷⁷ Therefore, the systems approach will be adopted for purposes of this study for,

. . . in order to gain a sophisticated concept of profit planning and control [budgeting] one must realize that it approaches the total systems concept which integrates all the functional and operational aspects of the enterprise.⁷⁸

The Systems Approach: An Integrated Framework for Organization and Management Thought

The systems approach to organization and management is built upon the work of general systems theorists who have attempted to develop a systematic, theoretical framework for describing general relationships of the empirical world. In the words of Buckley:

. . . general systems theory seeks to classify systems by the way their components are organized (interrelated) and to derive the 'laws,' or typical patterns of behavior, for the different classes of systems singled out by the taxonomy.⁷⁹

In other words, general systems theorists searched for common characteristics (principles) in the operations of systems wherever they are found, whether in business, physics, biology, or society. For years scholars have used the term "system" in learned discussions on diverse topics ranging from philosophy to engineering. What, then, is a system?

The System Concept

The following are some of the definitions formulated by scholars studying systems:

1. ". . . a system may be described as a set of elements joined in some way for the purpose of attaining common, mutual goals."⁸⁰
2. ". . . a system is 'an organized or complex whole; an assemblage or combination of things or parts forming a complex or unitary whole'."⁸¹
3. ". . . a system [is] 'an array of components designed to accomplish a particular objective according to plan'."⁸²
4. ". . . [a system is] a complex unit formed of many often diverse parts subject to a common plan or serving a common purpose."⁸³
5. ". . . a system is a set of parts coordinated to accomplish a set of goals."⁸⁴
6. ". . . a system is a complex of elements or components directly or indirectly related in a casual network, such that at least some of the components are in some way related to some others in a more or less stable way at some time."⁸⁵

As these definitions imply, the following characteristics are basic to all systems: (1) all systems have a purpose, objective, or basic goal to perform, (2) all systems are made up of individual parts or sub-systems, which are often diverse, and (3) the components of a system are designed into a meaningful arrangement either because they are subject to a common plan or serve a common purpose. A system is also characterized by synergism, that is, the simultaneous action of the system's separate and interrelated elements produce an effect greater than the sum of the elements' effects taken separately.

Systems vary greatly in their composition, appearance, size, attributes, and purpose. For example, the human body is a system composed of organs, connective tissue, bone structure, nerve structure, and so forth. This complex system is designed in such a way that it successfully achieves homeostasis. A social club is a system composed of individuals for the purpose of recreation. Accounting is a system made up of journals, ledgers, computers, people, and so forth, for the purpose of providing information to decision makers. A small manufacturing firm is a system composed of departments, people, inventories, machines, and other scarce resources for the purpose of maximizing or earning satisfactory profits for the owners over the long run.

Because of the great number and diversity of systems, it is frequently convenient to classify them according to their various characteristics and dimensions. For example, systems are frequently classified as: (1) conceptual or empirical; (2) natural or man-made; (3) open or closed; (4) social, man-machine, or machine; (5) permanent or temporary; (6) stationary or non-stationary; or (7) a system, subsystem, or supersystem. The characteristics of each of these classifications is summarized in Table II, pages 44 to 47. This classification scheme will be explained in greater detail in Chapter III (see pages 82 to 83) when a small manufacturing firm is described as a system.

The Systems Approach to Organization and Management

The systems approach to organization and management grew out of the development of operations research during World War II and the concept

TABLE II
TYPES OF SYSTEMS

Classification	Definition	Examples
Conceptual	A system concerned with theoretical structures, which may or may not have any counterpart in the real world--composed of ideas.	Economic theory, non-Euclidean geometry systems, organization theory.
vs.		
Empirical	Such systems are generally concrete operational systems made up of people, materials, machines, energy, and other physical things, although electrical, thermal, chemical, information and other such systems involving intangibles also fall into this category.	Business organization, production department, social club.

Natural	A system that has evolved from natural phenomena.	Entire ecology of life, individual organism, water system, solar system.
vs.		
Man-Made	A system formed by people.	Business organization, national defense, transportation system, telephone system.

TABLE II (Continued)

Classification	Definition	Examples
Open	A system that interacts with its environment. Such a system generally has little influence on its environment and must function with inadequate feedback from the environment.	Business enterprise interacts with industry, national economy, government, creditors, etc.
vs.		
Closed	A system that does not interact with its environment. Whatever environment surrounds the closed system does not change, or if it does, a barrier exists between the environment and the system to prevent the system from being affected.	Doubtful if such a system exists. Concept has important implications however.
<hr/>		
Social	A system viewed purely from aspects of interpersonal relationships and human behavior.	Business organizations, government agencies, political parties and any other social group.
vs.		
Man-Machine	A system composed of people and machines.	Most empirical systems are of this type as almost every system composed of man is also composed of equipment--even a philosopher writes and records.
vs.		
Machine	A system containing only machines. For such a system to exist, the machines would have to obtain their own inputs and maintain themselves--self healing.	Such systems do not at this time exist. Some electrical power generating systems approximate such a system.
<hr/>		

TABLE II (Continued)

Classification	Definition	Examples
Permanent	A system that endures for a time span that is long relative to the operations of humans in the system.	Economic system, business policies (as far as year-to-year operations are concerned).
vs. Temporary	A system designed to last a specified period of time and then dissolve. Such systems are important for the accomplishment of specific tasks in business and for research in science.	Venture, project, a television system set up to record and transmit national political convention.
Stationary	A system whose properties and operations either do not vary significantly, or else vary only in repetitive cycles.	Automatic factory, supermarket store operation, ferry system.
vs. Nonstationary	A system that is not stationary, i.e., a system that is not repetitive.	Continental defense system research and development laboratory, human being.

TABLE II (Continued)

Classification	Definition	Examples
System	The system in the hierarchy of systems that is being studied or controlled.	The business firm is viewed as "the system" or the "total system" when focus is on production, the results of operations or the comprehensive budget.
vs.		
Subsystem	A smaller system within the system being studied or controlled.	The production department is a subsystem of the business firm.
vs.		
Supersystem	A larger system than the one being studied or controlled of which the system is a subsystem.	The industry to which the business firm belongs is a supersystem.

Source: Compiled from a discussion on classifications by Robert G. Murdick and Joel E. Ross, Information Systems for Modern Management (Englewood Cliffs, N. J., 1971), pp. 279-282.

of weapons management after the war.⁸⁶ It has been used increasingly since that time. In effect, the systems approach to organization and management involves the application of relevant concepts developed and utilized by general systems theorists in order to facilitate the understanding of formal organizations and the management process. This approach or way of thinking recognizes that every phenomena involves parts, components, or subsystems and emphasizes their interrelationships. In fact, the expression "everything depends on everything else" is an appropriate way of thinking about the systems approach. A systems analyst is a decision maker or problem solver who utilizes the systems approach. Once a problem is recognized, the systems analyst identifies the relevant variables, analyzes and synthesizes the various factors, and utilizes a decision model to determine the optimal or best solution or courses of action. The basic operating tool utilized by systems analysts is a model.

Models

As previously defined, a model is a simplified representation of reality which permits the solution of complex problems by focusing on only a portion of the key features of the real world. For the systems analyst, a model provides the basis for studying and understanding the complex relationships and interrelationships of the system under study. Furthermore, a model provides a tool for assessing and predicting the effect of changes in certain aspects of the system on the performance of the system.

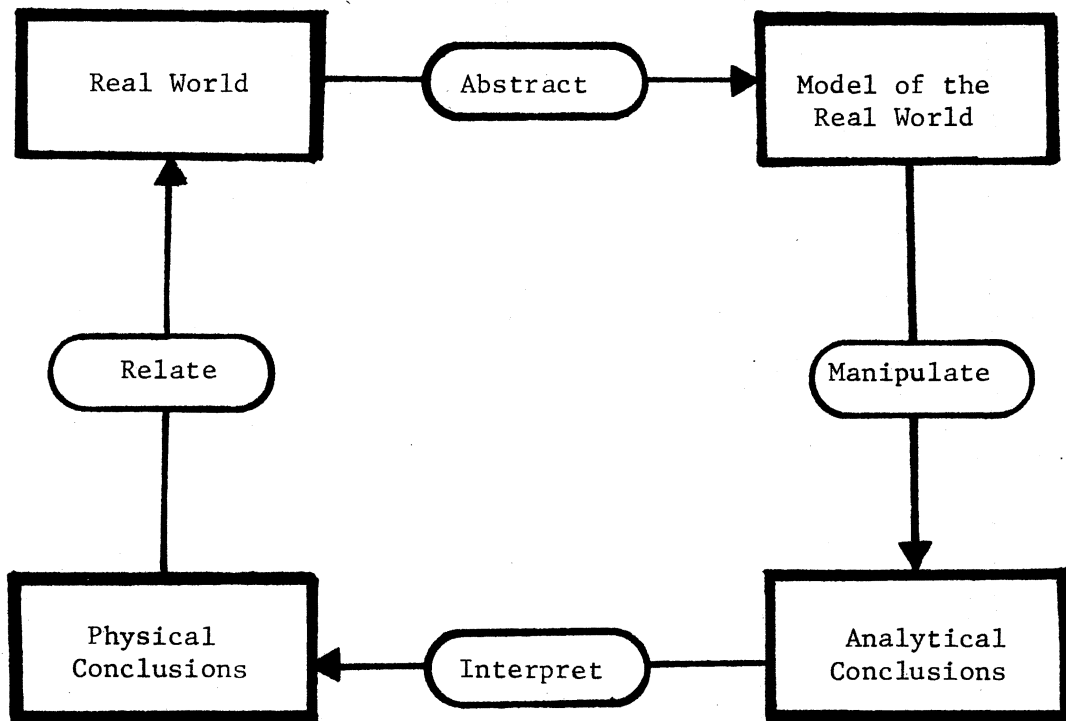
Basically, the value of a model lies in its substitutability for the real system. The physical scientist might

proceed toward the solution of a decision problem by experimentation: i.e., he would try various combinations of controllables in a planned fashion and observe the results. In most problems of business and government, this procedure is either impossible or impractical. Who, for example, would propose that we simply 'try' a number of weapon systems? To do so, even on a restricted pilot-study basis, would obviously be too costly. Thus, the need in decision-problem analysis is for a representation of the system which can be used in place of the real system. A model is such a device. In using a model, the analyst makes assertions which express the relationship of various elements of the system with one another and, in turn, their effect on the performance of the system. In doing so, he creates an entity--the model--which he can use in lieu of the actual system. He can then experiment on the model and on this basis make his predictions of the effects which changes in the system will have on its performance.⁸⁷

For the systems analyst the decision process requires the construction of a model which accurately represents the key features of the system under study.

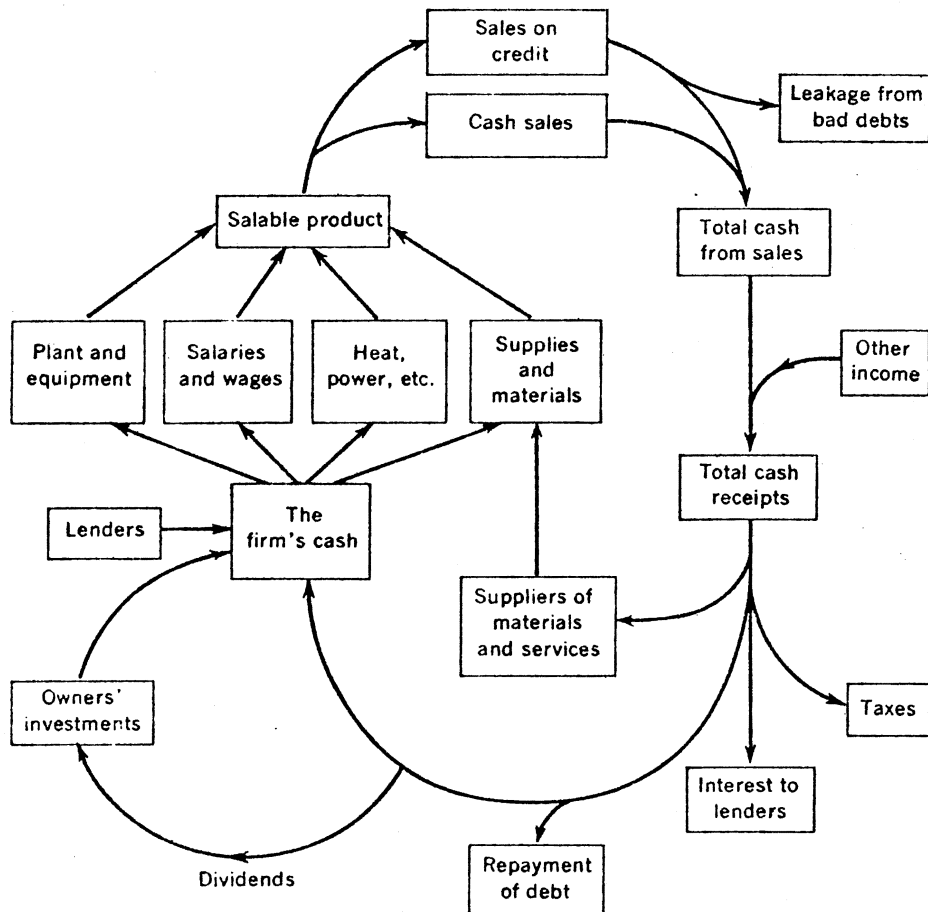
Figure 1, page 50, presents the modeling process. As illustrated, model building begins with the observation of real world phenomena and necessitates abstracting the key features or major variables, representing the behavior of the system. In the initial stages of the modeling process, the model deals with generalities. It is tested and refined by manipulating the basic variables and assessing, interpreting, and relating the test results to the real world phenomena. The model is made more realistic by adding additional variables or detail and through continued testing of the model.

For purposes of this study, a particular type of system, a small manufacturing company, is to be considered. Many different models have been developed for such firms. For example, the traditional organization chart is a model as it represents the organizational subunits and their interrelations. Similarly, Figure 2, page 51, presents a model



Source: Richard A. Johnson, Fremont E. Kast, and James E. Rosenzweig, The Theory of Management of Systems (3rd ed., New York, 1973), p. 131.

Figure 1. Modeling Process



Source: David I. Cleland and William R. King, Systems Analysis and Project Management (New York, 1975), p. 99.

Figure 2. Pictorial Model of Flow of Cash Through a Business Enterprise

of a business entity. This model focuses on the flow of a scarce economic resource, cash, through the organization. Although both of these are representative models, they are different because they focus as different aspects of the real system. In other words, each model incorporates certain features of the real world and simultaneously omits other aspects. The model developed by the systems analyst depends upon the decision to be made, that is, a good model is one which is useful in the decision process.

The purpose of this study, of course, is to design a particular type of organization model, a flexible, computerized budget model for a small manufacturing firm.⁸⁸ Therefore, the relevant literature relating to previous budget models is reviewed below.

Budget Models

The comprehensive budget has been referred to as ". . . the best approximation of a formal model of the total organization: its objectives, its inputs, and its outputs."⁸⁹ A study of the literature, however, reveals that formal business planning through systematic budgeting is a relatively new management tool.

Evolution of Budgeting

The first real interest in budgeting in this country occurred in 1921 when Congress passed the Budget and Accounting Act which led to the first national budget for the fiscal year ended June 30, 1923.⁹⁰ James O. McKinsey's book, Budgetary Control, which was published in 1922 was one of the earliest publications on business budgeting and control.⁹¹

Practically all the literature on budgeting at that time focused on the budget as an instrument of governmental administration.

As a consequence of this . . . book, and under the pressure of increasing competition, management's interest in formalized periodic budgeting increased and led to a series of further publications during the twenties.⁹²

In 1931 the National Conference Board surveyed 294 American companies with a production volume in excess of \$100 million and found that 162 of these companies applied budgetary control.⁹³

Three important developments in cost accounting during the 1930's greatly enhanced the "efficiency and significance of budgetary control":

- (i) The development of the break-even chart⁹⁴ which brought about, or at least invigorated, flexible budgeting.
- (ii) The development and the broader utilization of standard costing which complemented budgeting in a decisive way.
- (iii) The exploitation of national statistics, especially those of specific industrial sectors for the purpose of forecasting sales in individual firms.⁹⁵

During the 1950's, another important aspect of budgeting was introduced and continues to be reflected in:

- (iv) "The systematic emphasis of psychological, and in particular motivational forces, in budgeting and controlling the activities within an enterprise."⁹⁶

During the early and mid 1950's, such pioneers as Green, Kami, Steiner, and Drucker devoted their efforts to selling businessmen on the advantages of formal planning. The rapid growth of budgeting is evidence of their success. The results of a 1960 survey of the chemical processing industry showed that in 1948 very few of the firms in the industry used formal planning techniques.⁹⁷ However, in 1960 approximately 90 percent were engaged in long-range planning. Comprehensive budgeting

is particularly evident in better-managed companies. A study by Sord and Welsch showed that 96 percent of the well-managed companies in the study utilized a comprehensive profit planning and control program on a continuing basis.⁹⁹

As Ansoff and Brandenburg point out, the challenge of budgeting is no longer "on the hows, and the whys, and the wonders of planning" but rather on pressing questions such as:

. . . how much planning is enough; what are the cost-benefit relationships in planning; what kinds of planning are appropriate to different firms, to different business conditions within firms; how should firms organize for planning; how is planning related to control; what is the role of computers in planning; how should planning practices differ among industries; how should uncertainty be handled?¹⁰⁰

What is the Role of Computers in Planning

Of particular concern in this study is the question, "What is the role of computers in planning?" Many critics contend that researchers and businessmen have devoted too little attention to this challenging question.¹⁰¹ As pointed out in Chapter I, the cost and time involved in preparing and modifying the budget, utilizing conventional manual techniques, results in an inflexible teaching and management tool. The computer has the potential to add desired flexibility to the planning or budgetary process. However, in spite of this obvious fact, a 1969 study of 12 companies with computer applications found that none of the companies had a fully developed budget system.¹⁰² There is evidence that some large companies have developed at considerable cost their own budget models, however, very little public information is available to educators and the managers of small companies.¹⁰³

Computerized Budget Models

In general, the literature relating to computerized budget models can be classified according to two main types: (1) optimization (algorithmic) models and (2) case-study (heuristic or simulation) models.

Optimization Models.¹⁰⁴ In his dissertation, Andrew Stedry developed a linear programming model for a single production department of a manufacturing firm.¹⁰⁵ Stedry refers to his model as:

. . . an attempt at devising a scheme for coordinating control efforts in a multidepartment situation. Developed specifically for the purpose of studying the interrelationships of factors in logical grouping rather than individually, it lends itself naturally to the study of more or less separated collections of activities in a firm.¹⁰⁶

Under certain conditions,¹⁰⁷ Stedry's model affects limited substitution of the factors of production in determining the optimum product mix and profit maximization point.¹⁰⁸ Stedry admits certain limitations in his model and compares his approach with that typically encountered in economic analysis:

In such a system there is no real problem of goal discrepancies . . . and virtually everything reduces to the question of whether accuracy and felicity are present in the costs and benefits that have been calculated.¹⁰⁹

Stedry at no time suggests that his model has practical application. He presents it as an analytical model ". . . which more closely resembles the operation of an actual firm than the classical economic model of the firm."¹¹⁰ Stedry also admits that optimization of a single department will not necessarily lead to optimization for the firm as a whole.

Ijiri, Levy, and Lyon also developed an analytical linear programming model to optimize a firm's year-end balance sheet position.¹¹¹ The authors did not propose that their model had practical application but rather treated it as an "experiment in applying modern mathematical methods to management problems in budgeting and financial planning."¹¹²

While these works have made a major contribution to accounting literature by providing a starting point for the development of managerial models in budgeting, there are serious questions as to whether such a model has practical application at this time in our historical development. As Mattessich states:

. . . at present no one has at his disposal an optimization model that is realistic enough for application to the firm as a whole. Indeed, the complexities of business life do not favor the prospects for creating such a model. The dilemma is worsened by the fact that the notion of profit maximization itself is vague and that the assumption of maximizing a monetary short-run profit as the basic goal of business activity is rejected by many theoreticians as well as practitioners.¹¹³

Mattessich's solution to this dilemma is a budget case-study, heuristic or simulation model. The literature relating to such models is reviewed next.

Case-Study Models.¹¹⁴ One of the earliest publications¹¹⁵ dealing with budget case-study models was written in 1961 by Richard Mattessich.¹¹⁶ In this article, Mattessich presented the traditional budget in terms of a series of mathematical equations and expressed the conviction that periodic business budgeting could be enriched through computer simulation. In response to this article, C. Sprowls (UCLA) developed a computerized version of a traditional budget textbook example in 1963.¹¹⁷

In 1964 Mattessich published a book which included a chapter entitled Budget Models of the Firm.¹¹⁸ In this material he discussed a budget case-study model he had designed for a fictitious firm. A companion volume presented the computer program (written in FORTRAN) and illustrative output consisting of nine subbudgets.¹¹⁹

Mattessich hypothesizes that his model provides ". . . a skeleton for implementation in actual practice."¹²⁰ In his statement of objectives he proposed:

1. To present an integrated periodic budget system of a fictitious manufacturing enterprise in form of a comparatively simple mathematical model together with the pertinent computer program.
2. To provide, thereby, a proto-type that may serve in actual practice as a basis for constructing budget models and programs that satisfy the individual needs of particular firms.¹²¹

Mattessich's illustrative model assumes 10 products, three raw materials, four production departments, two service departments, 12 factory overhead cost items, five operating expense items, and 12 sub-periods (months). The model assumes an absorption process cost method of accounting and has been designed to incorporate historical data for the projection of sales transactions. The output of the budget model was designed to focus only on the highest organization level. For example, no attempt was made to break sales data down by district, territory, or salesperson. The budget model program was written in FORTRAN which makes it difficult for those unfamiliar with this computer language to understand its operation.¹²² Although Mattessich's model has made a major contribution to the accounting literature, it did not have the impact Mattessich anticipated.¹²³

Budget case-study models, unlike optimization models have been developed and successfully applied in business firms. Two such models will be discussed briefly below. It is noted that these budget models were developed by private enterprises and, therefore, little public information is available.¹²⁴ In addition, these models were designed to meet the needs of the enterprise involved only and probably would not be flexible enough to adapt to another firm if more detailed information were available.

By 1965, Burroughs Corporation had developed a financial case-study model for their worldwide operations.¹²⁵ In discussing the model, the authors brought out two key points regarding their concept of financial simulation:

The first is the concept of modular construction. The total Burroughs model is actually a set of submodels, one for each of the management units. . . . Specifically, we constructed individual models for each of these management units, expressing their output in accounting terms, and aggregated this output to produce the accounting consolidations. . . . The second point . . . is that there is a logical sequence that must be followed. This sequence depends on the structure of the business. The output of certain models forms the input for others. The relationship thus created reflects the interplay between the divisions.¹²⁶

The authors state that the "construction of a model is an expensive, time-consuming process . . ." but that "the effort is worthwhile, for corporate planning . . . is a complex and difficult task."¹²⁷

In 1965, Sun Oil Company began construction of a budget case-study, deterministic model. In mid 1969, George W. Gershefski discussed the model which was still undergoing change.¹²⁸ The original emphasis of the model was long-range planning, although its value as a tool in short-range planning was soon realized. The model incorporates historical data and projects forecasts through the utilization of regression

analysis. The model generates an income statement, capital investment schedule, statement of earnings employed and stockholders' equity, tax report, rate-of-return analysis, financial and operations summary and an additional 142 pages of output making up 61 specific reports.

Sun Oil Company considers the budget case-study model a powerful management tool and ". . . extremely valuable for comparing and evaluating alternative courses of action that a company may take."¹²⁹

Summary

In order to establish a setting in which the budgetary process could be examined, the relevant literature relating to organization and management theory was reviewed. The literature revealed that although organized human activity and management are as old as civilization, modern organization and management theory is a relatively recent development. The current literature reflects a wide range of topics written by a diverse group of authors from many disciplines. Accordingly, numerous approaches to the study of organization and management have been advocated, each having merit. For purposes of this study, the systems approach will be utilized as it provides a basis for integrating the concepts and ideas of the various approaches to the study of organization and management. Basically, the systems approach recognizes that every phenomenon involves parts, components or subsystems, and emphasizes their relationships. Models, the basic operating tool of decision makers utilizing the systems approach (systems analysts), are simplified representations of reality and assist decision makers by (1) providing the basis of studying and understanding the complex relationships and interrelationships of the systems under study and (2)

providing a tool for assessing and predicting the effect of changes in certain aspects of the system on the performance of the system. The real value of models is in their substitutability for the real system.

Numerous representative organization models have been developed, each focusing on different aspects of the organization. For purposes of this study a particular type of organization model, a computerized budget model, is to be considered. Therefore, the relevant literature relating to budget models was reviewed, revealing that planning through comprehensive budgeting is a relatively new management tool having reached popular acceptance during the mid and late 1950's. Today accountants and management are faced with the challenge of making budgeting a more effective management tool; computerized budget models provide the key for more effective business planning. Two main types of computerized budget models have been proposed: (1) optimization models and (2) case-study models. At this time in our historical development, only case-study models appear to have practical application.

There is evidence that models have been developed and successfully applied in some large business firms. However, such models are not public information and as a result are not available to educators and the managers of small companies. Furthermore, it is doubtful whether the complex specialized models would be appropriate for (1) teaching purposes or (2) use in small manufacturing concerns. The justification for this study, therefore, is to develop a flexible budget model that will meet these needs.

FOOTNOTES

¹A formal organization refers to an enterprise that is characterized by a formal intentional structure of roles or positions. This structure is frequently depicted by an organization chart.

²"Generally accepted" is not used here in the context used by the AICPA (American Institute of Certified Public Accountants). Rather, the comprehensive budget is generally accepted by most successful managers and academicians as an essential and powerful management tool. Many managers do not at this time regard the budget in such a way.

³Much could be written reviewing the literature on this subject. Therefore, the writer will review only that portion of the literature which appears most pertinent to the establishment of the basic building blocks for the budget model developed in this study.

⁴David I. Cleland and William R. King, Management: A Systems Approach (New York, 1972), pp. 60-61.

⁵Ibid., p. 61.

⁶Ibid.

⁷Chester Barnard, The Functions of the Executive (Cambridge, 1938), p. 72.

⁸Chester Barnard interpreted in Koontz and O'Donnell, p. 39.

⁹William G. Scott, "Organization Theory: An Overview and an Appraisal," Journal of the Academy of Management, 4 (April, 1961), p. 7.

¹⁰Richard M. Cyert and James G. March, A Behavioral Theory of the Firm (Englewood Cliffs, 1963), p. 78.

¹¹Marvin E. Mundell, A Conceptual Framework for the Management Sciences (New York, 1967), p. 214.

¹²Robert O. Presthus, quoted in Murdick and Ross, p. 40.

¹³Robert N. Anthony, Planning and Control: A Framework for Analysis (Cambridge, 1965), p. 9.

¹⁴Max Ways, "Tomorrow's Management," Fortune, 66 (July, 1966), p. 85.

- 15 Peter Drucker, The Practice of Management (New York, 1954), p. 1.
- 16 Urwick, quoted in Marvin E. Mundel, A Conceptual Framework for the Management Sciences (New York, 1967), pp. 3-4.
- 17 Joseph W. McGuire, "Management and Method," in Joseph W. McGuire, ed., Contemporary Management: Issues and Viewpoints (Englewood Cliffs, 1974), p. 1.
- 18 Donnelly, Gibson and Ivancevich, p. 4.
- 19 Fremont E. Kast and James E. Rosenzweig, Organization and Management: A Systems Approach (New York, 1970), p. 6.
- 20 Richard A. Johnson, Fremont E. Kast, and James E. Rosenzweig, The Theory and Management of Systems (2nd ed., New York, 1967), p. 14.
- 21 American Accounting Association, "Report of the Committee on Accounting and Information Systems," The Accounting Review (1971 Supplement), p. 297.
- 22 Koontz and O'Donnell, p. 4.
- 23 The above definitions could apply as well to Heads of State, Commissioners, Mayors, Deans, Academic Department Chairmen, etc. as these individuals must efficiently and effectively manage scarce human, material, and financial resources in order to achieve the goals of their organization.
- 24 Chester I. Barnard, quoted in Anthony, p. 27.
- 25 Anthony, p. 28.
- 26 Groups/organizations consisted of families, tribes and political units.
- 27 Claude S. George, The History of Management Thought (Englewood Cliffs, 1968), pp. 3-26. C. S. George conducted a survey of the management practices of the Sumerian temple priests, Egyptian pharaohs, and other officials of ancient civilizations.
- 28 Murdick and Ross, p. 33.
- 29 Koontz and O'Donnell, pp. 16-17.
- 30 Aristotle quoted in Koontz and O'Donnell, p. 16.
- 31 Adam Smith quoted in Koontz and O'Donnell, p. 16.
- 32 Koontz and O'Donnell, p. 17.
- 33 Ibid.

³⁴Ibid.

³⁵Murdick and Ross, pp. 33-35. See also Koontz and O'Donnell; Donnelly, Gibson, and Ivancevich; and Starr.

³⁶The reader is reminded that the purpose of this section is to establish the framework for the budget model developed in this study and therefore only the highlights of each milestone will be described.

³⁷Donnelly, Gibson, and Ivancevich, p. 26.

³⁸Ibid., pp. 26-27.

³⁹Ibid.

⁴⁰Ibid.

⁴¹Murdick and Ross, p. 35.

⁴²Ibid., pp. 35-36.

⁴³Henri Fayol, General and Industrial Management, tr. J. A. Conbrough (Geneva, 1929) and Henri Fayol, General and Industrial Management, tr. Constance Storrs (London, 1949). References to Fayol will hereafter be from the most popular translation by Constance Storrs.

⁴⁴Murdick and Ross, p. 38.

⁴⁵Koontz and O'Donnell, p. 23.

⁴⁶Cf. Koontz and O'Donnell, p. 23: "Most of those who have contributed to the principles of business management--such as Sheldon, Dennison, Mooney, and Barnard--show no evidence of having been familiar with the work of Fayol."

⁴⁷Murdick and Ross, p. 38.

⁴⁸Koontz and O'Donnell, p. 24.

⁴⁹Fayol's principles of management were as follows: (1) division of work, (2) authority and responsibility, (3) discipline, (4) unity of command, (5) unity of direction, (6) subordination of individual interest to general interest, (7) remuneration of personnel, (8) centralization, (9) scalar chain, (10) order, (11) equity, (12) stability of tenure of personnel, (13) initiative, (14) esprit de corps. For a further discussion of these principles of management, see Donnelly, Gibson, and Ivancevich, pp. 34-36; Koontz and O'Donnell, pp. 24-25; Murdick and Ross, pp. 37-38; Henri Fayol tr. by Storrs, pp. 19-42.

⁵⁰Donnelly, Gibson, and Ivancevich, p. 34.

⁵¹Ibid., p. 37.

⁵²Koontz and O'Donnell, p. 26. Cost textbooks used in university management courses take this approach. See for example, Koontz and O'Donnell; William H. Newman and Charles E. Summer, Jr., The Process of Management (Englewood Cliffs, 1967); Franklin G. Moore, Manufacturing Management (Homewood, 1969); Dalton E. McFarland, Management Principles and Practices (New York, 1958); George Terry, Principles of Management (5th ed., Homewood, 1968).

⁵³See, for example, Donnelly, Gibson, and Ivancevich, p. 37.

⁵⁴Murdick and Ross, p. 38.

⁵⁵Ibid.

⁵⁶Donnelly, Gibson, and Ivancevich, p. 125.

⁵⁷For details of the study see F. J. Roethlisberger and W. J. Dickson, Management and the Worker: An Account of a Research Program Conducted by the Western Electric Company Hawthorne Works, Chicago (Cambridge, 1939).

⁵⁸Starr, p. 641.

⁵⁹Murdick and Ross, p. 38.

⁶⁰Ibid.

⁶¹Ibid.

⁶²Ibid., p. 39.

⁶³Donnelly, Gibson, and Ivancevich, p. 303.

⁶⁴These disciplines are presented in alphabetical order and not in the order of importance.

⁶⁵Murdick and Ross, p. 40.

⁶⁶Ibid.

⁶⁷Ibid.

⁶⁸See item two, page 36.

⁶⁹Murdick and Ross, pp. 41-42. Harold Koontz has referred to the numerous approaches to the study of management as "the management theory jungle." See Harold Koontz, "The Management Theory Jungle," Journal of the Academy of Management, 4 (December, 1961), pp. 174-188.

⁷⁰Koontz and O'Donnell, p. 34.

⁷¹Among these schools are: custom, experience, scientific, human behavior, social system, systems, decision making, quantitative, process, empirical, rational qualitative, management science, decision theory, social psychology, group behavior, mathematical, and operations.

⁷²Warren W. Haynes and Joseph L. Massie, Management, (2nd ed., Englewood Cliffs, 1969), pp. 4-13.

⁷³Koontz and O'Donnell, pp. 34-42.

⁷⁴For example, Murdick and Ross use (1) behavioral, (2) empirical, (3) decision theory, (4) quantitative, and (5) management process. Donnelly, Gibson, and Ivancevich use (1) classical, (2) behavioral, and (3) management sciences.

⁷⁵Koontz and O'Donnell, p. 42.

⁷⁶Murdick and Ross, p. 42. Johnson, Newell, and Vergil, p. 14, take a similar stand.

⁷⁷Koontz and O'Donnell, p. 31.

⁷⁸Glenn A. Welsch, Budgeting: Profit Planning and Control (3rd ed., Englewood Cliffs, 1971), p. 4.

⁷⁹Walter Buckley, ed., Modern Systems Research for the Behavioral Scientist (Chicago, 1968), p. xvii.

⁸⁰Murdick and Ross, p. 7.

⁸¹Johnson, Kast, and Rosenzweig, p. 4.

⁸²Richard A. Johnson, William T. Newell, and Roger C. Vergin, Operations Management: A Systems Concept (Boston, 1972), p. 5.

⁸³Websters Unabridged Dictionary, quoted by Anthony, p. 14.

⁸⁴C. West Churchman, The Systems Approach (New York, 1968), p. 29.

⁸⁵Buckley, p. 493.

⁸⁶Murdick and Ross, p. 41.

⁸⁷David I. Cleland and William R. King, Systems Analysis and Project Management (2nd ed., New York, 1975), p. 98.

⁸⁸ As previously stated the purpose of the model is to (1) provide students, future managers, and management consultants with a tool for developing the budget and for assessing the impact changes in the basic budget variables and (2) provide the managers of small manufacturing firms with a tool for planning and coordinating the activities of their company in order to achieve their short-run financial goals.

⁸⁹ Horngren, p. 121.

⁹⁰ Mattessich, Simulation of the Firm Through a Budget Computer Program, p. 5.

⁹¹ James O. McKinsey, Budgetary Control (New York, 1922).

⁹² Mattessich, Simulation of the Firm Through a Budget Computer Program, p. 1.

⁹³ National Industrial Conference Board, Budgetary Control in Manufacturing Industry, quoted in Richard Mattessich, Simulation of the Firm Through a Budget Computer Program, p. 5.

⁹⁴ Mattessich attributes the development of the break-even chart to Walter Rautenstrauch in 1930.

⁹⁵ Mattessich, Simulation of the Firm Through a Budget Computer Program, p. 7.

⁹⁶ Ibid.

⁹⁷ Ansoff and Brandenburg, p. 219.

⁹⁸ Ibid.

⁹⁹ Welsch, p. 2.

¹⁰⁰ Ansoff and Brandenburg, p. 219.

¹⁰¹ Ibid., pp. 219, 224, 226, 228 ff.

¹⁰² Neil C. Churchill, John A. Kimpster, and Myron Uretsky, Computer-Based Information Systems for Management: A Survey (New York, 1969), p. 86.

¹⁰³ For example the Sun Oil Company previously referenced and discussed in greater detail later in this chapter.

¹⁰⁴ For a discussion of optimization models see page 9 of this study.

¹⁰⁵ Andrew C. Stedry, Budget Control and Cost Behavior (Englewood Cliffs, 1960). Stedry was a 1959 winner of the Ford Foundation Award.

¹⁰⁶ Ibid., p. 141.

¹⁰⁷ Ibid., p. 117. The author does not discuss in detail what he means by limited substitution. He states that this concept ". . . cannot be discussed here at any length, aside from the obvious comments already entered. That the issue of 'linearity' is involved can be seen from the fact that the indicated substitutions at some specific level of aggregation would make their effects felt via the coefficients (which then become functions of the outputs and mixes)."

¹⁰⁸ Many accountants would argue that we cannot discuss "profit" for a sub-unit of an organization. For example see Raymond P. Marple, "Management Accounting is Coming of Age," Management Accounting, 48 (July, 1967), p. 6. Also see Germain Boer, Direct Cost and Contribution Accounting: An Integrated Management Accounting System (New York, 1974), p. 44.

¹⁰⁹ Stedry, p. 145.

¹¹⁰ Ibid., p. 141.

¹¹¹ Y. Ijiri, F. K. Levy, and R. C. Lyon, "A Linear Programming Model for Budgeting and Financial Control," Journal of Accounting Research, 1 (Autumn, 1963), pp. 198-212.

¹¹² Ibid., p. 198.

¹¹³ Mattessich, Simulation of the Firm Through a Budget Computer Program, p. 8.

¹¹⁴ For a discussion of case-study models see page 9 of this study.

¹¹⁵ Mattessich, Simulation of the Firm Through a Budget Computer Program, p. 9. Mattessich claims to be the first. The author could find no earlier works.

¹¹⁶ Mattessich, Accounting and Analytical Methods.

¹¹⁷ C. Spowls was the Acting Director of the Western Data Processing Center at UCLA. He developed a computerized version of the example used by F. Weston in his textbook, Managerial Finance (New York, 1962). Weston apparently used this program and made some modifications to it. Richard Mattessich presents a copy of the program in an appendix to Simulation of the Firm Through a Budget Computer Program.

¹¹⁸ Mattessich, Accounting and Analytical Methods, pp. 333-408.

¹¹⁹ Mattessich, Simulation of the Firm Through a Budget Computer Program. The nine subbudgets presented were: Sales Budget, Production Budget, Material Budget, Labor Budget, Factory Overhead Budget, Operating Expense Budget, Cash Budget, Projected Income Statement, Projected Balance Sheet.

¹²⁰ Ibid., p. 3.

121 Ibid.

122 The researcher was able to secure a copy of the companion volume, Simulation of the Firm Through a Budget Computer Program, on a two-week interlibrary loan. Most of this two weeks was spent trying to gain an understanding of the operation of the model.

123 The companion text, Simulation of the Firm Through a Budget Computer Program, is currently out of print and the writer had a very difficult time securing a copy of this publication. In discussions with various schools across the country, the researcher has not found anyone who actually used the model in a classroom situation.

124 It would, of course, be poor management to share with competitors an economic resource, developed at considerable cost.

125 E. N. Khoury and H. Wayne Nelson, "Simulation in Financial Planning," Management Services, 2 (March-April, 1965), pp. 13-21.

126 Ibid., pp. 15-16.

127 Ibid., p. 20.

128 George W. Gershefski, "Building a Corporate Financial Model," Harvard Business Review, 47 (July-August, 1969), pp. 61-72.

129 Ibid., p. 72.

CHAPTER III

THEORETICAL FRAMEWORK FOR A SMALL MANUFACTURING COMPANY

Introduction

This chapter, which presents a theoretical framework for a typical small manufacturing company, is divided into three parts. First, the typical small manufacturing company is described as a formal organization using the systems approach. As this analysis indicates, the typical small manufacturing company is a complex system of interrelated and interdependent segments which can be viewed and analyzed on numerous dimensions. Therefore, to aid in understanding the operations of such an organization (system) and to assess and predict the effect of changes in certain aspects of the organization, a generalized model of a typical small manufacturing firm will be developed in this chapter's second part.

Management performs a vital function within formal organizations, that is, managers coordinate the activities of the interrelated and interdependent segments and relate them to the environment in order to achieve the organization's objectives. Therefore, in the chapter's third part, the role and functions managers perform within typical small manufacturing companies is discussed.

The Typical Small Manufacturing Company:

A Formal Organization

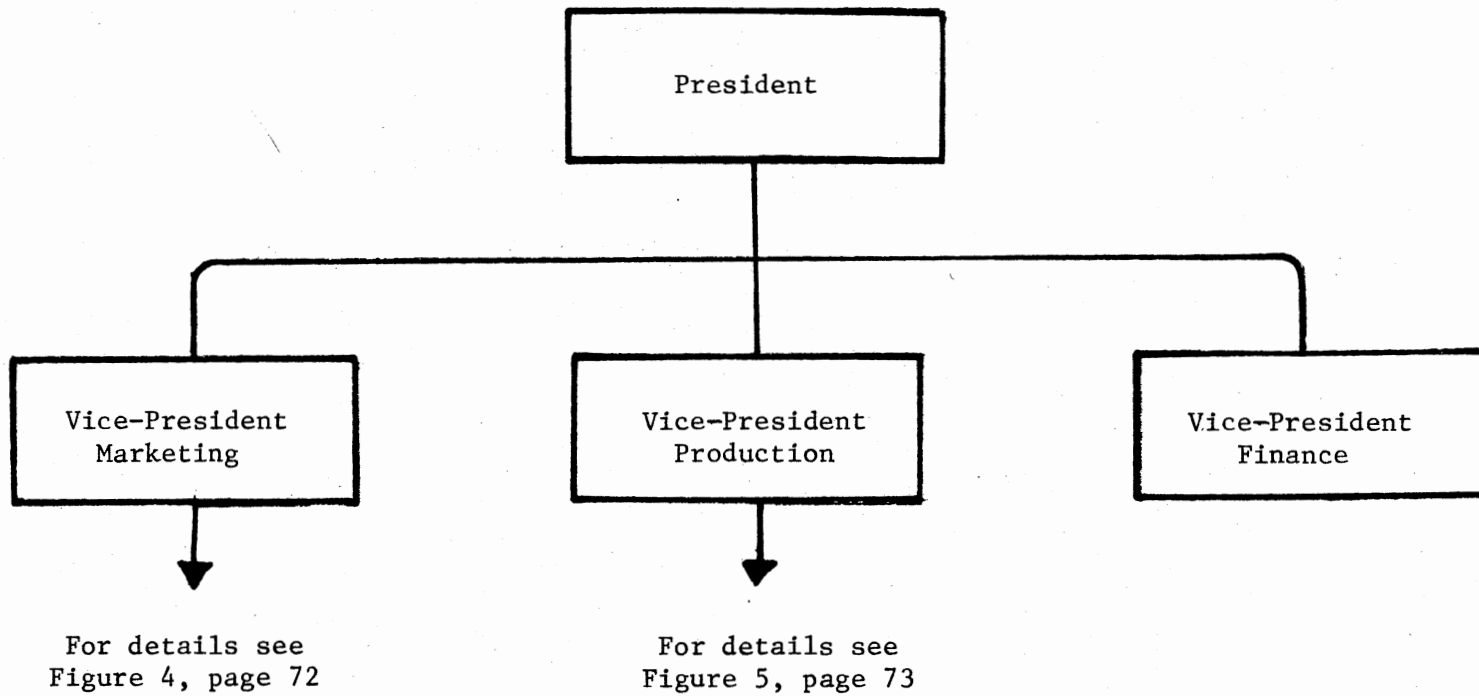
The budget model developed in this study was designed for a particular type of formal organization, a small manufacturing company. In order to establish a setting or framework for the budget model, it was necessary to have an understanding of formal organizations and how they function and thus to describe the small manufacturing company.

Illustrative Small Manufacturing Company

For illustrative purposes, an assumed typical small manufacturing company, the Hypothetical Corporation, will be used throughout this study. An organization chart which depicts the assumed authority-responsibility relationships for the Hypothetical Corporation is presented in Figures 3, 4, and 5, pages 71 through 73. (Assumptions will be made regarding each of these individuals in this study.) It is assumed that the Hypothetical Corporation produces three products: Red, Blue, and Green. Appendix C presents a portion of the comprehensive budget developed by the assumed managers of the Hypothetical Corporation.

Social Role of a Typical Small Manufacturing Company

As discussed in the previous chapter, organizations of all types pervade our society and have resulted because people have psychological and social needs and desires to accomplish objective(s) which cannot be achieved by a single person. For example, industrialization required:



Source: Adapted from an example used by Germain Boer, Direct Cost and Contributions Accounting: An Integrated Management Accounting System (New York, 1974).

Figure 3. Hypothetical Corporation Administrative Function Organization Chart

Marketing
Organization
Level

1

2

3

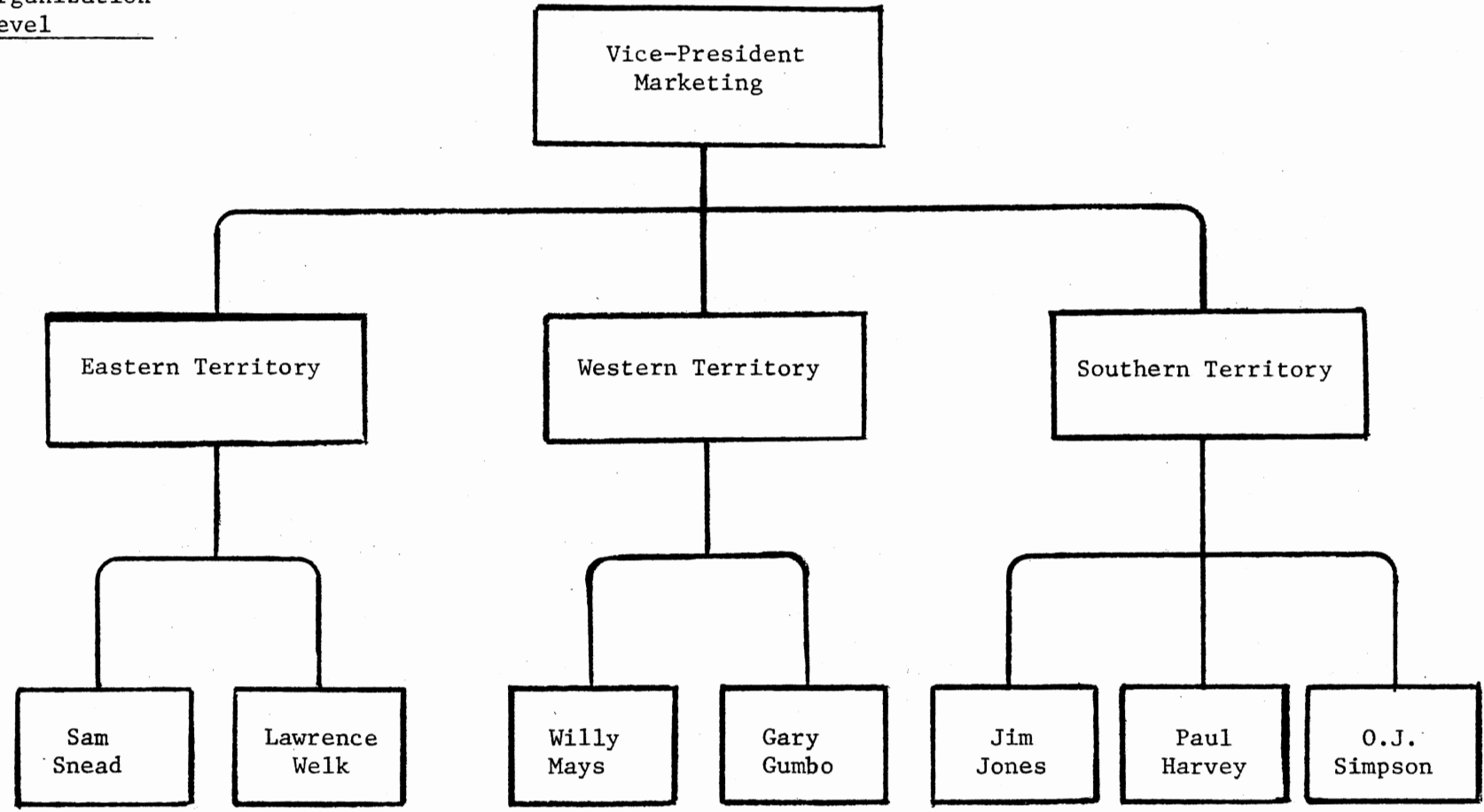


Figure 4. Hypothetical Corporation Marketing Function Organization Chart

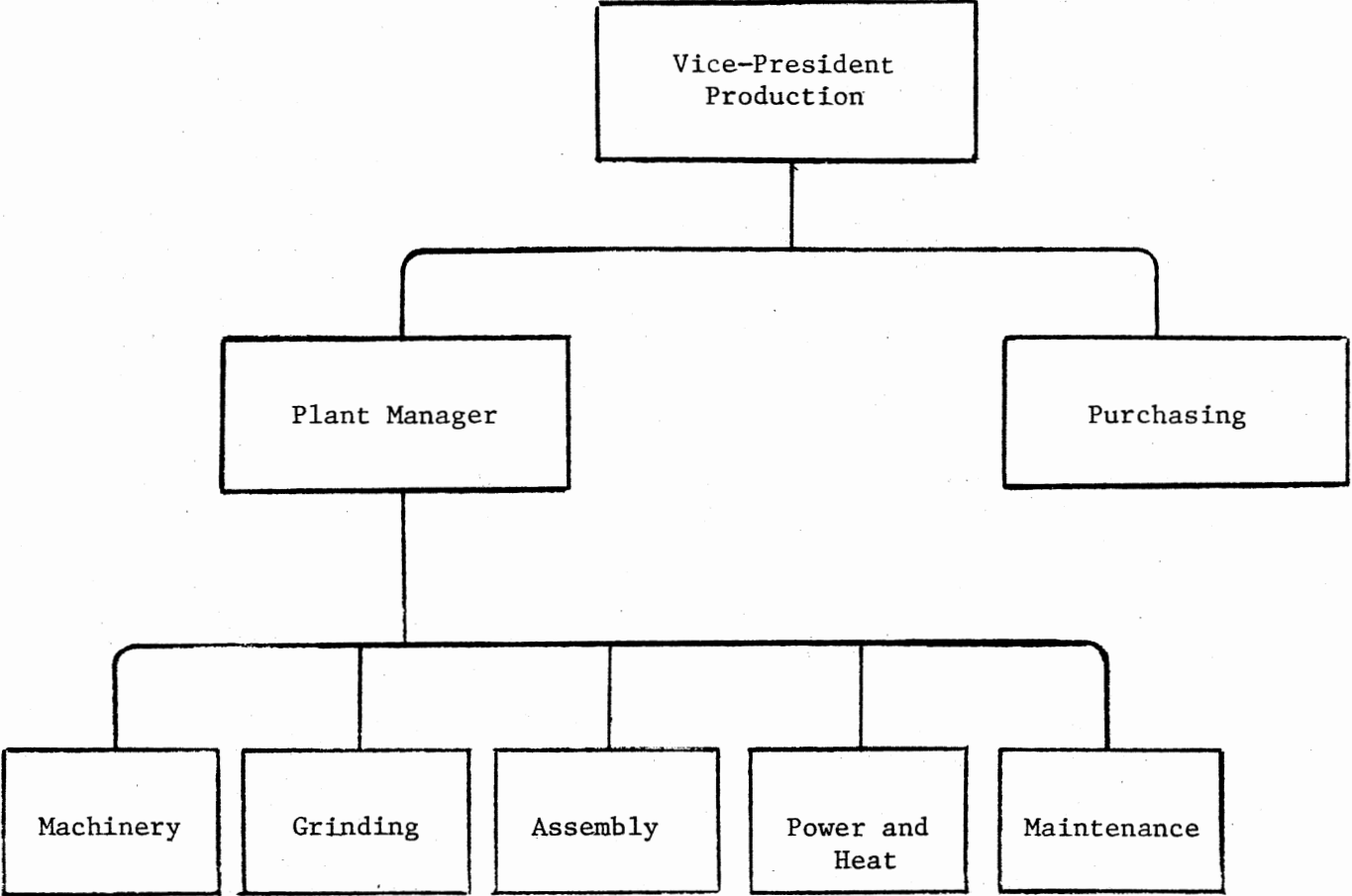


Figure 5. Hypothetical Corporation Production Function Organization Chart

(1) large accumulations of scarce human, material, and capital resources and (2) the development of special skills which could be acquired only after considerable training. No one person possessed all the necessary prerequisites to establish and operate a General Motors or General Electric and, therefore, in order to benefit from technological developments, large-scale formal organizations evolved.¹ The typical small manufacturing company fulfills a need that could not otherwise be achieved, that is, it converts scarce economic resources such as information, materials, money, labor, and facilities (inputs) into a final product or products (output).²

The Typical Small Manufacturing Firm

Defined as an Organization

As pointed out in the previous chapter, organizations although varied, have certain common characteristics:

. . . organizations are (1) goal oriented, people with purpose; (2) psychosocial systems, people working in groups; (3) technical systems, people using knowledge and techniques; and (4) an integration of activities, people coordinating their efforts.³

Obviously, the typical small manufacturing firm possesses these characteristics.

In Chapter II of this study, the organization was defined as ". . . a system of structural interpersonal relations [such that] . . . individuals are differentiated in terms of authority, status, and role with the result that interaction is prescribed."⁴ As this definition implies, typical small manufacturing companies such as the Hypothetical Corporation, are characterized as follows.

1. Small manufacturing firms represent a system of structural relations, that is, a formal organization structure exists that delineates authority-responsibility relationships within the organization such that individual positions and roles are prescribed. Such relationships are frequently depicted in an organization chart.

2. The small manufacturing firm is also a system of interpersonal relations; the activities of the organization are performed by people who interact with each other and as a result relationships evolve that do not appear on an organization chart. These numerous relationships, frequently referred to as the informal organization structure, result in unwritten rules of conduct and as a result influence the success or failure of a business entity. Informal relationships are of many types: the assembly department group, the engineering group, the morning-coffee regulars, the Friday-evening bowling gang, the water-cooler clique, and so forth.

3. In small manufacturing firms individuals are differentiated in terms of authority, status, and role. Authority-responsibility positions are prescribed by the formal organization structure. "Authority is the legal right to command or direct the efforts of others; responsibility is the obligation to respond to directions of other people."⁵ For example, according to the formal organization structure for the Hypothetical Corporation, the Vice-President of Marketing (a) has the power and authority to enter into business transactions relating to the marketing of the firm's products and (b) is held accountable by the President for his actions and performance. Similarly, the manager of the Assembly Department (a) has the power and authority to utilize the

scarce human, material, and capital resources at his disposal and (b) is held accountable for his actions and performance by the Vice-President of Production.

Status, on the other hand, is an organization position or rank that is prescribed by the social or informal organization structure. Individuals in an organization hold status for various reasons. For example, O. J. Simpson is the informal leader of the salespersons in the Southern Territory. He has been given this position by the other salespersons because he (a) has the ability to meet the job requirements, (b) is liked by the other salespersons, and (c) has had a degree of success in attaining and implementing his decisions in the past. O. J. is shown respect commensurate with his status leadership position.

"Role has to do with the expected behavior pattern of a particular position."⁶ For example, the Vice-President of Production of the Hypothetical Corporation is expected to schedule production, provide adequate working conditions, establish performance expectations, and so forth. Similarly, O. J. Simpson is expected to be a fantastic salesperson, fun to be with, willing to listen to other employees, able to secure favorable responses from the Vice-President of Marketing, and so on.

4. Both the formal and informal organization structures prescribe interactions among individuals within small manufacturing companies.

The Systems Approach to the Study of
Small Manufacturing Companies

The systems approach to the study of organization and management was chosen for purposes of this study because it permits the integration

of the numerous and diverse ideas, concepts, and approaches advocated by a widely diverse group of scholars. This approach to the study of small manufacturing companies such as the Hypothetical Corporation (a formal organization) is characterized as follows.

1. The systems approach views an organization as a complex of interrelated and interdependent segments.⁷ To illustrate, the Hypothetical Corporation is composed of a marketing function segment, a production function segment, and a finance function segment (see Figures 3, 4, and 5, pages 71 through 73). In order for this company to achieve its objectives, these segments must interact and as a result are interrelated and interdependent. For example, the production function segments must produce the products in order for the marketing function segments to sell them. Similarly, the marketing function segments must sell the products in order to justify the production function segments' activity.

2. The systems approach recognizes that no single segment can function effectively without the others. The production function segments of the Hypothetical Corporation, for example, could not operate effectively without the Machinery Department.

3. The systems approach assumes that the actions of a single segment affects other segments in the organization as well as the environment in which it exists. To illustrate, the Hypothetical Corporation starts production of product Blue in the Machinery Department and finishes it in the Assembly Department. If the Machinery Department is unable to operate because of a machinery breakdown, the impact will be felt directly by the Assembly Department as well as by other segments within the organization. The breakdown will have an indirect impact on

environmental groups as well; the cost of such breakdowns will be reflected in the price of the product and thus will ultimately affect consumers.

4. Under the systems approach, the actions and interactions of many organizational segments are assumed necessary to achieve desired objectives because no one person can be an expert in all aspects of the organization's operations. Therefore, specialization plays a vital role in small manufacturing firms; e.g., the activities of the production function segments are quite different from the activities of the marketing function segments and, therefore, individuals require different skills and attributes.

5. The systems approach views the organization as ever-changing and dynamic; something is always happening that results in beneficial or detrimental repercussions for the organization.

The Typical Small Manufacturing

Company: A System

Typical small manufacturing companies possess the following characteristics, basic to all systems.

1. All systems have a purpose, objective, or basic goal to achieve.⁸ For the typical small manufacturing company, the overall objective is to maximize or to earn satisfactory returns for the owners over the long run but this is not the only objective; maintenance of market position, stabilization of employment, avoidance of undue risk, increased productivity, product leadership, personnel development, favorable employee attitudes, and a favorable public image are just a

few examples of other objectives frequently sought by the managers of such companies. Furthermore, a hierarchy of complex interrelated and interdependent subobjectives are also evident in the typical small manufacturing company; each organization segment as well as each person in the organization has a personal set of objectives. To illustrate, for the Hypothetical Corporation (a) the overall objective of the production function segment is to produce the firm's products effectively and efficiently, (b) the marketing function segment's overall objective is to maximize or earn a satisfactory contribution margin, and (c) O. J. Simpson's objectives are to achieve personal satisfaction, friendship, self-esteem, and to earn enough in commissions to provide adequately for his family.

2. All systems are made up of individual parts of subsystems which are often diverse. To illustrate, the typical small manufacturing company, the Hypothetical Corporation, is made up of numerous segments: a marketing function segment, a production function segment, and a finance function segment. Each of these segments is likewise composed of segments. For example, the Finance Department of the Hypothetical Corporation is composed of people, machines, and so forth.

3. The components of the system are designed into a meaningful arrangement either because they are subject to a common plan or serve a common purpose. The organizational structure of the typical small manufacturing firm, for example, intermeshes the technical and psychosocial aspects of the organization in such a way that the tasks of the organization are divided (differentiated) and the activities are coordinated (integrated). Organizational structure provides a vehicle for achieving the objectives of the organization.

4. Systems are also characterized by synergism, that is, the output of the organization's interrelated and interdependent segments produces an effect greater than the sum of the output of the individual elements functioning independently. This characteristic is of course the basis for specialization or labor which is an assumption of industrialization.

Type of System

Because systems vary greatly in their composition, appearance, size, attributes, and purpose, it is frequently convenient to classify them according to their various common characteristics or dimensions. Using the classification scheme defined in Table II, pages 44 through 47, a small manufacturing firm can be classified as follows.⁹

Conceptual vs. Empirical. A small manufacturing firm is a conceptual system when it is analyzed using theoretical constructs, or depicted using organization charts or manuals. On the other hand, when the same organization is analyzed as a system of interrelationships and activities of people, materials, machines, and so forth, it is classified as an empirical system.

Natural vs. Man-Made. A small manufacturing firm is a man-made system.

Open vs. Closed. Small manufacturing firms are open systems as they interact with their unpredictable environment composed of numerous groups or systems with diverse interests and objectives which affect the organization. Examples of such groups or systems are: stockholders,

creditors, employees, customers, suppliers, governments, competitors, and numerous other special interest groups as well as the general public.

Social vs. Man-Machine vs. Machine. Each small manufacturing firm is a social system made up of groups of people. The formal organization, which is frequently depicted in an organization chart, illustrates the formal relationships between individuals and provides the basic framework for the social system. However, in analyzing a social system the informal organization is considered because it represents the actual interrelationships of people within the organization. As research has shown, the informal relationships among people determines who, what, when, and how individuals will perform within the organization. Small manufacturing firms are also man-machine systems as both people and machines are necessary to achieve the objectives of the organization.

Permanent vs. Temporary. For purposes of this study, it is assumed that the firms for which the budget model is being designed are permanent systems. It is recognized that this classification is relative and only appropriate in the short-run.

Systems vs. Subsystems vs. Supersystems. Herein the small manufacturing company is viewed as the system or the total system, that is, the system of interest for purposes of the study. The reader should, of course, realize that this total system is a subsystem of larger systems in the environment. For example, the Hypothetical Corporation is a subsystem of all firms in the industry, all firms in the United States,

and so forth. It is also important to realize that the small manufacturing firm is a supersystem. In fact, such a firm represents a hierarchy of systems and subsystems. The following are just a few of the organization segments or subsystems of the Hypothetical Corporation: (1) the firm is composed of a production function segment, a marketing function segment, and a finance function segment; (2) the marketing function segment is composed of an eastern territory segment, a western territory segment, and a southern territory segment; (3) the eastern territory is composed of salespersons Sam Snead and Lawrence Welk.

Summary. As the above analysis indicates, a small manufacturing company represents a complex system which can be viewed and analyzed on numerous dimensions. To aid in understanding the operations of such a system and assess and predict the effect of changes in certain aspects of the system, a model of a small manufacturing firm is developed next.¹⁰

Organization Model of a Small Manufacturing Company

As previously defined, a model is a simplified representation of reality, permitting the solution of complex problems by focusing on only a portion of the key features of the real world.

Value of Models

Models permit decision makers to experiment with substitutes for the real system. This is important because in most cases it would be physically impossible or too costly to experiment with the real system.

For example, in planning sales and production activity for the coming budget period it would be impossible, because of the time and cost involved, to experiment with alternative levels of actual sales and production activity. Models frequently reduce complex relationships to a form that can be produced on paper,¹¹ thus permitting decision makers to use ". . . techniques of logic and mathematics [to] consider interrelationships and combinations of circumstances that would otherwise be beyond the scope of any human being."¹² A model provides a valuable tool for decision makers but does not replace decision making; management judgment and intuition are still necessary.

Development of Models

"The process of model development may be usefully viewed as a process of enrichment and elaboration."¹³

. . . one begins with very simple models, quite distinct from reality, and attempts to move in evolutionary fashion toward more elaborate models which more nearly reflect the complexity of the actual management situation.¹⁴

An evolutionary process will be used in this study. In this chapter a model of a basic system is presented and this model is then refined and elaborated upon until a generalized model of a typical small manufacturing firm is developed. This generalized model establishes the overall framework for (1) the discussion of the role and functions managers perform within such firms, (2) the theoretical model for the management planning function and budgetary process presented in Chapter IV, and (3) the computerized budget model presented in Chapter V.

Simple Model of Basic System

A simple model of a basic system is presented in Figure 6, page 85. Such a model is frequently referred to as an input-output model because it relates inputs with outputs. Because of the complexity of the interrelationships and interdependencies involved in transforming the basic inputs into outputs, no attempt is made to trace the conversion process through the system. This approach to studying and measuring the relationship between inputs and outputs is frequently referred to as the black box approach.

A typical small manufacturing firm can be explained using this simple model. Such a firm is a dynamic system that converts (transforms) scarce economic resources such as information, materials, money, labor, and facilities (inputs) into a final product or products (outputs). If the small manufacturing company (system) is effective, the output of the production process will achieve the overall objective of the organization which is to maximize or earn satisfactory returns for the owners over the long run.

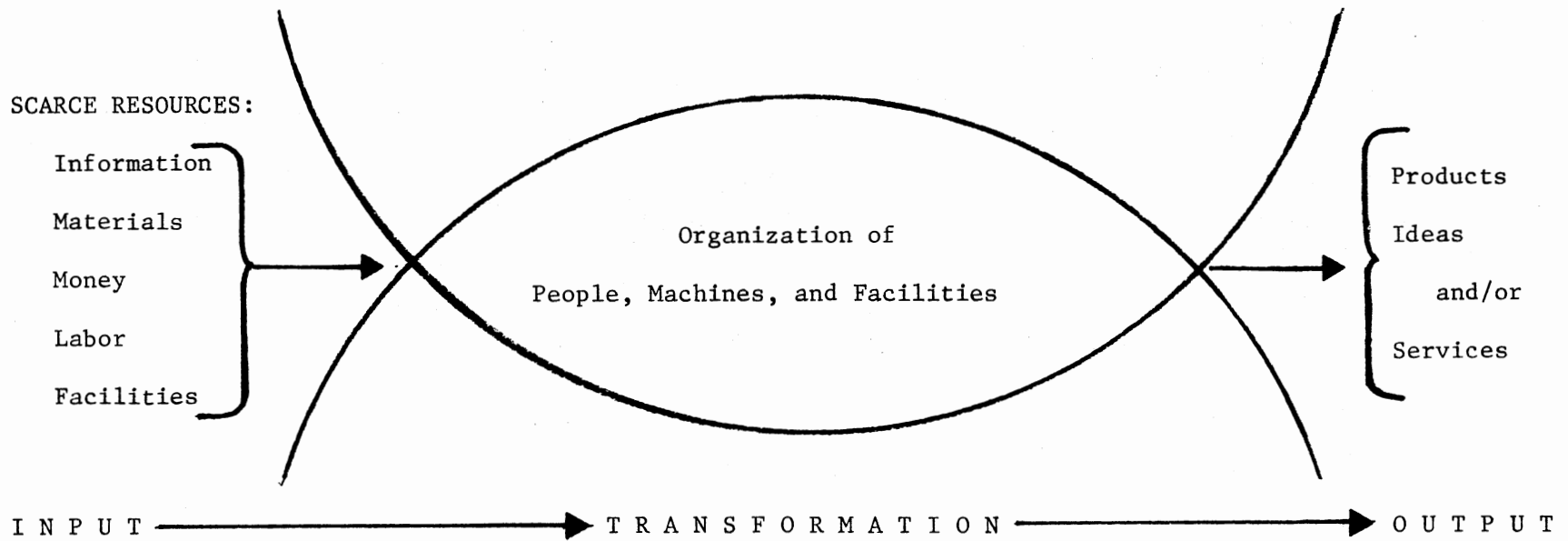
Refinement of the Simple Model

In developing a generalized model for a typical small manufacturing firm, the following variables and their implications are considered:

- (1) the overall environmental system and
- (2) the dynamics of small manufacturing firm.

The Overall Environmental Systems

The simple model of a basic system (Figure 6, page 85) does not



Source: Adapted from a basic systems model presented by Richard A. Johnson, William T. Newell, and Roger C. Vergin, Operations Management: A Systems Concept (Boston, 1972), p. 12.

Figure 6. Model of a Basic System

consider how the segments of the system interact with each other and the environment. The systems approach,

. . . views the enterprise as the central agency of an extended open system, encompassing a peripheral membership that interacts with, supports, and constrains the agency in its central membership. Failure to take this peripheral membership into account in modeling the significant pattern of energy exchange and transformation results in an oversimplification that renders the model useless for practical purposes. The systems concept is the only scheme that enables us to represent adequately the complexity of the interrelationships within a modern enterprise and establish or modify the understanding that must govern its performance.¹⁵

In other words, the systems approach recognizes that the typical small manufacturing firm is a subsystem of an overall environmental system; therefore, a generalized model should reflect those interaction effects. Cleland and King view the world as a complex of systems which can be described as part of: (1) the environmental system, (2) the competitive system, and (3) the internal system.

Environmental System. The environmental system is defined as ". . . the economic, political, and social milieu in which an organization operates . . ."¹⁶ As this definition implies, business firms in the United States are influenced by numerous and powerful environmental forces. In a democratic society the activities and operations of a business firm are influenced by such fundamental beliefs as equality for all, humanitarianism, individualism, progress, majority rule, freedom of dissent, and so on. Such firms are also influenced by governmental legislation such as the Fair Labor Standards Act, the Sherman Anti-Trust Act, the Robinson-Patman Act, and many others. Numerous governmental agencies such as the Securities and Exchange Commission, the Internal Revenue Service, and many others exert direct and/or

indirect environmental forces. International organizations such as the Organization of American States, the European Economic Community, directly or indirectly influence the operations of business firms in the United States as well. The above are just a few of the powerful environmental forces affecting the objectives and operations of typical small manufacturing firms.

Competitive System. The competitive system is defined as ". . . the complex of other organizations [systems] which compete for the distribution of scarce resources in a given environment."¹⁷ As this definition implies, every small manufacturing firm must function in a competitive environment as there is never enough of everything to go around: such firms must compete with a diverse group of organizations for scarce federal budget allocations; scarce human, material and capital resources; scarce consumer dollars; and so forth.

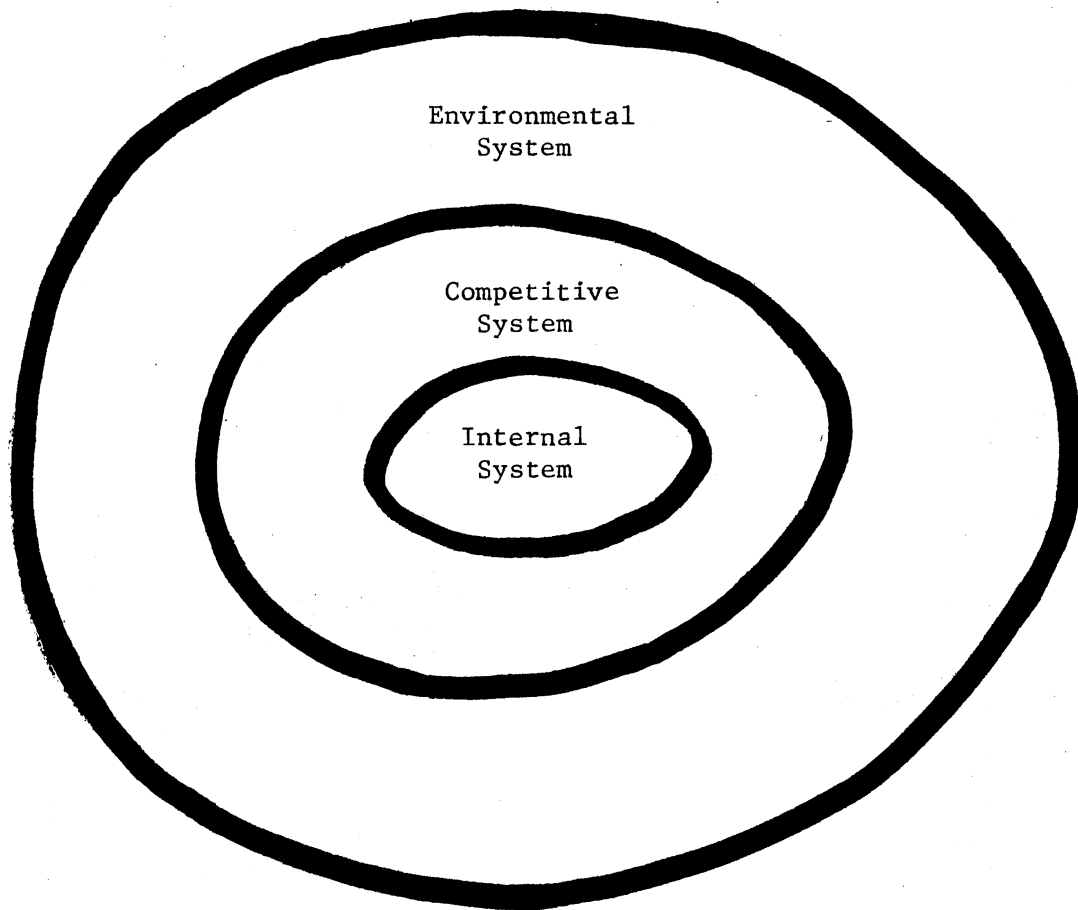
Internal System. The internal system ". . . is what is generally thought of as the organization" and can be characterized in terms of its various segments.¹⁸ To illustrate the internal system, the Hypothetical Corporation is composed of the following functional subsystems: a marketing function segment, a production function segment, and a finance function segment. This firm can also be described in terms of its various management subsystems, that is, ". . . subsystems that are designed to facilitate effective and efficient operation of the functional subsystems."¹⁹

. . . a production control subsystem is a set of interrelated policies, procedures, reporting requirements, decision rules, etc., for ensuring the proper control over the production process . . . A management information subsystem is a set of data collection elements, data processing devices, reports,

etc., which provides managers with the information necessary to make decisions . . . A personnel management subsystem focuses on planning and controlling the development of personnel resources while a marketing information subsystem addresses itself to the collection and dissemination of market-based information.²⁰

Interrelationships of Environmental Systems. A simple organizational systems model depicting the interrelationships between the environmental systems is presented in Figure 7, page 89. As this model illustrates, the environmental system establishes the overall framework which shapes the activities and operations of the competitive and internal subsystems. Similarly, the competitive system establishes the overall setting which limits and shapes the activities of the internal system.

Organizational-Claimant Model. Defining the small manufacturing firm in systems terms means expanding its boundaries to include environmental groups which have a claim or stake in the activities and future of the organization. An organization claimant is defined as ". . . an individual, a group of individuals, or some institution in the society that has a demand for something due."²¹ An organizational-claimant model which focuses on some of a business firm's multiple claimants and the nature of their claims is presented in Table III, pages 90 and 91. As this model indicates, organizational claimants such as stockholders, creditors, employees, customers, suppliers, governments, unions, competitors, local communities, the general public and many other special interest groups directly or indirectly, intentionally or unintentionally exercise powerful environmental forces affecting the operations and future of the typical small manufacturing firm. Such



Source: Adapted from a simple organizational systems model presented by David I. Cleland and William R. King, *Management: A Systems Approach* (New York, 1972), p. 161.

Figure 7. Simple Organizational Systems Model

TABLE III
ORGANIZATIONAL-CLAIMANT MODEL

Claimant to the Business Firm	General Nature of the Claim
Stockholders	Participate in distribution of profits, additional stock offerings, assets on liquidation; vote of stock, inspection of company books, transfer of stock, election of board of directors, and such additional rights as established in the contract with corporation.
Creditors	Participate in legal proportion of interest payments due and return of principal from the investment. Security of pledged assets; relative priority in event of liquidation. Participate in certain management and owner prerogatives if certain conditions exist within the company (such as default of interest payments).
Employees	Economic, social, and psychological satisfaction in the place of employment. Freedom from arbitrary and capricious behavior on the part of company officials. Share in fringe benefits, freedom to join union and participate in collective bargaining, individual freedom in offering up their services through an employment contract. Adequate working conditions.
Customers	Service provided the product; technical data to use the product; suitable warranties; spare parts to support the product during customer use; R and D leading to product improvement; facilitation of consumer credit.
Supplier	Continuing source of business; timely consummation of trade credit obligations; professional relationship in contracting for, purchasing, and receiving goods and services.
Governments	Taxes (income, property, etc.), fair competition, and adherence to the letter and intent of public policy dealing with the requirements of "fair and free" competition. Legal obligation for businessmen (and business organizations) to obey anti-trust laws.
Union	Recognition as the negotiating agent for the employees. Opportunity to perpetuate the union as a participant in the business organization.

TABLE III (Continued)

Claimant to the Business Firm	General Nature of the Claim
Competitors	Norms established by society and the industry for competitive conduct. Business statesmanship on the part of contemporaries.
Local Communities	Place of productive and healthful employment in the local community. Participation of the company officials in community affairs, regular employment, fair play, local purchase of reasonable portion of the products of the local community, interest in and support of local government, support of cultural and charity projects.
The General Public	Participation in and contribution to the governmental process of society as a whole; creative communications between governmental and business units designed for reciprocal understanding; bear fair proportion of the burden of government and society. Fair price for products and advancement of the state-of-the-art in the technology which the product line offers.

Source: David I. Cleland and William R. King, Management: A Systems Approach (New York, 1972), p. 104.

environmental forces are often conflicting. For example, stockholders have the right to participate in the distribution of profits and, of course, expect to maximize or earn satisfactory returns. However, employees, customers, suppliers, governments and many other claimants exert pressures on the organization which result in reducing distributable profits.

The Dynamics of Small Manufacturing Firms

The simple model of a basic system (Figure 6, page 85) does not

provide for the ongoing nature of small manufacturing companies. The systems view of organization is a dynamic one which recognizes that continual interaction between the segments of the internal, competitive, and environmental systems is necessary if the objectives of the organization are to be achieved. Therefore, the generalized model should provide for the dynamic nature of the system.

Generalized Model of Typical Small
Manufacturing Company

As discussed above, a small manufacturing company is a subsystem of larger systems in its environment and constitutes a collection or hierarchy of systems and subsystems. Figure 8, page 93, presents a generalized model of a typical small manufacturing firm, the Hypothetical Corporation. The characteristics of this model are discussed briefly below.

Environmental Forces. As previously discussed (see pages 86 and 87) a small manufacturing firm is a subsystem of: (1) the environmental system and (2) the competitive system. As the generalized model illustrates, the small manufacturing firm continually interacts with other organizations and individuals within its environment: stockholders, creditors, employees, customers, suppliers, governments, competitors, other special interest groups, and the general public. These organizational claimants have a claim or stake in the activities and future of the organization and, therefore, directly or indirectly and intentionally or unintentionally exert powerful, often conflicting, environmental forces which shape the objectives and operations of the small manufacturing firm (see Table III, pages 90 and 91, for the nature of these claims).

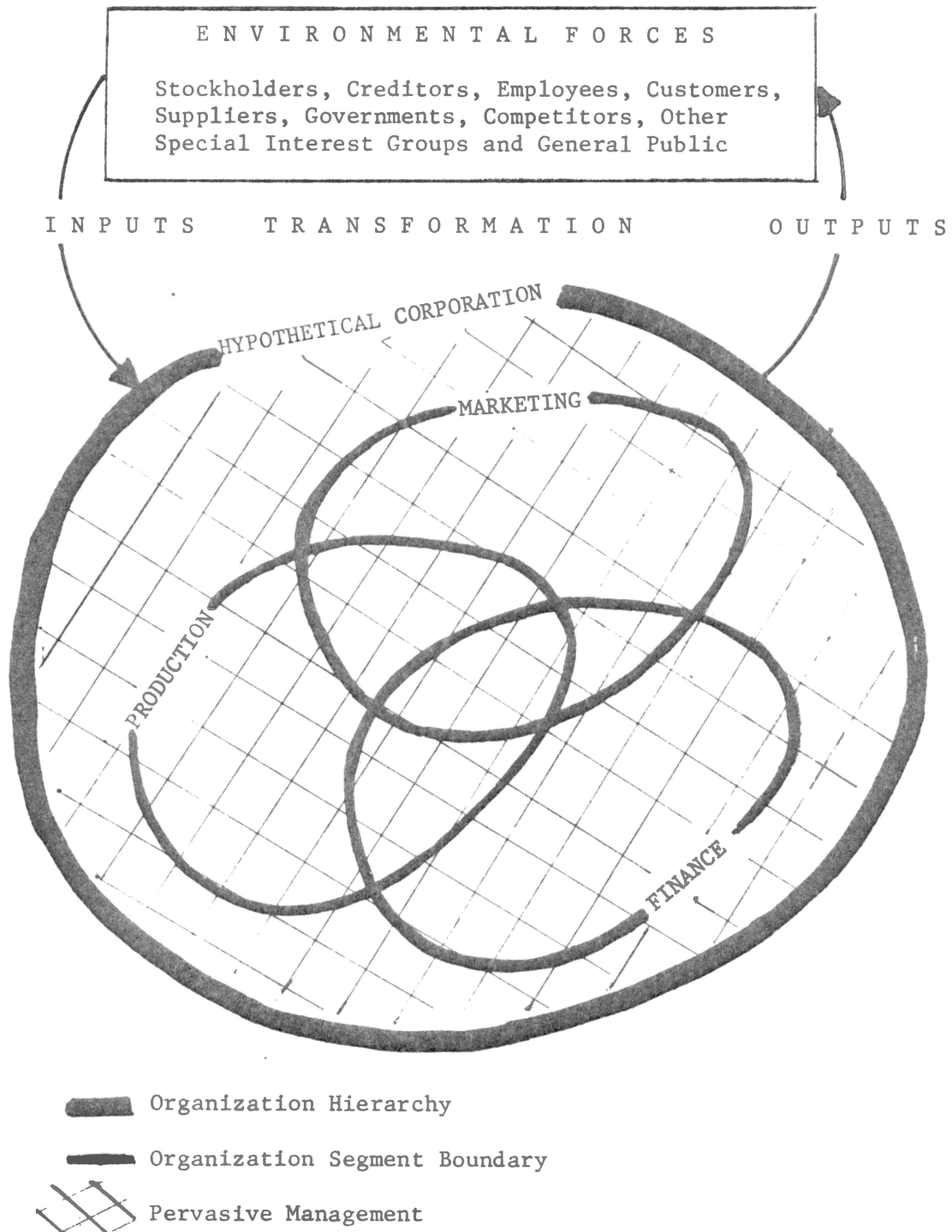


Figure 8. The Hypothetical Corporation as a System

Inputs. The typical small manufacturing firm secures scarce economic resources such as information, materials, money, labor, and facilities from other organizations and individuals in its environment. For example, (1) data required as a basis for management decisions is acquired as necessary from suppliers of such information in the environment, (2) the raw materials required to produce the firm's products are secured from suppliers in the competitive environment, (3) the money required to meet current obligations and finance the firm's required plant, equipment, and other assets is secured from stockholders, bondholders, and other creditors, (4) the labor necessary to convert the basic raw materials into finished products is secured from the employees of the firm, and (5) facilities such as land, building, and equipment, which are required to produce and market the firm's products, are secured from other organizations or individuals in the environment. The above and numerous other transactions are necessary if the small manufacturing firm is to achieve its immediate and long-run goals. However, as noted above, these necessary transactions or interactions with other systems in the environment allow organizational claimants (e.g., stockholders, creditors, employees, suppliers, unions, competitors, local community, and the general public) to influence the activities of the organization (see Table III, pages 90 and 91, for the nature of their claims).

Transformation. The organization is the vehicle through which the small manufacturing company's basic inputs are transformed or converted into finished products (output).

Output. Finished products are the output of the small manufacturing

company's production process. In order for the company to achieve its objectives, these products must be sold to customers (e.g., wholesalers, retailers, and/or consumers). Such transactions or interactions with other systems in the environment, however, allow organizational claimants (e.g., customers, governments, competitors, local communities, and the general public) to influence the activities of the small manufacturing company (see Table III, pages 90 and 91, for the nature of these claims).

Hypothetical Corporation. In this generalized organizational model, the Hypothetical Corporation is defined as the internal system (see page 87 for discussion). This typical small manufacturing company is a formal organization or ". . . a system of structural interpersonal relations such that . . . individuals are differentiated in terms of authority, status, and role with the result that interaction is prescribed" (see pages 75 and 76 for a discussion).²² As previously discussed (see pages 76 through 78), this typical small manufacturing company is:

1. A complex of interrelated and interdependent segments.
2. Structured in such a way that no single segment can function effectively without the others.
3. Structured in such a way that the actions of a single segment affects other segments in the organization as well as the environment in which it exists.
4. Structured to take advantage of specialization of labor.
5. Ever-changing and dynamic.

The Hypothetical Corporation is a conceptual, empirical, man-made,

open, social, man-machine, permanent system (see pages 80 and 81 for discussion) that is characterized as follows (see pages 78 through 80 for discussion):

1. It has a purpose, objective, or basic goal to achieve.
2. It is made up of individual parts or subsystems which are diverse.
3. Its components or segments are designed into a meaningful arrangement.
4. It is characterized by synergism.

Hierarchy of Systems and Subsystems. The Hypothetical Corporation, a typical small manufacturing company, is the system under study and represents a hierarchy of systems and subsystems. As the generalized organizational model illustrates (see Figure 8, page 93), the Hypothetical Corporation is composed of the following functional subsystems: (1) a production function segment, (2) a marketing function segment, and (3) a finance function segment. Each of these functional segments is likewise a system composed of subsystems as discussed later in this section.

Pervasive Management Function Subsystem. Within the Hypothetical Corporation, management is the primary force which coordinates the activities of the numerous interrelated and interdependent segments and relates to the environment in order to achieve the firm's objectives. In fulfilling their responsibilities, the managers of the Hypothetical Corporation perform certain major management functions: they plan, organize, direct, and control the activities of the firm. These managerial functions pervade the entire internal system as indicated by

the grid lines in Figure 8, page 93. As this model illustrates, management and the basic managerial functions influence the activities of all segments of the organization. The role of management in small manufacturing companies and the nature of the basic managerial functions is discussed in greater detail later in this chapter.

Model of Subsystem of Typical Small

Manufacturing Company

A model for each of the Hypothetical Corporation's subsystems can also be developed. Figure 9, page 98, presents a model for the production function segment of the Hypothetical Corporation, a typical small manufacturing company. The characteristics of this model are discussed briefly below.

Environmental Forces. The production function segment of the Hypothetical Corporation is a subsystem of (1) the environmental system, (2) the competitive system, and (3) the internal system (i.e., the Hypothetical Corporation). As the model illustrates, the production function segment continually interacts with (1) other organizations and individuals in the environmental and competitive systems and (2) the marketing and finance function segments in the internal system. As a result of these necessary interactions, the following systems have an influence on the activities of the production function segment: (1) organization claimants (see Table III, pages 90 and 91), (2) the marketing function segment, and (3) the finance function segment.

Inputs. The production function segment secures scarce economic resources from (1) other organizations and individuals in the

environmental and competitive systems and (2) the other organization segments in the internal system.

Transformation. The production function segment is the vehicle through which basic inputs are transformed or converted into finished products.

Outputs. Finished products are the output of the production function segment. These products become the basic input for the marketing function segment.

Production Function Segment. The production function segment is a subsystem of a formal organization, the Hypothetical Corporation. Therefore, the characteristics of formal organizations and systems (discussed above under the heading "Hypothetical Corporation," page 95) applies to the production function segment.

Hierarchy of Systems and Subsystems. The production function segment represents a hierarchy of systems and subsystems. For example, the production function segment is composed of three service department segments (i.e., Power and Heat, Purchasing, and Maintenance) and three production department segments (i.e., Assembly, Grinding, and Machinery). Each of these segments is likewise composed of subsystems. To illustrate, the Grinding Department is composed of work groups, machines, materials, and other assets.

Pervasive Management Function Subsystem. The managerial functions of planning, organizing, directing, and controlling pervade the entire production function segment as indicated by the grid lines in Figure 9, page 98.

Role of Management in Small Manufacturing Companies

As previously discussed, the system approach to the study of organizations and management was chosen for purposes of this study. The systems concept views (1) the organization as a system made up of numerous interrelated and interdependent segments and (2) management as the primary force within such organizations, which coordinates the activities of the numerous segments and relates them to the environment in order to achieve the organization's objectives.

The Systems Approach to Management

Management, as discussed in Chapter II, is defined by the writer for purposes of this study as the effective and efficient utilization of scarce economic resources such as information, materials, money, labor, and facilities, in order to achieve the immediate and long-run goals of the small manufacturing company. Management refers to the coordinated effort of the entire management team, effectiveness refers to the degree to which a goal or objective is attained or an end met, and efficiency refers to the optimum relationship between input and output.

"The effectiveness with which an endeavor is managed has come to be recognized in most instances as perhaps the single most essential ingredient to long-range success for that endeavor."²³ Advocates of the systems approach contend that:

Today, more than ever before, the recognition and use of system interactions and interdependencies are virtually essential. The reasons for this are that the world is evolving so rapidly and that decisions must be made which have such momentous implications that 'simpler' approaches to management, such as a reliance on intuition or the application of

'principles,' will no longer produce satisfactory results Moreover, the measurement of results is becoming easier and more stringent. Thus, bad management actions are more readily apparent than they have been in the past because of the advent of the computer and because of better data collection and processing techniques.²⁴

The systems approach recognizes that the management process involves (1) selecting appropriate organizational goals and (2) coordinating the activities of the organization in order to accomplish these goals.²⁵

Organizational Goals

Systems theorists recognize that the small manufacturing firm represents a hierarchy of goals and subgoals, that is, the organization as well as each organizational segment has its own unique set of goals and subgoals (see pages 78 and 79 for discussion and examples). The successful management team selects and accomplishes the organization's overall objectives through knowledge and understanding of the entire system. This means that individual organization segments may not achieve their individual limited goals, for what is best for the whole may not necessarily be best for each segment of it. For example, the product mix that results in the greatest contribution margin for the Hypothetical Corporation as a whole necessitates the production of three products: Red, Blue, and Green. However, this means that the production department's performance is less than optimal, that is, the production department would be more efficient if only one product were produced.

Accomplishment of Organizational Goals

In coordinating the activities of the small manufacturing company

to accomplish the firm's goals,

. . . the manager plans the work of his subordinates and his own activity, selects and trains subordinates by staffing his operations, organizes the work and task relationships, directs the work, and controls results by measuring performance against plan.²⁶

The above statement highlights the traditional functions of the manager: planning, staffing, organizing, directing, and controlling. As discussed in Chapter I, advocates of the management process or operational school approach the study of management by focusing on the nature of these managerial functions. This functional approach, which emphasizes what a manager does, provides a basic action framework for the systems viewpoint. In other words, these management functions must be performed if the organization is to survive.

Management Functions

A management function is defined as a major activity of management. Since the time of Fayol, numerous management theorists have attempted to enumerate these functions. A review of the existing management literature, however, reveals that management functions have been classified or identified in a number of different ways as illustrated in Table IV, page 103. These differences are not significant for purposes of this study because a review of the literature reveals that there is little disagreement as to what a manager ought to do or what a manager does. The real issue is the relative importance attached to individual management activities. In other words, the real difference between management theorists is the interpretation of the word "major" in the definition of a management function. For the purposes of this study, therefore, there seems to be no good reason to deviate from the practice most frequently

TABLE IV

MAJOR MANAGEMENT FUNCTIONS AS SEEN BY VARIOUS AUTHORS

Authors	Planning	Organizing	Control- Controlling	Communication- Communicating	Actuating	Directing- Direction	Staffing	Innovation	Representation	Creating	Motivating	Directing and Marketing
Johnson, R. A., et al. <u>The Theory and Management of Systems</u> . New York: McGraw-Hill Book Company, 1967.	X	X	X	X								
Terry, G. R. <u>Principles of Management</u> . Homewood, Ill.: Richard D. Irwin, Inc., 1964.	X	X	X		X							
Jucius, M. J. and W. E. Schlencer. <u>Elements of Managerial Action</u> . Homewood, Ill.: Richard D. Irwin, Inc., 1960.	X	X	X			X						
Davis, R. C. <u>The Fundamentals of Top Management</u> . New York: Harper and Brothers, 1951.	X	X	X									
Dale, E. <u>Management: Theory and Practice</u> . New York: McGraw-Hill Book Company, 1965.	X	X	X			X	X	X	X			
Koontz, H. D. and C. O'Donnell. <u>Principles of Management</u> . New York: McGraw-Hill Book Company, 1955.	X	X	X			X	X					
Halmann, T. <u>Professional Management: Theory and Practice</u> . Boston: Houghton Mifflin Company, 1962.	X	X	X			X	X					
Hicks, H. G. <u>The Management of Organizations</u> . New York: McGraw-Hill Book Company, 1967.	X	X	X	X						X	X	
Longenecker, J. <u>Principles of Management and Organizational Behavior</u> . Columbus, Ohio: Charles E. Merrill Books, Inc., 1964.	X	X	X									X

Source: David I. Cleland and William R. King, Management: A Systems Approach (New York, 1972), p. 118.

encountered in the management accounting literature, that is, giving primary emphasis to the following management functions: (1) planning, (2) organizing, (3) directing, and (4) controlling.²⁷

Planning is concerned with selecting future courses of action and developing plans for the organization as a whole and for each segment of the organization in order to move the organization toward the accomplishment of its objectives. Planning is the mental process of thinking about what should be done, how it should be done, where action is to be effected, who is responsible, and why such action is necessary.

Organizing is deciding how to put together the organization's scarce economic resources in order to carry out the organization's established planned course of action. Organization involves securing the necessary scarce economic resources, determining an orderly flow and structure of processes for converting these scarce resources, delineating authority-responsibility relationships to establish the formal organization structure, and recognizing the authority-responsibility patterns existing between participants in the overall system.

Directing involves the day-to-day activities taken by management to ensure that the organization functions smoothly. Direction involves ". . . the face-to-face leadership between supervisors, subordinates, peers, and associates."²⁸ Directing is closely related to the psychological concept of motivation, which is defined as ". . . the perception of some want or goal together with the resulting drive toward achieving the want."²⁹

. . . directing entails giving sympathy and encouragement, delineating instructions, doing counseling, interpreting policy, and related activities which set the organization into motion and keep it moving toward the objective.³⁰

Controlling involves taking the necessary steps to ensure that actual activities are consistent with planned activities and that every segment of the organization is operating at maximum efficiency. The control process typically involves three steps: (1) the establishment of standards, (2) the appraisal of performance against these standards, and (3) the correction of deviations from plan. Control is largely a function of obtaining useful feedback on how well the organization is progressing toward its stated objectives.

The Planning and Control Cycle

These major functions follow a rather well-defined cycle--the planning and control cycle--as depicted in Figure 10, page 106. As this model illustrates, management planning involves the selection of a course of action or plan(s) to achieve the goals and objectives of the organization. Such plans are frequently formalized in the form of budgets. These plans are then implemented by (1) organizing the firm's scarce economic resources (information, materials, money, labor, and facilities) into a meaningful arrangement or structure and (2) directing the day-to-day activities of the firm by supervising and motivating individuals within the organization to effectively and efficiently utilize the firm's scarce economic resources. Controlling the activities of the organization to conform to plan involves two steps: (1) measuring actual performance and (2) periodically evaluating variances from plan, that is, differences between the planned course of action and actual performance. Variance analysis provides valuable feedback for the development and selection of new plans.

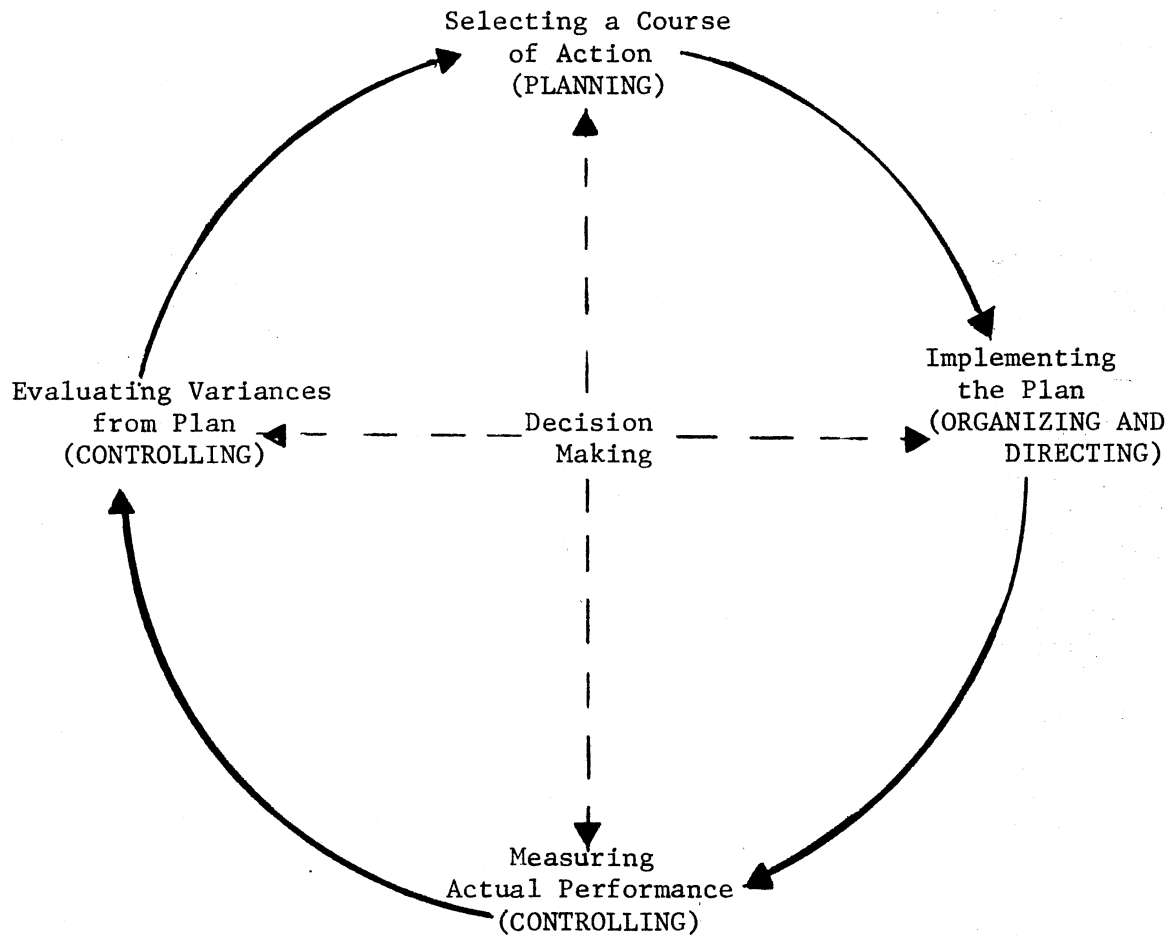


Figure 10. The Planning and Control Cycle

Decision Making and Management Functions

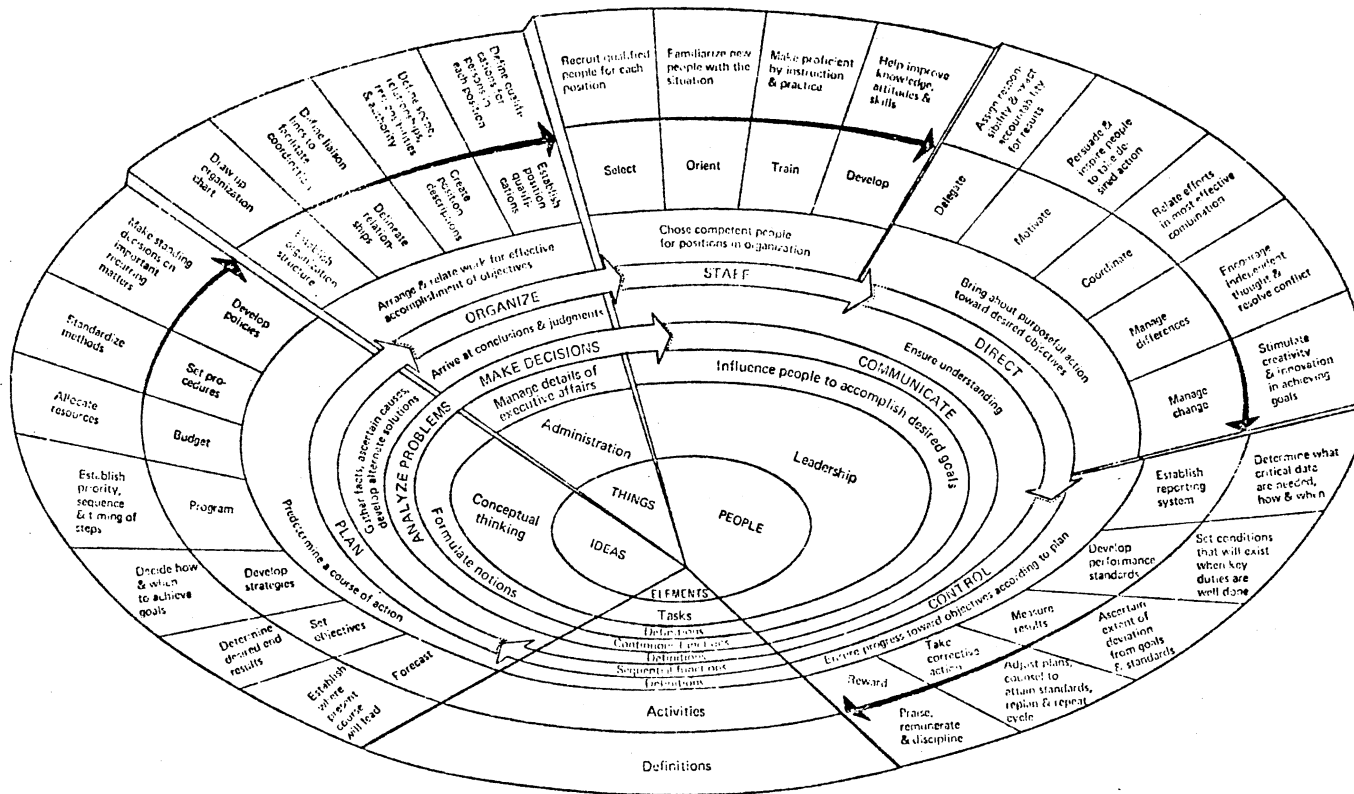
A decision is a rational choice from among alternative courses of action. Although decision making is not generally regarded as a separate management function, per se, it is inextricably interrelated with planning, organizing, directing, and controlling (see Figure 10, page 106).³¹ According to Starr, ". . . decision making is the root process of all managing. It is the generalized activity--common to all management."³²

. . . all managerial activity might be considered decision-making . . . If all behavior results from decision making and if managing is a particular kind of behavior, then managing is decision making. Obviously there are other useful ways to view management--concentration on process or functions, for example. But decision making is one of the most important tasks of managers. It pervades the performance of all managerial functions.³³

For example, (1) when planning production activities for a future period, management must decide upon anticipated sales activity, (2) when organizing scarce economic resources to implement plans, management must make decisions relating to the best arrangement or structure, (3) when directing the activities of individuals within the organization, management must decide the best supervisory and motivating techniques, and (4) in controlling the activities of the organizations, management must make decisions relating to the measurement of performance and decisions as to whether a variance from plan is significant.

Complexity of Management Process

The complexity of the management process is well illustrated in the "Management Process in 3-D" model presented in Figure 11, page 108. As this model illustrates the basic elements of the management process are



Source: R. Alec MacKenzie, "The Management Process in 3-D," Harvard Business Review 47 (November-December, 1969), p. 87.

Figure 11. The Management Process in 3-D

(1) ideas, (2) people, and (3) things. Planning involves ideas, organizing involves things and (staffing), directing, and controlling involves people.³⁴ The model also suggests that the basic tasks performed by management are (1) conceptual thinking, formulating notions, (2) administration, managing details of executive affairs, and (3) leadership, influencing people to accomplish desired objectives. Planning involves conceptual thinking, organizing involves administration, and (staffing), directing, and controlling involve leadership. This model defines the continuous functions of management as (1) analyzing problems, gathering facts, ascertaining causes, and developing alternative solutions, (2) making decisions, arriving at conclusions and judgments, and (3) communicating, ensuring understanding. Planning and organizing involve analyzing problems and making decisions. Directing and controlling involve communication.

The 3D model also reveals that each management function is composed of many subfunctions. For example, planning involves (1) forecasting, establishing where the present course will lead, (2) setting objectives, determining desired end results, (3) developing strategies, deciding how and when to achieve goals, (4) programming, establishing priority, sequence and timing steps, (5) budgeting, allocating resources, (6) setting procedures, standardizing methods, and (7) developing policies, making standing decisions on important recurring matters.

In practice, of course, the day-to-day world of the manager is much more complex than any of these simple models describe. In observing managers it becomes obvious that management functions are carried out more or less continuously and simultaneously--frequently under

considerably urgency, stress, and pressure. Managers seldom (if ever) stop to examine which function they are engaged in at a particular moment in time. Perhaps they could not tell even if they tried, since a specific activity might touch upon all of the management functions. In other words, although it is convenient to separate the major activities of management for discussion purposes, they are not completely separable in practice; management must:

1. plan for organizing,
2. plan for directing,
3. plan for controlling,
4. organize for planning,
5. organize for directing,
6. organize for controlling,
7. direct planning,
8. direct organizing,
9. direct controlling,
10. control planning,
11. control organizing, and
12. control directing.

Universality of Management Functions. As discussed in the introductory chapter, Fayol contended that management was universal, that is, managers at all levels of any type of organization perform essentially the same tasks or management functions.³⁵ Scholars since the time of Fayol have generally agreed with this basic principle. Fayol and other theorists, however, recognized that the relative importance and time spent in the performance of each of the managerial

functions differed depending upon the manager's level in the organization hierarchy and the types of decisions made by the manager.³⁶ For example, as a manager moves up the organizational hierarchy relatively more of the manager's time is involved in the management planning function and less time is devoted to the other managerial functions. Because the manager's position in the organization hierarchy has an impact on the manager's major activities, the characteristics of management levels is discussed briefly below.

Management Levels

Formal organizations are almost always hierarchical in structure. In fact, complex systems are almost universally hierarchical; for example, the human body has a hierarchical structure. The frequency of hierarchical structures is explained as follows: (1) a hierarchical structure facilitates the effective and efficient utilization of scarce economic resources and, therefore, it is most likely to appear through an evolutionary process because it permits the organization to survive in a world competing for scarce economic resources, (2) a hierarchical structure facilitates the communication process, that is, much less information has to be communicated or transmitted among the segments.³⁷

In recent years, numerous scholars have studied the implications of the manager's position in the organization hierarchy on (1) the relative importance of the tasks or functions the manager performs in the organization and (2) the nature of the decisions made by the manager in fulfilling his basic responsibilities. Two works relating to managerial levels are outlined briefly below.

Herbert Simon. In his work, Simon compares an organization to a three-layer cake.³⁸ For the typical small manufacturing company, the bottom layer represents the basic work process involved in producing and marketing the firm's products. In other words, this layer of the organization is composed of production workers, salespersons, and so forth. The middle layer represents those processes that govern the day-to-day operations of the small manufacturing firms. Management decisions at this level of the organization typically involve programmed decisions; decisions that tend to be repetitive and routine. Definite procedures can be established for such decisions so that they do not have to be treated anew each time they occur.

The top layer of the small manufacturing company is identified by Simon as those processes which are required to design and redesign the entire organization. Such processes establish the basic objectives for the small manufacturing company. Management decisions at this level typically involve non-programmed decisions; novel, unstructured, consequential policy decisions.

Fremont E. Kast and James E. Rosenzweig. In their work, Kast and Rosenzweig view an organization as an open socio-technical system.³⁹ They describe the hierarchical structure of a complex business organization as composed of three managerial levels: (1) the technical level, (2) the organizational level, and (3) the institutional level. In general, these managerial levels coincide with the layers described by Simon. Kast and Rosenzweig characterize the three managerial levels as follows:

The technical system is involved with the actual task performance in the organization. In the business firm, the

technical functions involve the actual production and distribution of the products or services--the task performance activities of the organization. The technical system is not just involved with physical work but includes many types of technical activities utilizing knowledge. For example, research and development, production control, market research, operations research, and many accounting functions are part of the technical system . . .

The second level, the organizational, coordinates and integrates the task performance of the technical system. A primary function of management at this level is to integrate the input of material, energy, and information to the technical level.

The institutional level is involved in relating the activities of the organization to its environmental system. The organization must continually receive supporting inputs from the society in order to carry on its transformation activities.⁴⁰

As Kast and Rosenzweig point out, the managerial system spans the entire organization by directing the technology, organizing resources, and relating the organization to its environment. Kast and Rosenzweig explain the differences in emphasis at the three managerial levels as follows:

. . . the technical level is concerned primarily with economic technical rationality and tries to create certainty by 'closing the technical core' to many variables. Thompson says, 'under norms of rationality, organizations seek to seal off their core technologies from environmental influences. Since complete closure is impossible, they seek to buffer environmental influences by surrounding their technical cores with input and output components.' The closed system view is applicable to the 'technical core' of the organization.

By contrast, at the institutional level the organization faces the greatest degree of uncertainty in terms of inputs. Therefore, management at this level should have an open-system view and concentrate on adaptive and/or innovative strategies. The organizational manager operates between the technical core and the institutional level and serves to mediate and coordinate the two. This level transforms the uncertainty of the environment into the economic-technical rationality necessary for input into the technical core.⁴¹

As the above statements indicate, the manager's level in the organization hierarchy has a definite impact on the role and functions performed by that manager.⁴² These differences are outlined in Table V, page 115, in terms of tasks performed, point of view, techniques employed, time horizon, and decision-making.

Size of Organization and Managerial Levels. It is, of course, obvious that the size of the organization determines the distinction between managerial levels and tasks, that is, the smaller the organization, the more likely the various managerial activities will be carried out by one person--for example, in the single proprietorship, all managerial activities are carried out by the owner-manager. Similarly, the larger the organization, the more likely these managerial levels are identifiable and separable--for example, these managerial levels are readily identified in General Motors and General Electric.

For the typical small manufacturing firm, therefore, the managerial levels may sometimes blend. For example (see Figures 3, 4 and 5, pages 71 through 73), in some firms the functions of the Vice-President of Production and the Plant Manager may be performed by the same individual, the functions of the Vice President of Marketing and the manager of the sales territories may be performed by one person, and so on.

Examples of Hypothetical Corporation's Managerial Levels. Each of the managerial levels described by Kast and Rosenzweig (see Table V, page 115) is explained below as they apply to the Hypothetical Corporation (see Figures 3, 4, and 5, pages 71 through 73). The reader should realize that the distinction between these managerial levels will vary

TABLE V

THE MANAGERIAL SYSTEM: TECHNICAL, ORGANIZATIONAL, AND INSTITUTIONAL LEVELS

Type of Manager	Task	Viewpoint	Technique	Time Horizon	Decision-Making Strategy
Technical	Technical rationality	Engineering	Scientific management, operations research	Short run	Computational
Organizational	Coordination	Political	Mediation	Short run and long run	Compromise
Institutional	Deal with uncertainty, relate organization to environment	Conceptual and philosophical	Opportunistic surveillance, negotiate with environment	Long run	Judgmental

Source: Fremont E. Kast and James E. Rosenzweig, Organization and Management: A Systems Approach (New York, 1970).

between small manufacturing firms according to their size and organization structure.

The manager of the Assembly Department of the Hypothetical Corporation is classified as a technical level manager and is primarily concerned with the technical aspects of producing the firm's products. In fulfilling this basic task, most of the manager's time is devoted to directing workers, controlling their performance, and effectively and efficiently organizing the department's scarce economic resources (materials, labor, facilities, etc.). This manager spends relatively less time planning the department's activities. Managers at this level of the organization tend to take an engineering viewpoint, that is, they are concerned with the effective and efficient combination and utilization of materials, people, and machines. This manager tends to utilize scientific management and operations research techniques--for example, time and motion studies, linear programming scheduling techniques, and so forth. Decisions tend to be for a relatively short period of time--frequently decisions involving the immediate, daily, and weekly time frame. Decision-making strategies tend to be computational.

The Vice-President of Production is classified as an organizational level manager. This manager is primarily concerned with coordinating and integrating the activities of the production function segments--the organization segments involved in the task performance activities of producing the firm's products. At this level of the organization the manager devotes relatively less time on the directing and controlling functions and relatively more time in organizing the scarce economic resources (information, materials, labor, facilities, and so forth). This manager spends relatively more time in the management planning

function than the technical level manager but relatively less time than the institutional level manager. Managers at this level tend to take a political viewpoint, that is, they are concerned with getting people to work together in order to achieve the objectives of the production function segment.

The Vice-President of Production tends to use mediation techniques in the performance of responsibilities by interpreting the basic objectives of the institutional level of the organization into technical short-run performance criteria to be met by the technical level organization segments. For example, this manager converts the sales budget into a production budget. The Vice-President of Production is concerned with both the short-run and long-run time frame. In the short run this manager is concerned with operations of the production function segment (this time span is generally relatively longer than at the technical level, for example, weekly, monthly, and yearly rather than immediate, daily, and weekly). The Vice-President of Production is also concerned with securing adequate labor, machines, and facilities in order to be able to meet the long-run objectives as established by the institutional level of the organization.

Decision-making strategies at the level of the organization tend to involve compromise because the manager is faced with limited technical resources in fulfilling the objectives established at the institutional level. The Vice-President of Production must often compromise the objectives of the organizational and technical levels of the organization.

The activities of the Plant Manager of the Hypothetical Corporation have characteristics of both the technical and organizational level

managers and for this reason is discussed out of organizational structure sequence. This manager is concerned with both the technical aspects of producing the firm's products as well as coordinating and integrating the activities of the production and service departments. The Plant Manager spends relatively less time directing and controlling activities than does the Assembly Production Manager but relatively more than the Vice-President of Production. This manager is concerned with the effective and efficient organization of the available scarce economic resources and spends relatively more time planning than does the Assembly Department Manager but relatively less than the Vice-President of Production.

The Plant Manager's viewpoint tends to have aspects of an engineer and politician; in other words, this manager is concerned with the effective and efficient combination and utilization of materials, people, and machines, as well as getting people to work together in order to achieve the objectives of the production function segment.

The Plant Manager utilizes scientific management and operations research techniques and also uses mediation techniques, by interpreting and converting criteria established by the Vice-President of Production into criteria for each of the production and service departments (e.g., scheduling production for each of the production departments by interpreting the production budget).

The Plant Manager is concerned primarily with short-run decisions; however, like the Vice-President of Production, is also concerned with long-run facilities. The decisions of the Plant Manager are computational and mediating in nature.

The President of the Hypothetical Corporation is classified as an institutional-level manager. The other members of the top management team--the Vice-Presidents of Marketing, Production and Finance--closely assist the President in the performance of managerial activities. At the institutional level of the organization, managers deal with uncertainty and relate the activities of the organization (internal system) to its environment (competitive and environmental systems). Management activities are concerned with adaptive and innovative strategies--as the environment changes so must the organization if it is to survive. Managers at this level of the organization spend relatively more time (if not most) of their time in the management planning function and relatively less on the other managerial functions of directing, controlling, and organizing.

The viewpoint of managers at the top level of the organization tends to be conceptual and philosophical; they deal with ideas and basic principles of what "ought to be" for the organization. The basic techniques utilized by the institutional level managers is opportunistic surveillance and negotiation with the environment, that is, they must be aware of opportunities in the environment and be able to facilitate exchange with claimants and adapt to change in the environment. Managers at this level of the organization tend to be concerned with the long-run activities of the organization and decision-making strategies are judgmental. Implications of managerial levels on the management planning function will be discussed in greater detail in the next chapter.

Summary

This chapter has presented a theoretical framework for the typical

small manufacturing company. Such an organization was defined and described as a formal organization and as a system. As this analysis highlighted, the typical small manufacturing firm represents a complex of interrelated and interdependent segments which can be viewed and analyzed on numerous dimensions. To aid in understanding the operations of such a company and assess and predict the effect of changes in certain aspects of the system, a model of a small manufacturing company was developed.

The modeling process can be viewed as a process of enrichment and elaboration. A simple model of a system (Figure 6, page 85) was presented and then refined until a generalized model of a typical small manufacturing company (Figure 8, page 93) was developed. This model views the small manufacturing company as a dynamic system continually interacting with its environment and converting scarce economic resources (inputs) into a final product or products (output). The typical small manufacturing company represents a hierarchy of systems and subsystems. A model of a subsystem of a typical small manufacturing company, the production function segment, was also developed and discussed.

Management performs a vital function within small manufacturing firms, that is, managers coordinate the activities of numerous interrelated and interdependent segments and relate them to the environment in order to achieve the organization's objectives. Therefore, the role and functions managers perform within small manufacturing companies were discussed.

In fulfilling their responsibilities, all managers perform certain major activities--the management functions of planning, organizing, directing and controlling. Although it is frequently convenient to

analyze each management function separately, they are not mutually exclusive. These managerial functions which pervade the entire organization are universal because managers at all levels of the organization perform essentially the same tasks. However, the relative importance of each of these major activities changes as a manager moves up the organization hierarchy. Managerial levels and their influence on the managerial functions were discussed in the last section of this chapter.

This chapter has developed the basic framework for the development of a theoretical model for the management planning function and budgetary process presented in Chapter IV and the computerized budget model presented in Chapter V.

FOOTNOTES

¹Such organizations were characterized by: (1) the separation of ownership and management and (2) specialization of labor.

²For purposes of this study, the very small, one-person operation is ignored.

³Cleland and King, Management: A Systems Approach, p. 61.

⁴Robert O. Presthus, quoted in Murdick and Ross, p. 40.

⁵Cleland and King, Management: A Systems Approach, p. 6.

⁶Ibid., p. 372.

⁷An organization segment is defined as any part or subdivision (subsystem) of the organization which is used as a basis of analysis in this study.

⁸Cf., Koontz and O'Donnell, p. 137, ". . . purpose is often used to denote the reason for which an enterprise exists. . . . Objective is a term commonly used to indicate the end point of a management program, whether stated in general or specific terms, while the implication of a target or goal is almost invariably one of specific qualitative or quantitative aims." However, as Koontz and O'Donnell point out, a clear distinction between these terms is seldom used in practice, therefore, these terms will generally be used interchangeably in this dissertation.

⁹It is noted that in many cases the purpose of the analysis determines the classification. For example, see discussion below relating to conceptual vs. empirical models.

¹⁰As previously pointed out, a model is the basic operating tool utilized by systems analysts.

¹¹Symbolic models use symbols to describe the real world. For example, an organization chart or a mathematical model are symbolic models.

¹²Cleland and King, Systems Analysis and Project Management, p. 17.

¹³William T. Morris, "On the Art of Modeling," Management Sciences, 13 (August, 1967), p. 709.

¹⁴Ibid.

¹⁵G. Gillman, "The Manager and the Systems Concept," Business Horizons, 12 (August, 1969), p. 19.

¹⁶Cleland and King, Management: A Systems Approach, p. 159.

¹⁷Ibid., p. 160.

¹⁸Ibid.

¹⁹Ibid., p. 162.

²⁰Ibid., pp. 162-163.

²¹Ibid., p. 102.

²²Robert O. Presthus, quoted in Murdick and Ross, p. 40.

²³Welsch, p. 1.

²⁴Cleland and King, Management: A Systems Approach, p. 173.

²⁵The term "goal" is used here in the general sense. As previously pointed out the terms "purpose," "objective," and "goal" are commonly used interchangeably. The term "goal" was chosen here as the literature frequently refers to goal congruence when discussing the hierarchy of goals or objectives.

²⁶Murdick and Ross, p. 108.

²⁷As noted in Table IV, these management functions are the most frequently cited and, therefore, may be considered the major ones.

²⁸Cleland and King, Management: A Systems Approach, p. 136.

²⁹Horngren, p. 151.

³⁰Cleland and King, Management: A Systems Approach, p. 136.

³¹Some authors have proposed that decision making is the only management function and then go on to distinguish (a) planning decisions, (b) decisions involving managerial control, and so forth. See for example, Alex M. Lee, Systems Analysis Frameworks (New York, 1970), pp. 120-129.

³²Starr, p. 117.

³³Kast and Rosenzweig, p. 344.

³⁴Staffing was not defined as a "major" management function for purposes of this study.

³⁵Fayol referred to management functions as elements of administration. He identified the elements as planning, organizing, commanding, coordinating, and controlling.

³⁶It was also recognized that the nature of management decisions was affected by the manager's position in the organizational hierarchy.

³⁷Simon, pp. 40-41.

³⁸Ibid.

³⁹Kast and Rosenzweig, pp. 120-130.

⁴⁰Ibid., p. 129.

⁴¹Ibid., pp. 129-130.

⁴²Other authors take a similar approach. For example, Johnson, Kast and Rosenzweig distinguish three management levels or systems: (1) operating, similar to technical level, (2) coordinative, similar to organizational level, and (3) strategic, similar to institutional level.

CHAPTER IV

THEORETICAL FRAMEWORK FOR PLANNING THE OPERATIONS OF SMALL MANUFACTURING COMPANIES

Introduction

As discussed in Chapter III, management performs a vital function within small manufacturing companies by coordinating the activities of the numerous segments and relating them to the environment in order to achieve the firm's goals and objectives. In fulfilling their responsibilities, managers perform certain major functions; they plan, organize, direct, and control the activities of the company. The most basic and fundamental management function is planning.

As previously stated, this study is concerned with the planning aspects of the budgetary process. Therefore, a theoretical framework for planning the operations of small manufacturing companies will be developed in this chapter. The initial sections of the chapter are devoted to a brief analysis of the managerial planning function. These sections are then summarized and synthesized into a generalized theoretical framework for planning the operations of small manufacturing companies utilizing the comprehensive budget. The assumed typical small manufacturing company, the Hypothetical Corporation, will be used in this chapter for illustrative purposes (see page 70, for discussion).

Management Planning Function

Few will deny the importance of the management planning function. Donnelly, Gibson, and Ivancevich have stated, ". . . the essence of management is planning, and all other functions are derived from planning."¹ Henri Fayol also viewed planning as a vital management function. In describing the planning process, he said:

. . . the maxim, 'Managing means looking ahead,' gives some idea of the importance attached to planning in the business world, and it is true that if foresight is not the whole of management, at least it is an essential part of it. To foresee, in this context, means both to assess the future and make provisions for it; that is foreseeing is itself action already. Planning is manifested on a variety of occasions and in a variety of ways, its manifestation, apparent sign and most effective instrument being the plan of action. The plan of action is, at one and the same time, the result of being envisaged, the line of action to be followed, the stages to go through, and methods to use. It is a kind of future picture wherein proximate events appear progressively less distinct, and it entails the running of the business as foreseen and provided against over a definite period.²

Planning Defined

The following are some of the definitions that have been proposed by other organization and management theorists:

1. ". . . planning means determining what shall be done."³
2. ". . . planning is the selection of future courses of action for the enterprise and for each department within it."⁴
3. ". . . planning is a process of collecting information and making decisions in order to narrow the range of alternative behaviors until the most desirable set of actions can be specified."⁵
4. ". . . planning is the process of establishing goals, allocating resources, and providing the guidance necessary for the operation of an organization."⁶

5. ". . . planning is the process of setting formal guidelines and constraints for the behavior of the firm."⁷
6. . . . planning is the process of thinking about the job to be done, considering what is needed to do it in terms of equipment, people, facilities and other resources, and coming up with the plans necessary to delineate how the job can best be accomplished."⁸

As the above definitions imply, the following characteristics are basic to the planning process: (1) planning involves the future, (2) planning involves action, and (3) planning involves an element of personal or organizational identification or causation (i.e., the future course of action will be taken by the planner or by someone selected by the planner or for him within the organization).⁹

Decision-making is not planning. A decision involves the choice between alternative courses of action and does not necessarily involve action or the future. As discussed in reviewing the planning and control cycle (see page 106), decisions occur at every step of the planning process and, therefore, are an integral part of planning.

Forecasting is not planning. Forecasting involves anticipating or predicting some future condition or event affecting the organization. Although forecasting involves the future, it may or may not involve action.

Programming is not planning. Programming is the management activity which translates management decisions into specific action patterns (plans) for implementation. Programs or plans result from the mental process of planning.

. . . planning is not an entity in itself--its primary purpose is to provide the guidelines necessary for the vital decision-making processes throughout the organization. Planning, therefore, should be geared to obtaining, translating, understanding, and communicating information that will help to

improve the rationality of current decisions which are based upon future expectations. Expectations are developed through the process of forecasting and predicting the future.¹⁰

Advantages of Planning

If an organization is to survive in a competitive world, it is essential that planning be undertaken as a major management function. Listed below are a few of the advantages of planning as they relate to the assumed typical small manufacturing company, the Hypothetical Corporation.

1. Planning facilitates coordinated, purposeful action. In other words, planning makes it easier for the managers of the Hypothetical Corporation to integrate the activities of the production, marketing, and finance function segments in order to achieve the goals and objectives of the company. For example, if the Vice-President of Production knows that the marketing function segment plans to sell 100,000 units of product Blue in the coming budget period, he can plan to produce the necessary quantity.

2. Planning highlights inconsistencies in the organization's activities. For example, the Marketing Function segment of the Hypothetical Corporation originally planned to sell 150,000 units of product Green in the coming period. However, the Production Function segment is constrained by present facilities and, as a result, is only able to produce 75,000 units. Adequate planning will bring this obvious inconsistency to the attention of management and permit them to revise their plans in light of this constraint.

3. Planning helps managers avoid delays. For example, the Plant Manager of the Hypothetical Corporation is able to effectively and

efficiently utilize scarce resources and avoid production "bottlenecks" by planning the activities of the production departments to avoid unused production facilities (production scheduling).

4. Planning facilitates the effective and efficient utilization of scarce managerial resources. For example, those activities of the organization that are repetitive can be reduced to standing plans, such as policies, methods, and procedures.¹¹ Standing plans eliminate the need for managers to redecide the same issues. Planning also utilizes scarce management resources by stopping inconsistent courses of action before they get to the implementation or action phase. Managerial resources can also be utilized by delegating a portion of the planning function to individuals who can become planning experts.

5. Planning facilitates the other managerial functions. In fact, a good plan is a necessary prerequisite for the accomplishment of the other managerial functions: organizing, directing, and controlling.

6. Planning emphasizes the importance of goals and objectives in management planning decisions and, therefore, tends to encourage the development of sound organizational goals and objectives.

7. Planning permits organizations to survive in an environment that is always changing. Management must accept change as an inevitable consequence of functioning in a dynamic world by adapting to change, influencing change in their environment, utilizing change to their advantage and taking advantage of opportunities, through planning. "The planning process can be considered as a vehicle for accomplishment of systems change . . ."¹²

Limitations of Planning

Listed below are a few of the limitations of planning as they relate to a typical small manufacturing company, the assumed Hypothetical Corporation.

1. Planning takes time. In many cases the necessity of prompt action precludes planning.

2. Planning is expensive. The costs of planning include (a) the time involved by managers and technical people, (b) the money expended to secure information external to the firm, (c) the physical resources required to facilitate the planning process, and so forth. Managers have a difficult time determining when a plan has gone far enough as both costs and benefits are usually difficult to measure.

3. Plans tend to make an organization inflexible. Individual managers have a vested interest in developing and implementing plans. They do not like to admit they were wrong and are also hesitant to invest the time necessary to revise plans.

4. Plans involve an uncertain future. They are based on assumptions and predictions of what will occur in the future. Therefore, plans are limited by the degree to which future conditions can be reliably forecast.

5. Planning tends to limit innovative and creative responses by those who carry out plans. It has been shown that individuals who carry out highly detailed plans for long periods of time, tend to atrophy mentally.¹³

The Planning Process

It is frequently convenient to study the planning process by considering the nature of the steps taken in developing and implementing plans. The following are representative of the steps typically enumerated in the management literature: (1) discovering problems and opportunities, (2) setting planning objectives, (3) establishing planning premises, (4) determining alternative courses of action, (5) evaluating alternative courses of action, (6) choosing an alternative, and (7) implementing the plan. It is noted that the steps taken in the planning process are basically the same as those taken in decision making.

Discovering Problems and Opportunities. Successful managers are continuously appraising their environment (the internal, competitive, and environmental systems) in an attempt to identify future problems and opportunities. Such knowledge allows managers to plan to minimize the impact of problems, and plan to exploit future opportunities. For example, assume the managers of the Hypothetical Corporation anticipate a strike in the steel industry in the coming budget period. Since steel is one of their basic raw materials, management plans to build up steel inventories to minimize this potential production problem. In addition the managers of the Hypothetical Corporation anticipate that 500,000 units of a new product Purple can be sold, thus generating additional contribution margin of \$1,000,000. Recognition of this opportunity allows management to plan for the necessary scarce economic resources (information, materials, money, labor, and facilities) in order to produce the new product Purple.

Setting Planning Objectives. Planning objectives, as opposed to overall organizational objectives, ". . . indicate the end points of what is to be done, where the primary emphasis is to be placed, and what is to be accomplished by the network of policies, procedures, rules, budgets, programs, and strategies."¹⁴ For example, it is assumed that the managers of the Hypothetical Corporation have established a planning objective for the coming budget period--to generate net income of \$500,000--by placing primary emphasis on the contribution margins generated by products Red, Blue, and Green. The necessary policies, procedures, rules, budgets, programs, and strategies will be developed in order to establish the necessary criteria and guidelines for accomplishing this planning objective.

Establishing Planning Premises. Planning premises are assumptions made by business planners concerning variables that are expected to influence the alternative courses of action considered in reaching the planning objective(s). For example, business planners establish premises concerning external variables such as (a) opportunities and problems, (b) business conditions, (c) population growth, (d) price levels, (e) business cycles, (f) political philosophies, (g) economic conditions, and so on. In addition, business planners formulate premises concerning factors internal to the firm such as (a) organizational objectives and purposes, (b) values of top management, (c) strengths and weaknesses of the firm, (d) financial position, (e) employment level, (f) production level, and so on.

The following are a few of the questions reviewed by the managers of the Hypothetical Corporation during this phase of the planning

process. What are the assumed markets for our products during the next five years? What are the assumed environmental conditions which will affect labor costs, material costs, equipment costs, facility costs, etc., during the next five years? What is the anticipated "political" environment and what effect will it have on the Hypothetical Corporation? What technological changes can be assumed, and what impact will they have on the Hypothetical Corporation?

Determining Alternative Courses of Action. During this phase of the planning process, management searches for alternative courses of action to achieve the plan's objective. For example, the managers of the Hypothetical Corporation investigate: (a) alternative product sales mixes, (b) alternative advertising campaigns and their anticipated impact on sales volume, (c) alternative selling prices, and so forth.

Evaluating Alternative Courses of Action. During this phase of the planning process management weighs the desirability (anticipated outcomes) of each alternative course of action in conjunction with the planning premises and objectives. In some cases alternatives can be evaluated by utilizing mathematical techniques while in other cases subjective evaluation must deal with intangibles and uncertainties. The budget model developed in this study will provide valuable assistance to managers during this phase of the planning process by permitting decision makers to change the basic budget variables at little cost and loss of time thus allowing them to evaluate the anticipated consequences of possible alternative courses of action.

Choosing an Alternative. During this phase of the management

planning process, managers make a decision and select a particular course of action. The decision is arrived at after consideration of the basic premises, constraints, organizational goals and objectives, the anticipated adaptability of the plan, and the cost and time involved in implementing the plan.

Implementing the Plan. Here management translates the selected course of action into plans and derivative plans (programming). These plans: (a) provide for the procurement and utilization of the necessary scarce economic resources and (b) schedule and coordinate the activities of the interrelated and interdependent organizational segments. For the plans to be successfully implemented, information about them must be communicated to and accepted by individuals responsible for making the plan(s) work.

Dimensions of Planning

The planning process and the resulting plans are multidimensional in nature. Thus, planning can be described in terms of the following dimensions: (1) horizontal, (2) vertical, (3) time and causality, and (4) action.¹⁵

Horizontal Dimension. The planning process is dynamic in nature and, therefore, requires interaction and feedback along a horizontal time dimension. Successful managers approach the planning process on a continuous basis by (a) continually planning the organization's interactions with the internal, competitive, and environmental systems and (b) continually assessing existing plans in light of signals emitted from the internal, competitive, and environmental systems. For example,

managers of the Hypothetical Corporation should recognize that the budgetary process must be approached on a continuous basis, that is, it is insufficient to prepare a budget once a year, rather the budget should be continually compared to actual results and revised as environmental conditions change. For the managers of the Hypothetical Corporation, therefore, the budgetary or planning process is a continuous element of their activities.

The management planning process is concerned with horizontal planning for different degrees of futurity, that is, planning can be viewed on a continuum ranging from short-range to long-range planning. For example, it is assumed the managers of the Hypothetical Corporation are concerned with planning for relatively short-range operations and as a result develop relatively detailed monthly and yearly operating budgets. This management group is also concerned with planning for relatively longer operations and as a result prepares less detailed two and three year operating budgets. In addition, the managers of the Hypothetical Corporation recognize that if they are going to survive and succeed over the long run, they must be concerned with long-range planning as well and, therefore, prepare relatively long-range 5, 10, and 20 year budgets.

. . . generally, long-term planning deals with decisions regarding the broad technological and competitive aspects of the organization, the allocation of resources (human and material) over an extended period, and the long-run integration of the organization within its environment, that is, the internal, competitive, and environmental system.¹⁶

Long-range planning is an important part of the total management planning process for an organization. Long-range planning establishes the overall framework for all shorter-range planning. Plans of various

time periods are, of course, interdependent. Therefore, it is obvious that there must be continuous interaction and feedback among the numerous time dimensions of planning, that is, long-range planning affects or limits all planning along the time dimension and vice versa.

Vertical Dimension.¹⁷ The planning process for an organization can be viewed on a vertical dimension as a hierarchy of planning levels and resulting plans. The top level of the planning hierarchy involves the establishment of the organization's overall objectives--the general, typically long-run end points toward which management directs the organization. For example, it is assumed that the managers of the Hypothetical Corporation have established the following objectives: (a) to maximize or earn satisfactory returns for the owners over the long run, (b) to capture a major share of the consumer market, (c) to produce high quality products, and so on. The second level of the planning hierarchy involves the establishment of goals--specific, typically short-run end points expressed in terms of explicit outputs or functional outcomes. To illustrate, it is assumed that the managers of the Hypothetical Corporation have established the following goals in order to achieve the organization's objectives: (a) to earn a 10 percent return on owners' investment, (b) to capture 45 percent of the consumer market for product Red, 30 percent for product Blue, and 25 percent for product Green, and so forth. At this level of the planning process, the overall organizational objectives are assumed as given and, therefore, planning is concerned with making an optimal choice among possible alternatives.

The third level of the planning hierarchy involves the translation of organizational goals into activities aimed at specific targets--fixed

attainable end points. For example, it is assumed that at the third level of the planning process the managers of the Hypothetical Corporation translate the organizational goal of 10 percent return on the owners' investment into the following targets: (a) to sell 44,915 units of product Red, 12,300 units of product Blue, and 67,710 units of product Green (see Schedule SB-1, page 243); (b) to produce 47,315 units of product Red, 14,700 units of product Blue, and 70,410 units of product Green (see Schedule PRB-1, page 347); (c) to incur maximum variable production costs of \$74 for product Red, \$60 for product Blue, and \$50 for product Green (see Schedule SC-1, page 341); and so forth. At this level of the planning process, management is concerned with effective and efficient utilization of the organization's scarce economic resources in order to achieve the organization's objectives and goals.

It is noted that the scope of the planning process narrows as business planners move down the planning hierarchy--at the top level of the planning hierarchy, planning tends to be comprehensive in nature (broad scope) and as business planners move down the planning hierarchy, planning tends to become more specific in nature (narrow scope).

Successful planning necessitates continuous interaction and feedback among the planning levels because (a) organizational objectives guide or limit organizational goals, (b) organizational goals determine organizational targets, (c) organizational goals and the degree to which they are accomplished affect organizational objectives, and (d) organizational targets and the degree to which they are accomplished affect organizational goals and objectives.

Planning levels are, of course, directly related to the organization's managerial levels; at the top level of the organization, managers

are primarily concerned with establishing organizational objectives and at the lower levels of the organization, managers are primarily concerned with establishing targets for current operations. The relationship between managerial levels and the planning process will be discussed in greater detail on pages 140 through 152.

Time and Causality Dimensions. Planning involves continuous feedback between exploratory forecasting and normative forecasting. Exploratory forecasting predicts future courses of action by extrapolating the present. To illustrate, in the current period the Hypothetical Corporation has sold 9,500 units of product Red, 8,400 units of product Blue, and 7,100 units of product Green. Sales have been increasing at a rate of 10 percent per year. Therefore, an exploratory forecast would project sales of 10,450 units of product Red, 9,240 units of product Blue, and 7,810 units of product Green for the coming period.

Normative forecasting, on the other hand, structures future courses of action based on desired future states. For example, the managers of the Hypothetical Corporation desire to sell 50,000 units of each product.

Successful managers must constantly evaluate the future by considering and balancing both exploratory and normative forecasts. If a firm is to survive, it must be ready to take advantage of opportunities and adapt to change. It is not enough to plan the organization's future course of action based only on the firm's current activities. Likewise, it is unwise to plan the organization's future course of action based on unrealistic or idealistic desired future states. Actual performance provides valuable feedback for assessing the degree of confidence that

can be placed in exploratory and normative forecasts.

Action Dimension. There is a continuous interaction between management planning and actions taken to implement plans. Planning determines the actions an organization will take in a future period. For example, the managers of the Hypothetical Corporation plan to sell 44,915 units of product Red in the next period (see Schedule SB-1, page 342). Therefore, during this period they will take actions to produce 47,315 units of Red (see Schedule PRB-2, page 348); provide for 189,260 feet of wood (47,315 units at four feet per unit, see Schedule SC-1, page 341); and so on.

The consequences of the previous actions taken by the organization affect the planning process. For example, in the previous period the managers of the Hypothetical Corporation planned to sell 55,000 units of product Red. However, they only sold 40,000 units. This variance of 15,000 units will be analyzed and taken into consideration in formulating plans for future periods.

Summary. As the above discussion indicates, the management planning process is complex and can be viewed and analyzed on numerous dimensions. Robert N. Anthony, in his classic work, Planning and Control Systems, reviewed the existing management planning and control literature and developed a useful conceptual framework which incorporates the systems approach and provides a basis for classifying management planning decisions according to type and managerial level.¹⁸

The Anthony Planning Framework

The characteristics of Anthony's conceptual planning framework is

discussed briefly below.

Management Planning and Control Functions. As previously discussed, planning involves deciding what management wants to happen and then developing plans to take the necessary steps to move the organization toward this desired future state (see page 104). Control, on the other hand, involves taking steps to ensure actual performance is consistent with planned performance (see page 105). In developing his basic framework, Anthony points out that it is impossible to separate the management control function from the management planning function, that is, it is impossible to have control without adequate planning. As discussed in Chapter I, however, this study is concerned only with the planning aspects of the budgetary process. Therefore, the Anthony conceptual framework will be discussed primarily as it relates to the management planning function. This approach is justified because (1) planning is possible without control and (2) a good plan is a necessary prerequisite of effective control.

Planning and Control Levels. In his framework, Anthony identifies three levels in the planning and control hierarchy: (1) strategic planning, (2) management planning and control, and (3) operational planning and control.¹⁹ Although Anthony distinguishes three levels in the planning and control hierarchy, he points out that they are not discrete entities but in fact represent a continuum, that is, strategic planning is at one end of the continuum (point A), management planning and control is approximately at the mid-point of the continuum (point B), and operational planning and control at the other end of the continuum (point C)

with numerous degrees of both (1) strategic planning and (2) management planning and control between points A and B on the continuum, and numerous degrees of both (1) management planning and control and (2) operational planning and control between points B and C on the continuum. In general, Anthony's planning and control levels highlight the vertical dimension of the management planning process (see pages 136 through 138) and coincide closely with the three managerial levels identified by Kast and Rosenzweig: (1) the institutional level, (2) the organizational level, and (3) the technical level (see pages 112 through 119 for a discussion). The characteristics of each of Anthony's planning and control levels are summarized in Table IV, pages 142 and 143, and discussed briefly below.

Strategic Planning. Anthony defines strategic planning as:

. . . the process of deciding on objectives of the organization, on changes in these objectives, on the resources used to attain these objectives, and on the policies that are to govern the acquisition, use, and disposition of these resources.²⁰

Strategic planning decisions occur primarily at the highest level of the organizational hierarchy, the institutional level (see pages 112 and 113). As previously discussed, managers at this level are primarily concerned with relating the activities of the organization to its unpredictable, uncertain environment (the competitive and environmental systems). Anthony defines a strategy as a decision on how to combine and employ scarce economic resources and, therefore, strategic planning, ". . . is a process having to do with the formulation of long-range, strategic, plans and policies that change the character or direction of the organization."²¹ Strategic planning establishes the overall tone,

TABLE VI

CHARACTERISTICS OF ANTHONY'S PLANNING AND CONTROL FRAMEWORK

Characteristic	Strategic Planning	Management Planning and Control	Operational Planning and Control
Purpose of Planning Level	Determine or change character or direction of organization	Implementation of strategic plans	Carry out specific tasks
Output	Objectives, goals	Comprehensive budget, actions, precedents	Standard operating procedures
Kast and Rosenzweig Managerial Level	Institutional	Organizational	Technical
Role of Management	Relate activities of organization to environment	Integrates the input of given resources to technical level	Production and distribution of firm's products or services
Time Horizon	Relatively long	Current operations--week, month, year	Day-to-day
Focus of Plans	One aspect at a time	Entire organization	Single task or transaction
Judgment	Relatively much, subjective decision	Relatively less	Relatively little, rely on rules
Degree of Structure	Unstructured, irregular	Recurring, rhythmic	Highly structured, can be reduced to rules
Purpose of Estimates	Show expected results	Lead to desired results	Follow directions

TABLE VI (Continued)

Characteristics	Strategic Planning	Management Planning and Control	Operational Planning and Control
General Source of Data	External	Internal	Internal
Degree of Accuracy	Imprecise	Relatively precise	Exact
Source Discipline	Economics	Social psychology	Economics and physical sciences
Persons Primarily Involved	Top management and staff	Top and line management	Supervisors or none
Number of Persons Involved	Small	Large	Single or few
Communication	Relatively simple	Relatively difficult	Simple, can be reduced to standard operating procedures
Costs	Committed costs	Managed costs	Engineered costs

Source: Adapted primarily from Robert N. Anthony, Planning and Control Systems: A Framework for Analysis (Boston, 1965). Also, Sherman C. Blumenthal, Management Information Systems: A Framework for Planning and Development (Englewood Cliffs, 1969).

and the physical, financial, and structural framework for the entire organization.

. . . strategy is the pattern of objectives, purposes, or goals and major policies and plans for achieving these goals as stated in such a way as to define what business the company is or is to be in and the kind of company it is or is to be. A complete statement of strategy will define the product line (in functional, not literal, terms), the markets and market segments for which products are to be designed, the channels through which these markets will be reached, the means by which the operation is to be financed, the profit objective, and the size and kind of organization which is to be the medium of achievement.²²

Management strategic planning decisions are typically characterized as follows.

1. They tend to have relatively long-run consequences, that is:
 - (a) the effects of strategic decisions are frequently irreversible in the short-run--for example, once a major subsidiary has been purchased it usually takes a relatively long period of time to arrange to dispose of it and
 - (b) strategic decisions usually take a relatively long time to implement--for example, the decision to build a new plant in Oklahoma City may take 5 to 10 years to implement. However, strategic planning is not a synonymous term for long-range planning. It is possible to have a long-range plan that is not a strategy--for example, a 5 to 10 year operating plan. It is also possible to have a strategic plan that will be implemented in the short-run--for example, the acquisition of an important subsidiary is to be completed within one year.

2. A segment of the organization rather than the entire organization is usually involved in strategic planning; for example, the decision to acquire a major supplier. Usually this approach is necessitated by the fact that a single strategy involves so many unpredictable and

uncertain environmental decision variables that it would be humanly impossible for managers to deal with the impact of the strategy for the organization in total.

3. Typically strategic planning is irregular and unstructured in nature. The discovery of problems, opportunities and innovative ideas does not result according to a regular time table. Management must be ready to take action to minimize the impact of problems and take advantage of opportunities and innovative ideas wherever they are discovered; ". . . strategic planners work now on one problem, now on another, according to the needs and opportunities of the moment."²³

Each strategic decision is more or less unique and, therefore, the appropriate analytical techniques depend upon each decision. No overall statistical technique or mathematical model has yet been developed which is useful in analyzing all types of strategic decisions. In fact, current statistical and mathematical techniques have little to contribute for most types of strategical decisions--for example, decisions involving goals, what the company is to be, assessment of the environment, and selection of product market strategies. As Cyert and Dell point out, the task of strategic planning is primarily concerned with ". . . being imaginative and systematic in formulating alternatives from which the choice will be made."²⁴

4. The estimates used by strategic planners are intended to show what the expected results will be. These estimates are neutral and impersonal and in no way are intended to motivate managers to achieve desired results (as with management planning and control estimates). In strategic planning, managers are concerned about whether or not an

estimate is reasonable and the best estimate that can be made under the circumstances.

5. Strategic planning relies primarily on data collected outside the organization (competitive and environmental systems). These external data are supplied on an ad hoc basis, and are specifically tailored for each problem or plan.

6. Data relevant to strategic planners are relatively imprecise and contain a relatively high degree of uncertainty.

7. Strategic planning is, essentially, applied economics and relies heavily on economic concepts such as marginal revenues, marginal costs, and opportunity costs.

8. Strategic planning is highly staff oriented; line managers are not usually major participants in strategic planning.

9. Relatively few persons are involved in strategic planning and, therefore, communication is simple. In many types of strategic decisions secrecy is important.

10. Committed costs usually result from strategic planning decisions. These costs typically arise from the possession of plant, of equipment, and of basic organization and affect the organization's ability to meet long-range goals and objectives.

Management Planning and Control. Anthony defines management planning and control as ". . . the process of assuring that resources are obtained and used effectively and efficiently in the accomplishment of the organization's objectives."²⁵ Effectiveness refers to the degree to which a goal or objective is attained or an end met. In other words, whether or not what management desires to happen occurs.

Efficiency refers to the optimum relationship between input and output, that is, the performance of an activity at least cost. For example, the more units of output that are obtained from a given input, the more efficient is the machine or process and the less the cost per unit of output produced.

Management planning and control decisions are carried on within the guidelines established by strategic planning and involve the implementation of strategic planning decisions. For example, the strategic planning process for the Hypothetical Corporation established a set of objectives and goals (see pages 136 and 137) which include the following: (1) an objective to earn a satisfactory return for the owners of the corporation over the long run and (2) a goal to earn a 10 percent return on the owners' investment in the coming budget period. The purpose of the management planning and control process, therefore, is to choose a course of action that will accomplish the organization's established objectives and goals (including the goal to generate a 10 percent return on the owners' investment) by effectively and efficiently utilizing the firm's existing scarce economic resources (information, materials, money, labor, and facilities). For the Hypothetical Corporation, a major output of the management planning and control process is a relatively detailed planned course of action, a comprehensive budget, for the coming budget period.²⁶

Management planning and control occurs primarily at the second level of the management hierarchy, the organizational level (see pages 112 and 113, 116 through 118).²⁷ As previously stated, the major function of managers at this level is to integrate the input of scarce economic resource to the lowest level of organization, the technical

level. As a result of the differences in management emphasis, the following are characteristics of management planning and control decisions.

1. These decisions typically relate to current operations and, therefore, the resulting plans are for a relatively shorter period of time than strategic planning--typically a week, month, quarter, or year.

2. All aspects of the company's operations are typically taken into consideration in management planning and control decisions.

. . . it needs to be a total system because an important management function is to assure that all parts of the operation are in balance with one another; and in order to examine balance, management needs information about each of the parts.²⁸

The comprehensive budget represents a model for the entire organization.

3. Management planning and control decisions tend to be recurring and rhythmic in nature; they follow a somewhat regular timetable, month after month and year after year. For example, the managers of the Hypothetical Corporation have decided to review and update the budget each month. Therefore, they have established certain guidelines for its preparation; the steps to be taken, the dates when each step is to be completed, and so on. As Anthony points out, however, some management planning and control decisions are irregular in nature--for example, the decision by the managers of the Hypothetical Corporation to change the price of product Red, the decision to promote Harry Smith to foreman of the Assembly Department, and so on.

4. The data utilized in management planning and control decisions are intended to motivate managers to take actions that will lead to desired results; rather than the neutral and impersonal data utilized in strategic planning which is derived to show expected results.

. . . in more formal language, the objective of management [planning and] control is goal congruence, that is, the system should be set up so that actions that operating managers take in their perceived self interest are also in the best interest of the whole organization.²⁹

5. A substantial portion of the data needed for management planning and control decisions are generated internally and generally have an underlying financial structure. Much of these data are defined and accumulated similarly month after month. Therefore, successful managers establish uniform definitions for the basic decision variables. For example, in developing the comprehensive budget, the managers of the Hypothetical Corporation establish uniform definitions for basic budget variables--for example, product costs are calculated using a direct cost approach (i.e., to include direct materials, direct labor, and variable factory overhead).

6. Management planning and control data are relatively more precise than that used in strategic planning. Furthermore, the data needed are relatively easier to identify and determine. However, management planning and control data are relatively less exact than operational planning and control data and decisions involve judgment.

7. At this level of the planning hierarchy, managers are concerned with communicating, persuading, exhorting, inspiring, and criticizing; therefore, management planning and control is essentially applied social psychology.

8. Management planning and control is heavily line oriented; technical level managers typically participate in decisions. In the words of Anthony, "they are the persons whose judgments are incorporated in the approved operating plans, and they are the persons who must influence others and whose performance is measured."³⁰ For example, the production

manager of the Hypothetical Corporation's Assembly Department has an input into the preparation of the Product Standard Cost Sheets (Schedule SC-1, page 341), the Materials Budget--Unit Requirements (Schedule MAT-1, pages 349 and 350), the Direct Labor Budget (Schedule LAB-1, page 358), and the Factory Overhead Expense Budget (Schedule OVH-1, pages 360 and 361). Similarly, the salespersons and sales manager of the Eastern Territory of the Hypothetical Corporation have an input into the preparation of the Sales Budget (Schedules SB-1, SB-2, SB-3, and SB-4, pages 342 through 346), the Budgeted Contribution Statements (Schedules CONT-1, CONT-2, CONT-3, CONT-4, CONT-5, and CONT-6, pages 364 through 375), and so on.

9. A relatively large number of persons are typically involved in management planning and control decisions; therefore, the communication of objectives, goals, decisions, and results throughout the organization is relatively complex and extremely important.

10. Management planning and control costs are managed; costs that arise from a periodic (usually yearly) appropriation directly reflecting top-management policies.

Operational Planning and Control. Anthony defines operational planning and control as, "the process of assuring that specific tasks are carried out effectively and efficiently."³¹

Operational planning and control is carried on within the framework established by both strategic planning and management planning and control. These decisions focus on individual tasks and transactions which in many cases are capable of being programmed, that is, rules and procedures can be established which prescribe actions that are appropriate

for a given set of circumstances. For example, the Hypothetical Corporation has established a procedure that each time its inventory of raw material "deluxe kit" reaches 500 units (its reorder point), the purchasing agent is to order 1,000 units (its economic order quantity).

Operational planning and control occurs at the lowest level of the managerial hierarchy, the technical level. This level is, of course, concerned with the actual production and distribution of the firm's products or services and it is distinguished by these characteristics:

1. Relies on day-to-day activities of the organization.
2. Typically deals with a single task or transaction.
3. Usually can be reduced to rules and procedures.
4. The data utilized are rational in nature. Actions to be taken are decided by a set of logical rules--individuals follow directions.
5. The data needed for decisions are generated internally. Engineering studies, time and motion studies, and other scientific management and operations research techniques are utilized in operational planning and control decisions. Data is often non-monetary; for example, labor hours, machine hours, pounds of material and so forth.
6. Data are exact. For example, the managers of the Hypothetical Corporation order raw materials in specific quantities (see Schedule MAT-3, pages 353 and 354), direct laborers are paid the exact amount due (see Schedules LAB-2, page 359, and CB-1, pages 377 and 378), raw materials are used in specific quantities (see Schedule MAT-1, pages 349 and 350), and so on.

7. Rely on mathematical models. "Mathematical models . . . are essential characteristics of the operational [planning and] control process."³²
8. Based on economics and the physical sciences.
9. Decisions are typically carried out automatically or by supervisors.
10. Decisions can be reduced to standard operating procedures and a single or few persons are generally involved in carrying out the task.
11. Costs are engineered; costs that have an explicit engendered or physical, relationship with volume. For example, the Hypothetical Corporation has exact specifications for product Red: four feet of wood, two hours labor, and so forth (see Schedule SC-1, page 341); there is a clear-cut and cause-and-effect interdependence between costs and production levels.

The Budgetary Process: An Important
Aspect of the Management
Planning Function

The preceding sections of this chapter discussed the basic characteristics, complexity, and multidimensional nature of the management planning process and resulting plans. As this discussion revealed, the management planning function is broad in scope. For example, the managers of the Hypothetical Corporation must plan for technological improvements, product research and development, product distribution channels, advertising campaigns, market strategy, recruitment programs, training programs, facilities, profits, and so forth. For purposes of

this study, however, only one aspect of the management planning function will be considered, that is, those management activities involved in planning the operations of small manufacturing companies in order to achieve their short-run financial goals. The formal plan resulting from this aspect of the management planning process is, of course, the comprehensive budget. Therefore, the purpose of this section is to relate the budgetary process and resulting comprehensive budget to the management planning function. Because of the important and direct relationship between the budgetary process and the management planning function, the discussion will frequently summarize and reference earlier material in this chapter.

Budgetary Process Defined

For purposes of this study the terms "budgetary process," "budgeting," and "comprehensive budgeting" will be used interchangeably to refer to those aspects of the management planning process involved in developing and utilizing the comprehensive budget. Budgeting is an important aspect of the management planning function and, therefore, involves the future, action, and an element of personal or organizational identification or causation. Decision-making, forecasting, and programming are distinguished from budgeting (for a discussion see the section entitled "Planning Defined," pages 126 through 128).

Comprehensive Budget Defined

As discussed in the introductory chapter the terms "comprehensive budget" and "budget" are used interchangeably to refer to: a comprehensive, coordinated plan of action for the operations of a small

manufacturing company for a specific (relatively short) period of time expressed in dollars. As this definition implies, the budget model developed in this study is concerned with:

1. A comprehensive plan of action; the activities of every segment of the organization or system are included.
2. A coordinated plan of action; the interrelationships and interdependencies between segments of the organization or system are recognized.³³
3. The planning aspects of the budgetary process; the control aspects of the budget are not of primary concern.³⁴
4. Planning the operations or activities of small manufacturing companies. In other words, the term "budget" refers to operating budgets and not capital budgets.
5. Small manufacturing companies, formal organizations, and complex systems. Although the model could probably be used in other types of companies, they are not considered.
6. A relatively short period of time (usually one year). Therefore, management considers existing physical and human resources as fixed or given.

Advantages of Budgeting

Comprehensive budgeting facilitates the performance of the management process. As previously defined by the writer, management involves: the effective and efficient utilization of scarce economic resources such as information, materials, money, labor, and facilities in order to achieve the immediate and long-run goals of a small manufacturing company. The comprehensive budget aids managers in planning for the

effective and efficient utilization of the organization's existing scarce economic resources, therefore, effective budgeting facilitates effective management. Budgeting also (a) facilitates coordinated, purposeful action, (b) highlights inconsistencies in the organization's activities, (c) helps managers avoid delays, (d) facilitates the effective and efficient utilization of scarce managerial resources, (e) facilitates managerial planning, organizing, directing, and controlling, (f) emphasizes the importance of goals and objectives, and (g) permits organizations to survive in an environment that is always changing (for a discussion see the section "Advantages of Planning," pages 128 and 129).

Limitations of Budgeting

The benefits of budgeting are limited because budgeting (a) takes time, (b) is expensive, (c) tends to make an organization inflexible, (d) involves an uncertain future, and (e) tends to limit innovative and creative responses by those who carry out budgets (for a discussion see the section entitled "Limitations of Planning," page 130).

Budgetary Process

The budgetary process involves (a) uncovering problems and opportunities, (b) setting budget objectives, (c) establishing budget premises, (d) determining alternative courses of action, (e) evaluating alternative courses of action, (f) choosing an alternative, and (g) implementing the budget (for a discussion see the section entitled "The Planning Process," pages 131 through 134).

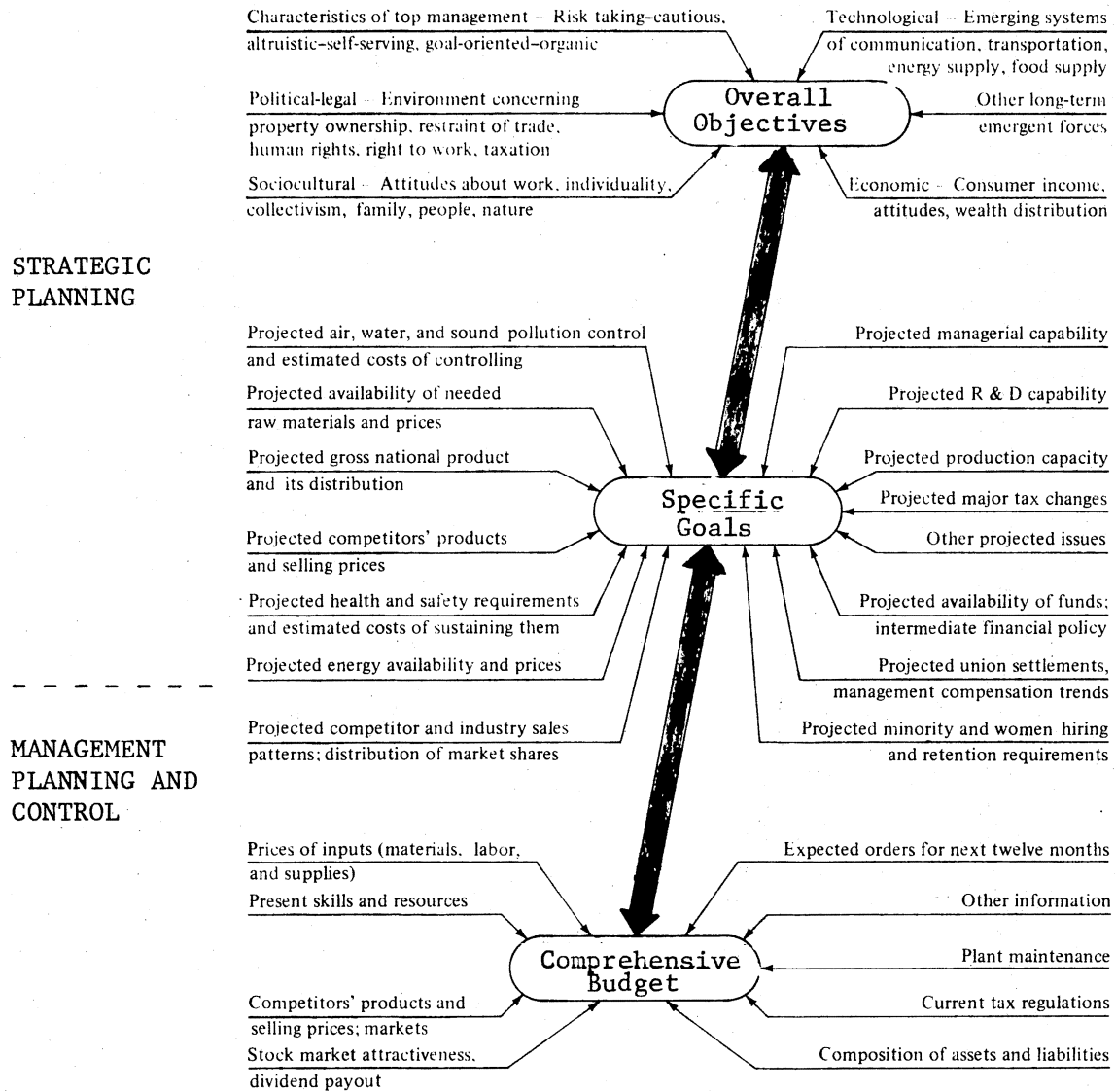
Dimensions of Budgeting

As previously discussed (see pages 134 through 139), the planning process and resulting plans are multidimensional in nature and can be described in terms of (1) a horizontal dimension, (2) a vertical dimension, (3) a time and causality dimension, and (4) an action dimension.

Horizontal Dimension. Management is concerned with planning and developing plans for different degrees of futurity; planning can be viewed on a continuum ranging from short-range to long-range planning. In this study budgeting is concerned with a relatively short period of time (usually one year). However, in developing the comprehensive budget managers must consider the implication of planning for all other degrees of futurity along the continuum; plans for the various time periods are interdependent.

Vertical Dimension. The planning process can be viewed on a vertical dimension as a hierarchy of planning levels and resulting plans. Figure 12, page 157, illustrates the planning hierarchy and its relationship to the comprehensive budget. As illustrated, the highest level of the planning hierarchy involves the establishment of the organization's overall objectives. Decision variables at this level of the planning hierarchy include (a) the characteristics of top management, (b) the political-legal system, (c) the sociocultural system, (d) the technological environment, (e) the economic system, and (f) the long-term emergent forces.

At the second level of the planning hierarchy, specific goals are



Source: Adapted from Jack Gray and Kenneth S. Johnston, Accounting and Management Action (2nd ed., New York, 1977), p. 7.

Figure 12. The Planning Hierarchy and its Relationship to the Comprehensive Budget

established. Decision variables at this level include (a) projected pollution controls and their associated costs, (b) projected availability of needed raw materials and prices, (c) projected gross national product and its distribution, (d) projected competitors products and selling prices, and so on.

At the third level of the planning hierarchy, organization goals are translated into specific activities aimed at fixed attainable targets. These targets are summarized and formalized in the comprehensive budget. Decision variables at this level include (a) prices of basic inputs--materials, labor, and supplies, (b) present skills and resources, (c) competitors' products and selling prices (markets), and so forth (see pages 136 to 138, for examples and a discussion of each planning level).

As the double-headed, large arrows in Figure 12 indicate, successful planning necessitates continuous interaction and feedback among the planning levels. As indicated, the comprehensive budget is developed within the overall framework of the organization's overall objectives, and specific goals. Further, the comprehensive budget and the degree to which it was attained influences the organization's overall objectives and specific goals.

Time and Causality Dimension. The budgetary process involves continuous interaction and feedback between exploratory forecasting and normative forecasting (for a discussion see pages 138 and 139).

Action Dimension. There is a continuous interaction between comprehensive budgeting and the activities taken to implement the budget. The comprehensive budget determines the operating activities

undertaken by the small manufacturing company during the budget period. Similarly, the degree to which prior budgets were attained affects the budgetary process (for a discussion see page 139).

The Budgetary Process and Anthony's

Planning Framework

It is useful to analyze the budgetary process utilizing the conceptual planning framework developed by Anthony wherein he identified three levels in the planning hierarchy: (1) strategic planning, (2) management planning and control, and (3) operational planning and control (see pages 139 through 152 for a discussion). Anthony's framework coincides closely with the vertical dimension of the budgetary process discussed on pages 156 to 158, and summarized in Figure 12. As indicated, strategic planning involves the establishment of the organization's overall objectives and specific goals. Management planning and control which is carried on within the guidelines of strategic planning involves translating the organization's goals and specific activities aimed at fixed attainable goals. Planning decisions derived at this level of the planning hierarchy are formalized in the comprehensive budget. The characteristics of Anthony's management planning and control decisions as summarized in Table VI (pages 142 and 143) are, therefore, characteristics of the budgetary process.

Summary

This chapter has presented a basic framework for planning the operations of small manufacturing companies. The first section of this chapter discussed the basic characteristics, complexity and

multidimensional nature of the management planning function. This overall framework was then related to a particular aspect of the management planning process; those planning activities involved in developing the comprehensive budget. The budget model developed in this study and described in the next chapter generates a comprehensive budget consistent with the overall framework discussed above.

FOOTNOTES

- ¹Donnelly, Gibson, and Ivancevich, p. 66.
- ²Henri Fayol, General and Industrial Management (London, 1949), p. 43.
- ³Arthur D. Hall, A Methodology for Systems Engineering (Englewood Cliffs, 1962), p. 6.
- ⁴Koontz and O'Donnell, p. 113.
- ⁵Jerry Dermer, Management Planning and Control Systems: Advanced Concepts and Cases (Homewood, 1977), p. 6.
- ⁶Cleland and King, Management: A Systems Approach, p. 235.
- ⁷Ansoff and Brandenburg, p. 226.
- ⁸Cleland and King, Management: A Systems Approach, p. 133.
- ⁹Preston P. LeBreton and Dale A. Henning, Planning Theory (Englewood Cliffs, 1961), p. 7.
- ¹⁰Johnson, Kast, and Rosenzweig, p. 54.
- ¹¹"Standing plans" is a term used to refer to those plans that are used over and over again.
- ¹²Johnson, Kast, and Rosenzweig, p. 51.
- ¹³Hall, p. 80.
- ¹⁴Koontz and O'Donnell, p. 125.
- ¹⁵Much of this discussion in this section is based on the model developed by Eric Jantsch in "Forecasting and Systems Approach: A Frame of Reference," Management Science, 19 (August, 1973).
- ¹⁶Johnson, Kast, and Rosenzweig, p. 61.
- ¹⁷A discussion of the vertical dimension of the planning process involves a distinction between the terms "objectives," "goals," and "targets" as defined below.

¹⁸Robert N. Anthony, Planning and Control: A Framework for Analysis (Cambridge, 1965).

¹⁹Anthony uses the terms "management control" and "operation control." As he states, it would be more exact to use the terms "management planning and control" and "operation planning and control." However, because Anthony makes no distinction between planning and control he uses the shorter terms ("management control" and "operational control") arguing that they are less cumbersome to use. For purposes of this study, however, planning is distinguished from control and, therefore, the longer terms ("management planning and control" and "operational planning and control") will be used.

²⁰Anthony, p. 16.

²¹Ibid., p. 24.

²²Kenneth R. Andrews quoted in Anthony, p. 25.

²³Anthony, p. 39.

²⁴Richard M. Cyert and William R. Dell, quoted in Anthony, p. 40.

²⁵Anthony, p. 27.

²⁶The nature of the comprehensive budget will be described in Chapter IV. The comprehensive budget establishes the fixed attainable targets described as the lower level of the vertical dimension of planning (see pages 136 and 137).

²⁷As discussed previously, managerial levels are not always identifiable and separable. The size and organizational structure affect functions performed by individual managers.

²⁸Anthony, p. 34.

²⁹Ibid., p. 45.

³⁰Ibid., p. 49.

³¹Anthony, p. 69.

³²Ibid., p. 84.

³³For a discussion of these interrelationships and interdependencies see item (1), page 77.

³⁴As previously discussed, such an approach is justified for the following reasons: (1) planning is possible without control and (2) a good plan is a necessary prerequisite of effective control.

CHAPTER V

A FLEXIBLE, COMPUTERIZED BUDGET MODEL FOR SMALL MANUFACTURING COMPANIES

Introduction

The purpose of this study was to develop a flexible computerized budget model for small manufacturing companies that (1) provides students, future managers and management consultants with a tool for assessing the impact of changes in the basic budget variables and (2) provides the managers of such firms with a tool for planning and coordinating the activities of their companies in order to achieve their short-run financial goals.

This chapter describes the computerized budget model developed in this study and is divided into four main sections: (1) the overall framework of the budget model, a decision model, is presented, (2) the general characteristics of the budget model are discussed, (3) the computer program, the data input, and the budget output are described, and (4) the procedures taken to test the model are outlined. The assumed typical small manufacturing company, the Hypothetical Corporation, will be used for illustrative purposes in this chapter (see page 70 for a discussion).

Overall Framework of Budget Model:

A Decision Model

As Horngren has suggested, the comprehensive budget is probably the best approximation of a formal model for a small manufacturing company.¹ As previously discussed a model is a simplified representation of reality which permits the solution of complex problems by focusing on only a portion of the key features of the real world.

Models of Small Manufacturing Companies

A model of a typically small manufacturing company is useful to students and managers (decision makers) because it: (1) provides a basis for studying and understanding the complex relationships, interrelationships, and interdependencies of small manufacturing companies, (2) furnishes a tool for assessing and predicting the effects of changes in certain aspects of the small manufacturing company on the performance of the organization, and (3) substitutes for the real company thus allowing analysis that otherwise would be impossible or too time-consuming or expensive.

Many types of models for small manufacturing companies have been developed; for example, (1) the pictorial model of cash flowing through a business enterprise (see Figure 2, page 51), (2) the abbreviated organization chart for the Hypothetical Corporation, a typical small manufacturing company (see Figures 3, 4, and 5, pages 71 through 73), (3) the model of a basic system (see Figure 6, page 85), (4) the simple organizational systems model (see Figure 7, page 89), and (5) the model of the Hypothetical Corporation as a system (see Figure 8, page 93). As

is obvious, each of these models is representative of the typical small manufacturing firm, yet each is different because each model incorporates certain aspects of the real world and simultaneously omits others.

The Budget Model: A Decision Model

As advocated by authorities in model building, a model's usefulness depends upon the decision to be made. Therefore, the purpose of this section is to briefly discuss the overall framework for the budget model--a decision model. This discussion focuses on the nature of the decision to be made by users of the model, that is, the decision: (1) involves a formal organization, (2) facilitates the management process, (3) involves planning, (4) involves the operations of a small manufacturing company, and (5) is part of the planning or budgetary process.

1. Involves a formal organization. The budget model developed in this study is designed to assist in making decisions about the operations of small manufacturing companies, which as discussed in Chapter II are formal organizations and complex systems. The generalized model of a typical small manufacturing company (see Figure 8, page 93) establishes the overall framework for the budget model described in this chapter. This model depicts the typical small manufacturing company as a dynamic system, continually interacting with its environment by converting (transforming) scarce economic resources (inputs) into final products (outputs). As this model illustrates, the typical small manufacturing company is a subsystem of larger systems in its environment and represents a complex of interrelated and interdependent segments.² The following are examples of the interrelationships and interdependencies

built into the budget model. (The Hypothetical Corporation example will be used for illustrative purposes.)

a. The relationship between the planned activities of the marketing function segments (projected sales) and the planned activities of the production function segments (planned production) is built into the budget model using the following mathematical equation: projected sales plus desired ending finished goods inventory minus beginning finished goods inventory equals planned production (see Schedule PRB-2, page 348).

b. The relationship between the activities of the production department (direct labor costs) and the finance department (cash payments) is built into the budget or decision model using the following mathematical equation: direct labor costs equal increase in cash payments (see Schedule CB-1, page 377 and 378).

c. For the Hypothetical Corporation the relationship (Sales Revenue) between Sam Snead, Lawrence Welk, and the Eastern Territory is expressed in the following equation: Sales Revenue (Sam Snead) plus Sales Revenue (Lawrence Welk) equals Sales Revenue (Eastern Territory) (see Schedule SB-4, pages 345 and 346).

2. Facilitates the management process. The budget model developed in this study is designed to facilitate the management decision process. Basically the systems approach recognizes that the manager performs a vital function within small manufacturing companies by coordinating the activities of the numerous interrelated and interdependent segments and relating them to the environment in order to achieve the organization's goals and objectives. In fulfilling their responsibilities managers

perform certain basic functions; they plan, organize, direct, and control the activities of the small manufacturing company. These managerial functions which are complex, interrelated, and interdependent, pervade the entire system. (This is illustrated by the grid lines in the generalized model of a small manufacturing company, Figure 8, page 93.) Inextricably interrelated with all of the managerial functions is decision making (see page 107 for discussion).

3. Involves planning. The budget model developed in this study is intended to assist managers in planning decisions involving the activities of small manufacturing companies. As defined by the author in Chapter III, planning is concerned with selecting future courses of action and developing plans for the organization as a whole and for each segment of the organization in order to move the organization towards the accomplishment of its goals and objectives. Planning is the mental process of thinking about what should be done, how it should be done, where action is to be effected, who is responsible, and why such action is necessary. As discussed in Chapter IV, planning involves the future, planning involves action, and planning involves an element of personal or organizational identification or causation. Decision making, forecasting, and programming are distinguished from planning. The discussion in Chapter IV revealed that management planning is all pervasive and a necessary prerequisite for effective management.

4. Involves the operations of a small manufacturing company. The budget model developed in this study was designed to facilitate a particular type of management planning decision--a decision involving the current operations of a small manufacturing company. Management planning decisions of this type are translated into the comprehensive budget for

implementation. The basic characteristics of the comprehensive budget developed in this study were discussed in Chapter IV, pages 153 and 154.

5. Part of the planning or budgetary process. As discussed in Chapter IV (see pages 131 through 134) it is frequently convenient to study the planning and budgetary process by considering the nature of the steps taken in developing and implementing the plans and budgets. The following steps are typical of those encountered in the management literature: (1) discovering problems and opportunities, (2) setting planning objectives, (3) establishing planning premises, (4) determining alternative courses of action, (5) evaluating alternative courses of action, (6) choosing an alternative, and (7) implementing the plan. The following steps in the planning or budgetary process are of particular concern for purposes of this study.

In evaluating alternative courses of action (step 5), management weighs the desirability (anticipated outcomes) of each alternative course of action in conjunction with the planning and budget premises and objectives. The budget model developed in this study, of course, provides students and managers with a valuable tool for weighing alternative courses of action.

In choosing an alternative (step 6), managers select a particular course of action after considering the basic premises, constraints, organization goals and objectives, the anticipated adaptability of the budget, and the cost and time involved in implementing the budget.

In implementing the plan (step 7), management translates the selected course of action into plans or budgets and derivative plans or schedules. For example, the comprehensive budget generated by the

budget model in this study implements the course of action selected by the decision maker (student or manager) regarding the operation of a small manufacturing company.

Use of Model

As the above discussion indicates, the computerized budget model developed in this study is to aid decision makers (students and managers) evaluate alternative courses of action involving the operations of small manufacturing companies, formal organizations, and complex systems. As previously discussed, conventional manual techniques tend to make the budget an inflexible management tool. Because of the time and cost involved in developing the budget, managers perceive that only a limited number of alternatives can be evaluated.³ In fact, for many managers the budget is regarded as a programming tool only; a tool for translating the selected course of action into a comprehensive budget.⁴ The computerized budget model developed in this study, however, has been designed as a flexible management tool; that is, it allows decision makers (students and managers) to evaluate the consequences of alternative courses of action at minimum cost and loss of time. Because of this flexibility, decision makers can investigate numerous alternatives and as a result make more informed, hopefully better, decisions.

The budget model automatically programs each alternative course of action; for each alternative evaluated the decision maker (student or manager) can instruct the computer to output one or more of the budget schedules. The nature of the model output is discussed later in this chapter.

General Characteristics of Computerized Budget Model

The general characteristics of the computerized budget model, a decision model, are discussed briefly in this section.

Case-Study Model

The budget model is a case-study model (also referred to as a heuristic or simulation model) which allows the decision maker (student or manager) to view the implications of two or more possible courses of action. Using such a model, a decision maker searches through alternative courses of action on a trial and error basis until the decision maker finds an alternative that is expected to produce desired goals or a satisfactory solution. For example, the managers of the Hypothetical Corporation are considering five different selling prices for the company's product Red in the coming budget period. However, selling price is inversely related to projected sales volume and as selling price increases, projected sales volume decreases. The five different selling prices represent five alternative courses of action. The anticipated relationship between selling price and projected sales volume are presented in Table VII, page 171.

Utilizing the budget model developed in this study, the managers of the Hypothetical Corporation prepare five data input cards, one for each alternative. The budget model is then run five times, once for each alternative data card. The output of the budget model, the set of budget schedules specified by the user, permits the decision maker (student or manager) to evaluate the consequences of each alternative. It

is assumed that the decision maker searches until a satisfactory alternative is found. (For a discussion of why a case-study model was selected rather than an optimization model see pages 9 through 12.)

TABLE VII
ANTICIPATED RELATIONSHIP BETWEEN SELLING PRICE
AND PROJECTED SALES VOLUME

Alternative	Selling Price per Unit of Red	Projected Sales Volume (Units)
1	\$10.00	10,000
2	9.00	12,000
3	8.00	13,000
4	7.00	15,000
5	6.00	17,000

Deterministic Model

The model is a deterministic model; a model where "for a specific set of input values, there is a uniquely determined output that represents the solution of a model under conditions of certainty."⁵ For example, for each of the five alternative courses of action considered by the managers of the Hypothetical Corporation above, the budget model generates a unique sales revenue figure and a unique net income figure.

(For a discussion of why a deterministic model was chosen rather than a probabilistic model, see pages 12 and 13.)

The managers of the Hypothetical Corporation, of course, recognize that the future is uncertain. Therefore, in planning the operations of their company for the coming budget period these managers evaluate projected net income for each alternative by considering (1) pessimistic outcomes, (2) expected outcomes, and (3) optimistic outcomes. By evaluating alternative courses of action in this way the managers of the Hypothetical Corporation can approximate a probabilistic model.

Predictive Model

The budget model is a predictive model; a model indicating that ". . . if this occurs, then that will follow . . . [such models] relate dependent and independent variables and permit trying out 'what if' questions."⁶ For example, the managers of the Hypothetical Corporation are considering the following questions:

1. What will happen to projected net income if we sell product Red for: \$10? \$9? \$8? \$7? \$6?
2. What will happen to projected net income if the direct labor rate increases by 10 percent?
3. What will happen to projected net income if the price of our raw material "deluxe kit" increases by 20 percent?
4. What will happen to projected net income if we increase advertising expenditures by \$10,000 in the Eastern Territory?
5. What will happen to projected net income if we increase sales salaries by \$10,000 and decrease the sales commission rate by two percent?

6. What will happen to plant capacity as measured in terms of machine hours if we change our product mix?

The budget model developed in this study will permit the managers to predict the consequences of each of these alternatives at minimum cost and loss of time.

Symbolic Model

The budget model is a symbolic model; a model that uses symbols to describe the real world. Such models permit decision makers (students and managers) to use ". . . techniques of logic and mathematics [to] consider interrelationships and combinations of circumstances that would otherwise be beyond the scope of any human being."⁷

Dynamic Model

The budget model is dynamic; that is, it is a model having time as an independent variable. The budget model provides for a maximum of 12 time periods. As is evident, the activities that are planned for the first budget period affect the activities planned for the second budget period, and so on. For example, in developing the cash budget, it is evident that the cash balance at the end of the first budget period, becomes the beginning cash balance for the second budget period, and so on.

Planning Segment Approach

The budget model developed in this study takes a segment approach to the planning process. Segment accounting is a concept closely related to responsibility accounting. However, while responsibility

accounting is "concerned only with the assignment of costs to organizational units for control purposes," segment accounting is concerned with "the assignment of all costs and revenues on a responsibility basis for 'both' planning and controlling . . ."⁸

Raymond P. Marple defines a planning segment as "any part or subdivision of an accounting entity which is separately recognized for . . . planning . . . purposes."⁹ Marple presents the following reasons for taking the segment approach to the planning process.

Most of management's planning . . . decisions do not relate to the business as a whole but to the parts or segments of which it is composed. Management's primary interest is in the contribution which each of these segments makes to the overall company results.

The term, 'segment' is used . . . to emphasize the fact that the many subdivisions of the business with which management must be concerned are not independent units or entities in their own rights. Rather they are interdependent arms or agencies of the business . . .

Each of the segments of a business which is recognized for management planning . . . purposes contributes, either positively or negatively, to the results of the business but only the business can earn a profit or sustain a loss. It is not possible to measure objectively the income or loss of a segment of the business.¹⁰

As Marple points out, management really needs to know "what is responsible for each item of cost and revenue" in order to plan effectively.¹¹ Segment accounting assigns expenses and revenues to planning segments based on the answer to this question. A planning segment is either (1) an organization segment or (2) a product segment.

Organization Segment. An organization planning segment is any part of a business entity that can be identified as part of the formal organization and is separately recognized for planning purposes. For

example, each of the boxes illustrated on the Hypothetical Corporation's organization chart represents an organization segment (see Figures 3, 4, and 5, pages 71 through 73). The model distinguishes three main types of organization planning segments: (1) marketing function segments, (2) production function segments, and (3) other administrative segments. The characteristics and limitations of each type of organization segment as used in this model are discussed briefly below.

1. Marketing function segments. The model provides for a maximum of three levels of marketing function segments. To illustrate, the Hypothetical Corporation has three levels of sales segments (see Figure 4, page 72). For purposes of this study the following terms will be used to refer to these three organization levels: the Vice-President of Marketing will be referred to as the level 1 sales segment, the three sales territories (Eastern, Western and Southern) will be referred to as level 2 sales segments, and the individual salespersons (Sam Snead, Lawrence Welk, Willy Mays, Gary Gumbo, Jim Jones, Paul Harvey, and O. J. Simpson) will be referred to as level 3 sales segments.

The budget model has been designed to allow users flexibility in defining the organization sales segments that are appropriate for their particular firm. For example, one company may find it appropriate for planning purposes to define their sales segments as follows:

<u>Sales Segment Level</u>	<u>Organization Unit</u>
1	Vice-President of Marketing
2	Sales Districts
3	Sales Territories

However, another company may find it desirable to use only two levels of sales segments:

<u>Sales Segment Level</u>	<u>Organization Unit</u>
1	Vice-President of Marketing
2	Sales Districts

It is also possible for the user to specify only one sales segment.¹²

2. Production function segments. The budget model provides for two major types of production function segments: (a) producing departments and (b) service departments.

A producing department is one in which manual and machine operations are performed directly upon any part of the product manufactured. More specifically, producing departments are those whose costs may be charged to the product because they have contributed directly to its production, such as machining, forming, upholstering, or assembling departments.

A service department is one that is not directly engaged in production but renders a particular type of service for the benefit of other departments.¹³

The Hypothetical Corporation, for example, has three production departments: Machinery, Grinding, and Assembly (see Figure 5, page 73). Because the Vice-President of Production, the Plant Manager, the Purchasing Department, the Power and Heat Department, and the Maintenance Department render necessary services to the production departments they are classified as service departments for purposes of this study.

3. Other administrative segments. Any organization segment that is not directly involved in the marketing function or the production function is classified in this study as an other administrative (organization) segment. For example, the Hypothetical Corporation has two such segments: the President and the Vice-President of Finance (see Figure 3, page 71).

Product Segments. Any product produced by the organization which is separately identified for planning purposes is referred to as a product segment. For example, the Hypothetical Corporation is assumed to produce three products: Red, Blue, and Green. Therefore, in developing the budget management identifies three product planning segments,

one for each product. The model has been designed to accumulate costs and revenues by responsible product segments and as a result can generate Budget Contribution Statements for each product at each organizational level (for example, see Schedules CONT-4, pages 370 and 371; CONT-5, pages 372 and 373; and CONT-6, pages 374 and 375).

Direct Cost Approach

The budget model developed in this study assumes a direct cost approach to the budgetary process. This approach is justified by the fact that:

. . . costs and revenues relevant to the decision are . . . incremental costs and revenues . . . Other costs and revenues which are not changed in total amount by the decision proposed are irrelevant to it because they do not affect the comparison.¹⁴

The direct costs of a planning segment are defined as:

. . . the costs which can be traced to that segment on a responsibility basis. They are the costs which exist because the segment exists, that would disappear if the segment disappeared. All costs would disappear if the company were discontinued, hence all costs are direct costs of the company as a whole. As we move to smaller and smaller segments more costs become indirect or common costs. They are the costs that can be disregarded in judging the smaller segment because they will be unaffected by what happens to that segment.¹⁵

As the above definition implies, only those costs that are directly traceable to a planning segment are identified with that segment. Such costs can be either variable or fixed. It is noted that fixed costs can be traceable to a product segment. For example, if the Grinding Department of the Hypothetical Corporation produced only product Green, then the \$144,000 of fixed costs traceable to the Grinding Department would also be traceable to the product Green (i.e., if the Hypothetical

Corporation stopped producing product Green there would be no need for the Grinding Department and, therefore, it would disappear). However, it is also noted that although such fixed costs are traceable to a product segment representing all units of product Green sold during the period, they are not traceable to an individual unit of product Green (i.e., if the Hypothetical Corporation produced and sold one less unit, the Grinding Department would still exist in order to produce the other 70,409 units of product Green). Under the direct cost approach, therefore, units of inventory are valued to include only those costs that are traceable to them. In other words, units of inventory are valued to include direct materials, direct labor, and variable factory overhead. Direct costs are frequently referred to as traceable costs and therefore the two terms are used interchangeably in this dissertation.

The application of a direct cost approach along with segment accounting or responsibility accounting is not surprising, in fact, ". . . the assignment of all costs and revenues to separate planning segments on a responsibility basis is merely an application of direct costing . . ."16

Computerized Budget Model

The purpose of this section is to briefly describe: (1) the computer program, (2) the basic data input cards, and (3) the budget schedules output by the budget model.

Computer Program

The computer program for the budget model was written in COBOL (Common Business Oriented Language) for the following reasons:

(1) COBOL is most frequently used by business firms and (2) COBOL made it relatively easy to generate the budget schedules. Every effort was made to document the model so that those unfamiliar with COBOL programming could understand the model's operation. A copy of the complete program is presented in Appendix B.

Data Input

The necessary budget data is input into the model in four main groups of cards: (1) start up cards, (2) marketing function data cards, (3) production function data cards, and (4) other data cards. The nature of each group is discussed briefly below while detailed instructions for preparing the data input cards are presented in Appendix A.

Start Up Cards. The purpose of the start up cards is to define the basic parameters of the budget and the organization for which the budget is being prepared, including:

1. The number of: level 3 sales segments (maximum 99), level 2 sales segments (maximum 99), production departments (maximum 20), service departments (maximum 10), number of other administrative departments (no maximum), number of products (maximum 50), number of raw materials (maximum 500).
2. The number of budget periods to be used (maximum 12), the initial budget period, the length of the budget period (month, quarter, year, or other).
3. The budget schedules to be printed out by budget model.

Twenty-four sets of budget schedules are developed and can be

output by the budget model (see Table VIII, page 184, for listing and Appendix C for example printouts).

4. The name of the small manufacturing company.

Marketing Function Data Cards. The marketing function data cards input projected revenues and expenses related to marketing, and include:

1. The marketing fixed cost names. The budget model has been designed to allow flexibility in naming the marketing fixed costs that are significant for decision making purposes. It is possible to use from one to three marketing fixed cost classifications.
2. The amount of each marketing fixed cost traceable to each marketing function sales segment and each product segment for each budget period.
3. The name of each level 2 sales segment and each level 3 sales segment.
4. The variable cost rates for each level 3 sales segment for transportation, commissions, and other variable marketing expenses.
5. Projected sales for each product sold by each level 3 sales segment for each budget period and the associated estimated selling price.

Production Function Data Cards. The production function data cards input expenses relating to the production process and define any production constraints that may limit the marketing activity. The following data are included with this group of cards:

1. The name of each production department.
2. The hourly labor or piece rate, the variable overhead rate, the overhead unit (direct labor hours, machine hours, etc.), and the maximum overhead units available for each production department.
3. Data relating to semifixed costs and the amount of fixed costs traceable to each production department in each budget period.
4. The budget model permits management to measure up to three production constraints other than overhead units. For example, it is assumed that the managers of the Hypothetical Corporation consider machine hours to be the best measure for estimating variable overhead expenses. However, management recognizes that the department's production is constrained by labor hours as well as machine hours. In this case, therefore, they input the name of the constraint (DLH) and the maximum number of units of the constraint available.
5. The name, costing unit, standard price, estimated beginning inventory, and desired ending inventory for each budget period, for each raw material used in production.
6. The name, estimated beginning inventory, and desired ending inventory for each budget period for each product produced.
7. The raw materials required, the amount of each raw material required, the labor required, the overhead units required, for each production department for each product.

Other Data Cards. The purpose of the other data cards is to input any remaining data necessary to generate desired budget schedules and consist of:

1. The name, variable overhead rate, and service unit (maintenance hour, etc.) for each service department.
2. The amount of fixed costs traceable to each service department in each budget period.
3. The production departments each service department serves and the associated interdepartment relationship, that is, the relationship between the level of production in the producing departments (as measured in overhead units) and the number of service units required.
4. The semifixed cost data for each service department.
5. The name of each other administrative department and the fixed costs traceable to the department in each budget period.
6. The name and amount associated with each budget period for each other income item, each other expense item, each other cash receipt item, and each other disbursement item.
7. The estimated beginning cash balance and the desired ending cash balance for each budget period.
8. The amount of noncash expenses associated with each budget period. The budget model requires that the user sum the amount of all noncash expenses associated with each budget period.
9. The percentage of sales on account, the anticipated beginning accounts receivable, and the anticipated collection of accounts receivable.
10. The percentage of purchases on account, the anticipated beginning accounts payable, and the anticipated payment schedule.

Computer Output

The purpose of the computer program is to generate a set of budget schedules making up the comprehensive budget. Contemporary budget textbooks were examined to determine the kinds of schedules usually produced and as a result of the analysis, the following budget output was defined.

Budget Schedules. The budget model generates 24 sets of budget schedules as outlined in Table VIII, page 184, with examples of each presented in Appendix C of this study. Every effort was made to make the schedules meaningful and easy to read. The decision maker (student or manager) specifies the budget schedules required for any one computer run.

Case-Study Approach. As previously stated, the budget is a case-study model. Therefore, although users are encouraged to analyze the impact of the plan of action for the organization as a whole, there will be many times in the trial and error experimental phase of the planning process when they will be interested only in those aspects of the plan posing critical constraints on existing resources.¹⁷ In most cases, it will be useless to generate the entire set of budgets during this phase; therefore, users are encouraged to familiarize themselves with the entire set of budget schedules and decide which reports are required at each step of the planning process. In the final phases of the planning process users will likely want to analyze most of the possible budget schedules.

Contribution Approach. The budget model developed in this study takes a contribution approach in developing budget schedules; variable

TABLE VIII
BUDGET SCHEDULES OUTPUT BY THE COMPUTER PROGRAM

Schedule Number	Example Page	Report Set
SC-1	341	Standard cost sheet
SB-1	342	Sales budget--units of product
SB-2	343	Sales budget--sales revenue dollars
SB-3	344	Sales budget--sales revenue dollars, level 2 sales segment
SB-4	345-346	Sales budget--sales revenue dollars, level 3 sales segment
PRB-1	347	Production budget--summary
PRB-2	348	Production budget--detailed calculations
MAT-1	349-350	Materials budget--unit requirements
MAT-2	351-352	Materials budget--cost of materials used in production
MAT-3	353-354	Raw materials purchase budget--unit requirements
MAT-4	355-356	Raw materials purchase budget--cost of materials purchased
MAT-5	357	Raw materials purchase budget--detailed calculations
LAB-1	358	Direct labor budget--labor hours required
LAB-2	359	Direct labor cost budget
OVH-1	360-361	Factory overhead expense budget
SC-1	362-363	Constraint report
CONT-1	364-365	Projected income statement
CONT-2	366-367	Budgeted contribution statement--level 2 sales segment
CONT-3	368-369	Budgeted contribution statement--level 3 sales segment

TABLE VIII (Continued)

Schedule Number	Example Page	Report Set
CONT-4	370-371	Budgeted contribution statement--product at total organization level
CONT-5	372-373	Budgeted contribution statement--product at level 2 sales segment
CONT-6	374-375	Budgeted contribution statement--product at level 3 sales segment
CONT-7	376	Budget of other income and other expenses
CB-1	377-378	Cash budget

costs are separated from fixed costs in order to focus on the contribution produced by the various revenue generating segments. A segment's contribution is defined as the dollar amount remaining after direct fixed costs have been deducted from its variable margin. A planning segment's variable margin is defined as the difference between its revenues and direct variable costs. The contribution approach was chosen for purposes of this study because managers are primarily concerned with the contribution each planning segment makes towards overall company results as measured by net income.¹⁸

Budgeted Contribution Schedules. As summarized in Table IX, page 186, the budget model will generate (upon request) a "Projected Income Statement" presenting the budgeted variable margin and taxable income for the organization as a whole (e.g., see Schedule CONT-1, pages 364 and 365). In addition, the model will generate a "Budgeted Contribution

TABLE IX

SETS OF BUDGETED CONTRIBUTION STATEMENTS GENERATED BY THE BUDGET MODEL

Schedule	Sales Segment Level	Example Output on Page	Description of Budget Set
CONT-1	1	364-365	A "Projected Income Statement" for total organization
CONT-2	2	366-367	A "Budgeted Contribution Statement" for each level 2 sales segment
CONT-3	3	368-369	A "Budgeted Contribution Statement" for each level 3 sales segment
CONT-4	1	370-371	A "Budgeted Product Contribution Statement" for each product sold by the firm as a whole
CONT-5	2	372-373	A "Budgeted Product Contribution Statement" for each product for each level 2 sales segment
CONT-6	3	374-375	A "Budgeted Product Contribution Statement" for each product for each level 3 sales segment

Statement" reflecting the estimated contribution produced by each level 2 sales segment (e.g., see Schedule CONT-2, pages 366 and 367), and by each level 3 sales segment (e.g., see Schedule CONT-3, pages 368 and 369). Finally, the model will generate a "Budgeted Product Contribution Statement" reflecting the estimated contribution produced by each product for: (a) the firm as a whole (e.g., Schedule CONT-4, pages 370 and 371); (b) each level 2 sales segment (e.g., see Schedule CONT-5, pages 372 and 373); and (c) each level 3 sales segment (e.g., see Schedule CONT-6, pages 374 and 375). It is thus possible for the managers of the Hypothetical Corporation to review 44 contribution statements as specified in Table X, page 188.¹⁹

Testing the Model

Because of limited financial resources, this researcher was unable to test the model using the data of actual small manufacturing firms. Therefore, realistic hypothetical data was developed to include every conceivable "real world" situation.

In developing this data the researcher began with a very simple textbook example.²⁰ After the budget schedules were verified to be correct, the data was elaborated upon to include every conceivable modification. The budget model output was tested at each step. The resulting data input probably included more unusual conditions and constraints than the data of several small manufacturing firms.

Summary

This chapter summarized the computerized budget model. Students (future managers and management consultants) and the managers of small

TABLE X

POSSIBLE BUDGETED CONTRIBUTION STATEMENTS
FOR THE HYPOTHETICAL CORPORATION

	Organization Segment	Product Segment		
		Red	Blue	Green
<u>Level 1 Sales Segment</u>				
Hypothetical Corporation	CONT-1	CONT-4	CONT-4	CONT-4
<u>Level 2 Sales Segment</u>				
Eastern Territory	CONT-2	CONT-5	CONT-5	CONT-5
Western Territory	CONT-2	CONT-5	CONT-5	CONT-5
Southern Territory	CONT-2	CONT-5	CONT-5	CONT-5
<u>Level 3 Sales Segment</u>				
Sam Snead	CONT-3	CONT-6	CONT-6	CONT-6
Lawrence Welk	CONT-3	CONT-6	CONT-6	CONT-6
Willy Mays	CONT-3	CONT-6	CONT-6	CONT-6
Gary Gumbo	CONT-3	CONT-6	CONT-6	CONT-6
Jim Jones	CONT-3	CONT-6	CONT-6	CONT-6
Paul Harvey	CONT-3	CONT-6	CONT-6	CONT-6
O. J. Simpson	CONT-3	CONT-6	CONT-6	CONT-6

manufacturing firms need a flexible computerized budget model because it provides a decision model to assist in evaluating alternative courses of action involving the operations of a small manufacturing company.

The characteristics of the budget model were discussed: it is a case-study, deterministic, predictive, symbolic, model which takes a planning segment, direct cost approach.

The computerized budget model was discussed: the computer program, the data input cards, the computer output, and testing of the model.

FOOTNOTES

- ¹Horngren, p. 121.
- ²Before proceeding the reader is asked to review the sections entitled "Generalized Model of a Typical Small Manufacturing Company," and "Model of a Subsystem of a Typical Small Manufacturing Company," pages 92 to 99 of this study.
- ³Ansoff and Brandenburg, p. 226.
- ⁴Ibid., p. 224.
- ⁵Murdick and Ross, p. 381.
- ⁶Ibid., p. 379.
- ⁷Cleland and King, Systems Analysis and Project Management, p. 17.
- ⁸Raymond P. Marple, "Management Accounting is Coming of Age," Management Accounting, 48 (July, 1967), p. 6.
- ⁹Ibid., p. 5.
- ¹⁰Ibid., p. 3.
- ¹¹Ibid., p. 6.
- ¹²As noted in this example, when only two levels of sales segments are used in developing the budget the level 2 sales segment is not used. This is necessary as the basic sales data (projected sales, selling price, etc.) is input into the model at the level 3 sales segment. If the user desires to use only one level of sales, then only the level 3 sales segment is used.
- ¹³Adolph Matz and Milton F. Usry, Cost Accounting: Planning and Control (Cincinnati, 1976), p. 51.
- ¹⁴McFarland, p. 48.
- ¹⁵Marple, p. 7.
- ¹⁶Ibid., p. 8.

¹⁷During this phase decision makers deal with "what if" questions. For example: What would happen if we increased the selling price of product Blue by \$5 per unit? What would happen if the price of our raw material "Wood" increases by 10 percent? What would happen if we changed our sales mix in the Eastern Territory?

¹⁸Marple, p. 6.

¹⁹The 44 schedules are computed as follows: $1_{\text{CONT-1}} + 3_{\text{CONT-2}} + 7_{\text{CONT-3}} + 3_{\text{CONT-4}} + 9_{\text{CONT-5}} + 21_{\text{CONT-6}} = 44$ schedules. There are 11 contribution statements for organization segments ($1_{\text{CONT-1}} + 3_{\text{CONT-2}} + 7_{\text{CONT-3}}$) and 33 for product segments ($3_{\text{CONT-4}} + 9_{\text{CONT-5}} + 21_{\text{CONT-6}}$).

²⁰Böer, pp. 70-125.

CHAPTER VI

SUMMARY AND CONCLUSIONS

Problem

Managers all too often regard the budget as a necessary evil rather than a powerful aid to their most crucial decisions. This managerial attitude has probably evolved for various reasons: (1) the cost and time involved in preparing and/or modifying the budget, using conventional manual techniques may result in an inflexible management tool; (2) the environment in which the company operates is always changing and as a result the budget is frequently inaccurate and out of date soon after its completion; and (3) when managers were introduced to the budgetary process in their formal education, highly simplified textbook examples and conventional manual techniques all too often tended to emphasize the mechanics of the budget and consequently many managers failed to gain an understanding of the budget's potential as a management tool for planning the activities of a company in order to achieve its goals.

As numerous writers have suggested, a flexible computerized budget model provides a viable solution to these problems. Such a model would at minimum cost and loss of time allow users to assess the impact of a change or revision in one or more of the basic budget variables on the planned course of action. With a computerized budget model, the user

need only change the relevant data input card(s), input the revised data cards, and within a few minutes a revised version of the budget is obtained.

A review of the literature in Chapter II, however, revealed that, although computerized budget models have been successfully developed and applied in a few large business firms, such models are not public information and as a result are not available to educators and the managers of small companies.

Purpose and Approach of the Research

The purpose and justification for this study, therefore, was to develop a flexible budget model for small manufacturing companies that (1) provides students, future managers and management consultants with a tool for assessing the impact of changes in the basic budget variables and (2) provides the managers of such firms with a tool for planning and coordinating the activities of their companies in order to achieve short-run financial goals.

The study involved: (1) library research, (2) the development of a conceptual framework for the budgetary process and the budget model, and (3) the development of the computerized budget model.

Summary of Conceptual Framework for Budgetary

Process and the Budget Model

In order to establish an overall setting for the budgetary process and budget model it was necessary to consider: (1) the behavioral characteristics of small manufacturing companies, formal organizations and complex systems; and (2) the role and functions managers perform

within such firms. Accordingly, the relevant organization and management theory literature were reviewed and summarized. As this analysis revealed, numerous, often diverse approaches to the study of organizations and management have been advocated by a diverse group of scholars, each having merit. The systems approach to organization and management was chosen for purposes of this study as it permits the integration of the numerous ideas, concepts, and approaches to the study of organizations and management.

The systems approach to organization views an organization as a complex of interrelated and interdependent segments and recognizes that: (1) no single segment can function effectively without the others, (2) the activities of a single segment affects other segments within the organization as well as the environment in which it exists, (3) the actions and interactions of many organization segments are necessary if desired goals and objectives are to be achieved, and (4) the organization is dynamic and ever-changing.

Models are the basic operating tool of decision makers utilizing the systems approach. As previously defined, a model is a simplified representation of reality which permits the solution of complex problems by focusing on only a portion of the key features of the real world.

Models are useful in that they provide decision makers with: (1) a basis for studying and understanding the complex interrelationships and interdependencies of the system, (2) a tool for assessing and predicting the effects of changes in certain aspects of the system on the performance of the system, and (3) a substitute for the real system, thus allowing analysis that would otherwise be impossible or too time-consuming or expensive.

Modeling is a process of enrichment and elaboration. The model builder begins with a very simple model and then makes it more representative of the actual situation by adding additional variables and detail. An evolutionary process was used in this study by beginning with a model of a basic system, then refining and elaborating upon it until a generalized model of a typical small manufacturing company was developed (see Figure 8, page 93). This model, which provides the overall framework for the budget model developed in this study, depicts the typical small manufacturing company as a subsystem of larger systems in its environment and a complex collection or hierarchy of systems and subsystems. Such a firm is a dynamic system which transforms scarce economic resources such as information, materials, money, labor, and facilities (inputs) into a final product or products (output). In order to achieve the organization's goals and objectives, the typical small manufacturing company must continually interact with an unpredictable and uncertain environment, that is, it must secure its scarce economic resources and sell its products to individuals and other organizations external to the company. As a result of these necessary interactions, organizational claimants (stockholders, creditors, employees, customers, suppliers, and so on), have a stake in the activities and future of the organization and, therefore, directly or indirectly and intentionally or unintentionally exert powerful, often conflicting environmental forces shaping the objectives, goals, and activities of the small manufacturing company.

Management performs a vital function within small manufacturing companies because managers coordinate the activities of the numerous interrelated and interdependent segments or parts and relate them to

the environment in order to achieve the organization's goals and objectives. In doing their jobs, managers perform certain major activities, including planning, organizing, directing, and controlling company operations. These managerial functions, which are complex, interrelated and interdependent, pervade the entire organization or system as illustrated by the grid lines in Figure 8, page 98.

Management is generally regarded as universal, that is, managers at all levels of any type of organization perform essentially the same tasks. However, the relative importance and time spent in the performance of each of the managerial functions differs depending upon the managers position in the organizational hierarchy. For example, managers at the upper levels of the organization spend considerably more of their time in planning than do managers at lower levels.

This study was primarily concerned with the management planning function. Planning is concerned with selecting future courses of action for the organization as a whole and for each segment of the organization in order to move the organization toward the accomplishment of its goals and objectives. Planning is the mental process of thinking about what should be done, how it should be done, where action is to be effected, who is responsible, and why such action is necessary.

The management planning function is complex, multidimensional and broad in scope. This study, however, was concerned with only one aspect of the management planning function; those management activities involved in developing the comprehensive budget, defined for purposes of this study as a comprehensive, coordinated plan of action for the operations

of a small manufacturing company for a specific (relatively short) period of time expressed in dollars.

Comprehensive budgeting which involves the future, action, and an element of personal or organizational identification or causation, is an important aspect of management planning and facilitates the management process by providing a useful tool for effectively and efficiently utilizing the organization's scarce economic resources. The comprehensive budget: (a) facilitates coordinated purposeful, action, (b) highlights inconsistencies in the organization's activities, (c) helps managers avoid delays, (d) facilitates the effective and efficient utilization of scarce managerial resources, (e) emphasizes the importance of goals and objectives, (f) facilitates managerial planning, organizing, directing and controlling, and (g) permits organizations to survive in an environment that is always changing. The benefits of comprehensive budgeting, however, are limited because budgeting (a) takes time, (b) is expensive, (c) if used ineffectively, tends to make an organization inflexible, and (d) tends to limit innovative and creative responses by those who carry out budgets.

Budgeting, which is inextricably interrelated with all other aspects of planning as well as management decision making, organizing, directing, and controlling, involves (a) uncovering problems and opportunities, (b) setting budget objectives, (c) establishing budget premises, (d) determining alternative courses of action, (e) evaluating alternative courses of action, (f) choosing an alternative, and (g) implementing the budget. The budget model developed in this study is particularly useful in steps d, e, and f.

Multidimensional in nature, effective comprehensive budgeting (a) is affected by planning for all other degrees of futurity (the horizontal dimension of planning), (b) occurs within the overall framework of the organization's overall objectives and specific goals (vertical dimension of planning), (c) requires continuous interaction and feedback between exploratory forecasting and normative forecasting (time and causality dimension of planning), and (d) necessitates interaction and feedback between comprehensive budgeting and the activities taken to implement the budget (the action dimension of planning).

As the above indicates, the budgetary process is complex and can be viewed and analyzed on numerous dimensions. Robert Anthony has developed a useful conceptual framework which incorporates the systems approach and provides a basis for classifying decisions according to three types:

1. Strategic planning is the process of deciding on objectives of the organization, on changes in these objectives, on the resources used to attain these objectives, and on the policies that are to govern the acquisition, use, and disposition of these resources.¹
2. Management [planning and] control is the process by which managers assure that resources are obtained and used effectively and efficiently in the accomplishment of the organization's objectives.²
3. Operational [planning and] control is the process of assuring that specific tasks are carried out effectively and efficiently.³

Comprehensive budgeting is primarily involved in planning decisions at the second level of the planning hierarchy, the management planning and control level. Table XI, page 199, summarizes the characteristics of decisions at this level of the planning hierarchy.

TABLE XI
 CHARACTERISTICS OF ANTHONY'S MANAGEMENT PLANNING
 AND CONTROL DECISIONS

Purpose of Planning Level-----	Implement the overall objectives and goals as established through strategic planning.
Output-----	Comprehensive budget.
Kast and Rosenzweig Managerial Level---	Occurs primarily at the organizational (middle) level of the organization; the managerial level primarily concerned with the integration of given resources to the technical (lower) level of the organization.
Time Horizon-----	Current operations: week, month, year.
Focus of Plans-----	Entire organization.
Judgment-----	Relatively less than strategic planning.
Degree of Structure-----	Decisions tend to be recurring and rhythmic in nature.
Purpose of Estimates-----	Leads to desired results.
General Source of Data-----	Internal.
Degree of Accuracy-----	Relatively more precise than strategic decisions.
Source Discipline-----	Social psychology.
Persons Primarily Involved-----	Top and line management.
Number of Persons Involved-----	Typically involve large number of persons.
Communication-----	Relatively difficult.
Costs-----	Managed costs.

Source: Adapted primarily from Robert N. Anthony, Planning and Control Systems: A Framework for Analysis (Boston, 1965). Also, Sherman C. Blumenthal, Management Information Systems: A Framework for Planning and Development (Englewood Cliffs, 1969).

Development of Computerized Budget Model

The development of the computerized budget model involved three phases. The first involved careful definition of the output of the budget model by examining contemporary accounting and budget textbooks to determine the kinds of budget schedules usually produced. As a result of this study, 24 sets of budget schedules were designed (see Table VIII, pages 184 and 185, for budget report titles and Appendix C for examples of each budget schedule).

The second phase involved the development of the computerized program. This program, written in COBOL, is presented in Appendix B. Every effort was made to make data input as easy as possible and to allow users to revise or change the basic budget variables quickly. A complete users manual is presented in Appendix A.

Finally the budget model was tested. Because of limited financial resources, the researcher was unable to secure the data of actual small manufacturing companies and, therefore, realistic hypothetical data was developed to include numerous real world situations.

Results of Study

As a result of this study, a computerized budget model has been developed which is consistent with the overall framework summarized above. This computerized budget model can, at minimum cost and loss of time, assist decision makers (students and managers) in evaluating the consequences of alternative courses of action involving the operations of small manufacturing companies, formal organizations, and complex systems. Because of the flexibility provided by the computerized budget

model, users can investigate numerous alternatives and as a result make more informed, hopefully, better decisions.

As indicated in Table XII, the model developed in this study is a case-study, predictive, deterministic, symbolic, dynamic model. Further, as summarized in Table XIII, page 202, the budget model and resulting schedules assume (1) a segment approach, (2) a direct cost approach, and (3) a contribution approach to the budgetary process.

TABLE XII
TYPE OF MODEL CHOSEN

Type	Definition
Case-Study	A model which allows users to view the implications of two or more alternative courses of action. It is assumed that they search through alternative courses of action until a satisfactory solution is found. Also referred to as a heuristic or simulation model.
Predictive	A model which signifies that if <u>this</u> occurs then <u>that</u> will follow--thus permits asking "what if" questions.
Deterministic	For a given set of inputs the model generates a unique solution.
Symbolic	A model which allows decision makers to convert interrelationships and interdependencies to mathematical equations.
Dynamic	Time is treated as interdependent variable.

TABLE XIII
CHARACTERISTICS OF BUDGET MODEL

Characteristic	Definition
Segment Approach	Revenues and expenses are traced to planning segments thus permitting the assessment of <u>what</u> is responsible for each item of revenue and cost.
Direct Cost Approach	Only those costs that can be traced to a planning segment are identified with that segment. Direct costs which can be variable or fixed, exist because the segment exists and would disappear if the segment disappeared.
Contribution Approach	The comprehensive budget separates variable costs from fixed costs in order to focus on the contribution produced by the various revenue generating segments.

Recommendations for Further Research

As previously stated, model building is an evolutionary process, that is, a process of enrichment and elaboration. The computerized budget model developed in this study was designed so that it would be flexible, adaptable, and useful to: (1) any educator teaching the budgetary process in university management, finance, or accounting courses and (2) the managers of any small manufacturing company. In addition, the model was designed so that it could be adaptable to any computer facility with a COBOL compiler.

This model represents a basic building block for educators and the managers of small companies. Additional research could involve

modifications which would in many cases enhance its usefulness for the specific needs of educators and the managers of small companies. The following are a few suggestions for refinement: (a) an economic order quantity (EOQ) model could be incorporated, (b) automatic simulation of the basic budget variables could be built into the model (this would necessitate programming a routine to automatically increment basic budget variables by a certain percentage for a certain number of times), (c) probability estimates could be built in, and (d) forecasting models could be incorporated.

Conclusions

This study represents an effort to develop a computerized budget model permitting decision makers to evaluate the consequences of alternative courses of action at minimum cost and loss of time. Two particular types of users were considered in developing the model: (1) university students studying the budgetary process in management, finance, and accounting courses, and (2) the managers of small manufacturing companies.

In order to establish a setting in which the budgetary process and the comprehensive budget could be examined, the behavioral characteristics of formal organizations and the role and functions managers perform within such organizations were studied. The systems approach to the study of organization and management was selected for purposes of this study as it permitted the integration of the numerous, often conflicting, ideas, concepts, and approaches to the study of organizations and management.

Models are the basic operating tool of decision makers utilizing the systems approach. Model building is an evolutionary process of elaboration and refinement. Therefore, the researcher began with a simple model and then refined it until a generalized model of a typical small manufacturing company was developed. This model, which provides the basic framework for the computerized budget model, views the small manufacturing company as a dynamic, ever-changing system which is a subsystem of larger systems in the environment and a complex of inter-related and interdependent segments or parts. Such a system transforms scarce economic resources (inputs) into final products (output).

Management is the all pervasive force within small manufacturing companies which coordinates the activities of numerous interrelated and interdependent segments or parts and relates them to the environment in order to achieve the organization's goals and objectives. In fulfilling their responsibilities, managers perform certain major activities, the most pervasive of which is planning. This study was concerned with a particular aspect of the planning process, that is, those activities involved in developing the comprehensive budget.

The budget model developed in this study is a case-study, deterministic, predictive, symbolic, and dynamic model, which takes a planning segment, direct cost approach to the planning process. The budget model, which was written in COBOL, emphasizes the contribution approach and generates up to 24 sets of budget schedules.

FOOTNOTES

¹Anthony, p. 16.

²Ibid., p. 27.

³Ibid., p. 69.

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APPENDIXES

APPENDIX A

USERS MANUAL FOR BUDGET MODEL

Introduction

The purpose of this appendix is to provide potential users with the necessary instructions for utilizing the budget model developed in this study. As stated in the introductory chapter the primary group of users is hypothesized to be students studying the budgetary process in university finance, management, and accounting courses. Therefore, this appendix is developed on the premise that it could be readily adapted to the classroom situation. The model was also developed with a second group of users in mind, the managers of small manufacturing firms. It is assumed that this group of users will also find this appendix useful in applying the budget model in their particular firms.

The assumed typical small manufacturing company, the Hypothetical Corporation, will be used for illustrative purposes in this appendix (see page 70 for a discussion).

Characteristics of Budget Model

Before discussing the data input cards, the user should be aware of the following characteristics of the budget. The model assumes: (1) a segment approach (see pages 173 to 177), (2) a direct cost approach (see pages 177 and 178), and (3) a contribution approach (see pages 183 to 187). Users of this budget model must acquire a thorough knowledge of the organization for which the budget is being prepared in order that they may assign revenues and expenses to responsible planning segments. An organization chart is often used to depict the authority-responsibility relationships of a business entity. However, in using an organization chart, users should be aware of continuing changes:

Because organizations are dynamic, ever-changing enterprises, the organization chart must be frequently updated to reflect the current organization structure. The formal organization chart produced by the company personnel department provides a starting point, but this chart should not be used as the foundation of the responsibility accounting (planning) system until it has been compared with the existing organization.¹

Developing Budget Variables

"Bottom Up Approach"

In deriving the necessary budget data it is suggested that the user take a "bottom up approach," i.e., that the user identify and project all revenues and expenses traceable to the lowest levels of the organization and then work up through the hierarchy to the highest level identifying and projecting the additional expenses at each step. For example, in deriving the budget data for the marketing function segments the managers of the Hypothetical Corporation identify and estimate the revenues and expenses traceable to each organization and product segment at the lowest level of the organization--the salesperson level (see Figure 4, page 72). Next, these managers identify the additional expenses expected for each organization and product segment at the next highest level of the organization--the sales territory level. Finally, the managers identify any additional costs traceable to the marketing function and product segments at the highest marketing function level. The "bottom up approach" is also suggested for deriving the budget variables for the production function and other administrative segments.

Organization Chart Approach

The user may also find the "organization chart approach" useful in

deriving the necessary budget variables. Using this approach the user first determines the organization structure of the firm for which the budget is being prepared and sets up a worksheet on a large piece of paper depicting the authority-responsibility relationships in the form of an organization chart. As projected revenues and expenses are derived they are recorded directly on this worksheet beside the box depicting the responsible organization segment. The necessary budget variables can be accumulated quickly using this method and the user is less likely to overlook a planning segment.

Garbage In, Garbage Out

In the planning process, the adage "garbage in, garbage out" is meaningful. The success of the budgetary process often depends upon the time, effort, experience, judgment, and cooperation of the management team in developing the basic budget variables. The output of the budget model is only as good as the data input into the model. If data is input without sufficient consideration, the output will be meaningless or "garbage." The purpose of the budget model developed in this study is to provide the user with a tool for developing a complete set of budgets at minimum cost and loss of time given the basic budget variables. The accuracy and speed of the mathematical calculations provided by the computerized budget model in no way overcomes the inadequacies of inadequate data input. The quality of the budget output is definitely dependent upon the quality of the budget input provided by the user.

Importance of Accurate Coding²

The user is cautioned to take adequate precautions to insure accurate coding. If input data are inaccurately coded the most careful consideration and deliberation on the part of management in developing the basic budget variables will be voided. For example, if management estimates that the company will sell 100,000 units of product Red in January but this is inaccurately coded as 10,000 units the computerized budget model will read the data as given (10,000 units) and develop the budgets accordingly.

Data Input Cards

The user should be familiar with the following general characteristics of the data input cards as used in this model.

Card Code

Each type of data input card is identified by an unique card code. For example, the "Raw Materials Detail Card" has a card code of "14" and the "Product Detail Card" has a card code of "16." The purpose of this card code is to identify the information being input into the model. The first two columns of every data input card is reserved for the card code. In this dissertation individual types of cards will frequently be referred to by this identification after first being defined. For example, the "Raw Materials Detail Card" may be referred to as the "16-card."

Other Budget Variables

Budget variables that are used on more than one data input card will be placed in the same column(s) on each card. For example, the product number will always be located in columns 3 and 4, the level 2 sales segment number will always be input in columns 5 and 6, and the segment name will always be input in columns 9 through 34.

Sequence of Data Input Cards

In order to conserve computer working storage space, the model has been designed on the premise that data input cards will be submitted in a specific sequence. For example, it is assumed that the "Start Up Card" will always be the first data input card. Further, it is assumed that the "Product Name Card" will always precede the "Product Desired Ending Inventory Card." If the data input cards are not submitted in the sequence specified, the model will not function properly.

Numeric Data

COBOL requires that any data read into a numeric field must be a numeral. A blank is not interpreted as a zero in COBOL. In an attempt to provide the user with greater flexibility in coding, however, the model has been designed to examine all numeric fields and replace all spaces with zeros. The model has also been designed to test for numeric data as it is read in. If non-numeric data is read into a numeric field, a program error routine will print out the data card as read with a message for the user to check the non-numeric data.³ The program will be terminated at that point.

In coding it is important for the user to distinguish between the numerical zero (a Ø punch) and the alphabetic character "0" (an 11-6 punch). In this paper the numerical zero will be noted as "Ø" whereas the alphabetic letter will be referred to as "0".

Coding Instructions

The following sections of this appendix will present detailed instructions to assist the user in coding the necessary budget data input cards. These instructions will be consistent with the following.

1. The column numbers presented will be all inclusive. For example, in describing the preparation of the "Start Up Card," the user will be instructed to insert the number of products manufactured and sold by the firm in columns 40 and 41. As a matter of convenience this column detail will be presented in the appendix as columns "4Ø-41."

2. All numeric data should be right justified. For example, if the firm manufactures seven products, this data should be inserted on the "Start Up Card" as follows:

4Ø	41
Ø	7

As an alternative column 4Ø could be left blank. The budget model would in this case automatically insert the necessary zero. The user is again cautioned to take adequate precautions to insure accurate coding. If the data was erroneously left justified the budget model would read the data as given and develop the budgets based on the input data of 7Ø products.

Number of Data Input Cards

The number and variety of cards that must be prepared in order to generate the desired budget depends upon the complexity of the organization for which the budget is being prepared and the output desired by management. Certain data cards will always be required while others are optional at the discretion of the user.

Data Identification Numbers

As an initial step in the coding process the user should identify and number consecutively starting with the number 1 the following budget variables. Since these numbers will be used for identification purposes in developing the budget, it is suggested that the user take adequate precautions to document all work. The variables that require numeric identification are:

- Level 2 Sales Segments,
- Level 3 Sales Segments,
- Production Departments,
- Service Departments (includes production administration),
- Other Administrative Departments,
- Raw Materials, and
- Products.

Table XIV, page 223, presents the above data identification for the Hypothetical Corporation.

Organization of Data Input Instructions

The necessary data is input into the budget model in four main

groups of cards: (1) start up data cards, (2) data cards relating to the marketing function, (3) data cards relating to the production process, and (4) other data cards. The next four sections of this appendix will discuss each of these groups in detail.

TABLE XIV

NUMERIC IDENTIFICATION FOR BUDGET VARIABLES
(HYPOTHETICAL CORPORATION)

<u>Level 2 Sales Segments</u>	<u>Other Administrative Departments</u>
Ø1 Eastern Territory	Ø1 President
Ø2 Western Territory	Ø2 Vice-President of Finance
Ø3 Southern Territory	
	<u>Raw Materials</u>
<u>Level 3 Sales Segments</u>	Ø1 Wood
Ø1 Sam Snead	Ø2 Kit
Ø2 Lawrence Welk	Ø3 Carton
Ø3 Willy Mays	Ø4 Oil Paper
Ø4 Gary Gumbo	Ø5 Styrofoam
Ø5 Jim Jones	Ø6 Glue
Ø6 Paul Harvey	Ø7 Bamboo
Ø7 O. J. Simpson	Ø8 Deluxe Kit
	Ø9 Steel
<u>Production Departments</u>	<u>Products</u>
Ø1 Machinery Department	Ø1 Red
Ø2 Grinding Department	Ø2 Blue
Ø3 Assembly Department	Ø3 Green
<u>Service Departments</u>	
Ø1 Vice-President of Production	
Ø2 Plant Manager	
Ø3 Purchasing Department	
Ø4 Power and Heat Department	
Ø5 Maintenance Department	

Start Up Data Cards

The purpose of this group of cards is to describe the basic parameters of the budget and the organization for which the budget is being prepared. This group of cards includes the following:

<u>Card Code</u>	<u>Card Name</u>
ØA	Start Up Data Card
ØB	Heading Detail Card #1
ØC	Heading Detail Card #2
ØD	Budget Printout Data Card
ØE	Organization Name Card

These cards should be submitted in the above sequence. The ØA-card, the ØD-card, and the ØE-card are necessary data input cards. The ØB-card and the ØC-card on the other hand are used only when the user wishes to use a budget period other than those provided by the model.

Instructions for the preparation of each of the start up data cards is presented in the following section.

Start Up (ØA) Data Card

The purpose of the "Start Up Card" is to input the basic parameters of the organization for which the budget is being prepared. This card must always be the first data input card. However, since this card is a summary of the entire organization, the user may wish to leave it to be coded until the last.⁴ The "Start Up Card" should be prepared as follows:

<u>Column(s)</u>	<u>Budget Variable and Input Instructions</u>
1-2	<u>Card Code</u> --place a "0" in column 1 and an "A" in column 2.
3-7	Leave these columns blank.
8-15	<u>Current Data</u> --place the date (MO/DA/YR) on which the budget is being prepared in these columns. For example, 7/10/77.
16-19	Leave these columns blank.
20-21	<u>Number of Level 2 Sales Segments</u> --insert and right justify the number of level 2 sales segments that will be utilized in developing the budget in these columns. The budget model is designed to input the basic sales data at the level 3 sales segment. Therefore, if only two (organization) levels of sales data are utilized in developing the budget only level 3 sales segments should be used, i.e., there will be no level 2 sales segments. In this case, the user should place zeros in columns 20 and 21 or alternately leave these two columns blank. The maximum number of level 2 sales segments provided for in this budget model is 99.
22-23	<u>Number of Level 3 Sales Segments</u> --insert and right justify the number of level 3 sales segments that will be utilized in preparing the budget in these two columns. Since the basic sales data is input at this level there must be at least one level 3 sales segment. The maximum number of level 3 sales segments provided for is 99.
24-25	<u>Number of Production Departments</u> --insert and right justify the number of production departments involved in the production process in these two columns. Only those departments involved in the physical production of a finished product(s) should be included in this number. Any department necessary to the production process but not directly involved in the physical production of a product(s) should be classified as a service department. For example, the Maintenance Department serves a necessary function in the production process but is not directly involved in the production of a product(s) and is therefore classified as a service department. The maximum number of production departments provided for in this budget model is 20.
26-27	<u>Number of Service Departments</u> --insert and right justify the number of service departments associated with the production process in these two columns. This number should include any administrative offices associated with production. For example, the office of the Vice-President of Production and the office of the Plant Manager should be included and accounted for as service departments. The maximum number of service departments provided for in this model is 10.

<u>Column(s)</u>	<u>Budget Variable and Input Instructions</u>
28-29	Number of Other Administrative Departments--insert and right justify the number of other administrative departments in these two columns. This number should <u>not</u> include any administrative offices relating to the marketing or production functions. The Vice-President of Marketing is built into the budget model. The Vice-President of Production should be input with the production service departments. Only those administrative offices not involved in the marketing or production function should be included in this number. For example, the Vice-President of Finance would be included in this number. The model is not restricted by the number of other administrative departments.
30-39	Leave these columns blank.
40-41	<u>Number of Products</u> --insert and right justify the number of products produced and sold by the manufacturing firm in these two columns. The maximum number of products provided for in the model is 50.
42-44	<u>Number of Raw Materials</u> --insert and right justify the number of raw materials used in the production process in these three columns. The model provides for up to 500 raw materials.
45-49	Leave these columns blank.
50-51	<u>Number of Budget Periods</u> --insert and right justify the number of budget periods required in these two columns. The maximum number of budget periods provided for is 12.
52-53	<u>Initial Budget Period</u> --insert and right justify the initial budget period in these two columns. If the budget is prepared on a monthly basis commencing in January, insert "01" in these two columns. If on the other hand the first budget period is November, insert "11" in these two columns. If the budget is to be prepared on a quarterly basis commencing in the first quarter of 1977, insert "01" in these two columns. If on the other hand the first budget period is the last quarter of 1977, insert "04" in these two columns. If the budget is prepared on a month-quarterly basis, insert the number of the first monthly budget period in these two columns. If the budget is prepared on a yearly basis insert zeros in these two columns or alternatively leave them blank.
54-55	<u>Initial Budget Year</u> --insert and right justify the initial budget year in these two columns. For example, if the year is 1977 the user should insert 77 in these two columns.

Column(s) Budget Variable and Input Instructions

56 Budget Period--insert the budget period desired in this column. The model provides for the following budget periods.

Monthly--if the budget is to be prepared on a monthly basis, insert "1" in column #56. The model will then generate the necessary monthly headings.

Quarterly--if the budget is to be prepared on a quarterly basis, insert "2" in column #56. The model will then generate the necessary quarterly budget headings.

Month-Quarterly--if the user wishes to prepare the budget on a monthly basis for the first quarter and then on a quarterly basis thereafter, insert a "3" in column #56. The model will then generate the necessary budget headings. The model is based on the calendar quarters January through March, April through June, July through September, and October through December. If the user, for example, wants to prepare a budget commencing in July, 1977, on a month-quarterly basis for six budget periods, then code the following:

- a. insert 06 in columns 50-51.
- b. insert 07 in columns 52-53.
- c. insert 77 in columns 54-55.
- d. insert 3 in column 56.

The model would then generate the following headings:

JULY 1977
 AUG. 1977
 SEPT. 1977
 3RD QTR 1977
 4TH QTR 1977
 1ST QTR 1978

If on the other hand, the user wants to prepare a budget on a month-quarterly basis for five budget periods commencing in August, 1977, then code the following data:

- a. insert 05 in columns 50-51.
- b. insert 08 in columns 52-53.
- c. insert 77 in columns 54-55.
- d. insert 3 in column 56.

In this case the model would generate the following budget period headings:

AUG. 1977
 SEPT. 1977
 3RD QTR 1977
 4TH QTR 1977
 1ST QTR 1978

If the user wishes to use some combination of months and quarters other than that provided by the model as outlined above (for example, five months and two quarters) then the "other" budget period should be utilized (see details and explanation below).

Column(s) Budget Variable and Input Instructions

56 Yearly--if the user wishes to prepare the budget on a yearly basis (for example, 1977, 1978, 1979) then a "5" would be inserted in column 56. In this case columns 52-53 could be left blank or zeros could be inserted.

Other--if the user wishes to use a budget period other than those provided by the budget model as outlined above, then insert a "5" in column #56 and prepare Heading Detail Card(s) to name the budget periods desired. For example, if the user wanted to prepare the budget using five monthly and two quarterly budget periods, or six monthly and two semi-annual budget periods, he would choose this option. If the user uses this option, zeros can be inserted in columns 52-55 or alternatively these columns can be left blank.

57-80 Leave these columns blank.

Heading Detail (ØB and ØC) Cards

The purpose of the "Heading Detail Cards" is to name the budget periods desired by the user. These cards are prepared only when a "5" is inserted in column #56 of the "Start Up Card." If more than six budget periods are used in developing the budget, then prepare both cards otherwise prepare only the ØB-card.

The user is allowed 13 spaces for each heading. When coding the heading data center the budget period name in these 13 columns. For example, if the first budget period to be used in developing the budget is named "July 1977" (9 spaces) and this would be centered in columns 3-15 (13 spaces) of the ØB-card as follows:

<u>Columns</u>	<u>Data</u>
3-4	blanks
5-13	July 1977
14-15	blanks

The user should abbreviate the heading so that there is at least one space on each side of the heading.

Heading Detail (ØB) Card #1

Prepare the first "Heading Detail Card" as follows:

<u>Column(s)</u>	<u>Budget Period</u>	<u>Budget Variable and Input Instructions</u>
1-2		<u>Card Code</u> --insert a "Ø" in column 1 and a "B" in column 2.
<hr/>		
		<u>Budget Period Heading</u> --center the heading for each budget period in the columns noted below.
3-15	1	
16-28	2	
29-41	3	
42-54	4	
55-67	5	
68-8Ø	6	

Heading Detail (ØC) Card #2

Prepare the second "Heading Detail Card" only when the number of budget periods is greater than six. When required, prepare this card as follows:

<u>Column(s)</u>	<u>Budget Period</u>	<u>Budget Variable and Input Instructions</u>
1-2		<u>Card Code</u> --insert a "Ø" in column 1 and a "C" in column 2.
<hr/>		
		<u>Budget Period Heading</u> --center the heading for each period desired in the column noted below.
3-15	7	
16-28	8	
29-41	9	
42-54	1Ø	
55-67	11	
68-8Ø	12	

Budget Printout (ØD) Data Card

The purpose of the "Budget Printout Data Card" is to define the budget reports required by the user. Although users are encouraged to

analyze the impact of the plan of action for the organization as a whole, there will be many times in the "trial and error" experimental phase of the planning process when the user will be interested in those aspects of the plan which pose critical constraints on existing resources.⁵ It will usually be useless to generate the entire set of budgets during this phase. Therefore, users are encouraged to familiarize themselves with the entire set of possible budget reports and decide which reports are required at each step of the planning process. In the final phase of the planning process the user will probably want to analyze most of the possible budget reports.

Each column of the "Budget Printout Data Card" relates to a particular budget report (examples of each are presented in Appendix C).

Insert a "1" if the budget report is required and a "0" if not wanted.

Prepare the required "Budget Printout Data Card" as follows:

<u>Column(s)</u>	<u>Budget Variable and Input Instructions</u>
1-2	<u>Card Code</u> --insert a "0" in column 1 and a "D" in column 2.
3-5	Leave these columns blank.
6	<u>Schedule SC-1</u> --a "Standard Cost Sheet" for each product produced by the organization will be generated by the budget model if a "1" is inserted in this column.
7	Leave this column blank.
8	<u>Schedule SB-1</u> --a "Sales Budget in Units of Product" for the organization as a whole will be generated if a "1" is inserted in this column.
9	Leave this column blank.
10	<u>Schedule SB-2</u> --a "Sales Budget in Dollars of Revenue by Product" will be generated as output if a "1" is placed in this column.
11	Leave this column blank.

<u>Column(s)</u>	<u>Budget Variable and Input Instructions</u>
12	<u>Schedule SB-3</u> --a "Sales Budget in Dollars of Revenue by Level 2 Sales Segments" will be generated as output of the budget model if a "1" is placed in this column.
13	Leave this column blank.
14	<u>Schedule SB-4</u> --a "Sales Budget in Dollars of Revenue by Level 3 Sales Segments" will be generated if a "1" is inserted in this column.
15	Leave this column blank.
16	<u>Schedule PRB-1</u> --a "Production Budget--Summary" will be an output of the budget model if a "1" is placed in this column.
17	Leave this column blank.
18	<u>Schedule PRB-2</u> --a traditional "Production Budget" will be generated if a "1" is placed in this column. The traditional format derives planned production by taking projected sales plus desired ending inventory minus beginning inventory.
19	Leave this column blank.
20	<u>Schedule MAT-1</u> --a "Materials Budget" stated in terms of "Unit Requirements" will be compiled if a "1" is placed in this column. The unit requirements presented in this budget will be those used in production as expressed in costing units.
21	Leave this column blank.
22	<u>Schedule MAT-2</u> --a "Materials Budget" stated in terms of "Cost of Materials Used in Production" will be an output of the budget model if a "1" is placed in this column.
23	Leave this column blank.
24	<u>Schedule MAT-3</u> --a "Raw Materials Purchase Budget" expressed in "Units to be Purchased" will be generated if a "1" is placed in this column.
25	Leave this column blank.
26	<u>Schedule MAT-4</u> --a "Raw Materials Purchase Budget" expressed in terms of "Cost of Materials Purchased" will be an output of the budget model if a "1" is placed in this column.
27	Leave this column blank.

<u>Column(s)</u>	<u>Budget Variable and Input Instructions</u>
28	<u>Schedule MAT-5</u> --a traditional "Raw Materials Purchase Budget" will be compiled if a "1" is placed in this column. The traditional format derives units to be purchased by taking units required for production plus desired ending inventory minus beginning inventory.
29	Leave this column blank.
30	<u>Schedule LAB-1</u> --a "Direct Labor Budget" expressed in terms of "Labor Hours Required" will be generated if a "1" is inserted in this column.
31	Leave this column blank.
32	<u>Schedule LAB-2</u> --a "Direct Labor Budget" expressed as "Direct Labor Cost" will be an output of the budget model if a "1" is inserted in this column.
33	Leave this column blank.
34	<u>Schedule OVH-1</u> --a "Factory Overhead Expense Budget" will be generated if the user inserts a "1" in this column.
35	Leave this column blank.
36	<u>Schedule CS-1</u> --a "Constraint Report" will be generated if a "1" is placed in this column. The purpose of this report is to present the number of units of each constraint that will be required in each budget period and to report on whether the maximum number of constraint units available has been exceeded or whether units of the constraint remain unused.
37	Leave this column blank.
38	<u>Schedule CONT-1</u> --a "Projected Income Statement" will be generated if a "1" is inserted in this column.
39	Leave this column blank.
40	<u>Schedule CONT-2</u> --a "Contribution Statement" for each Level 2 Sales Segment will be generated if a "1" is placed in this column.
41	Leave this column blank.
42	<u>Schedule CONT-3</u> --a "Contribution Statement" for each Level 3 Sales Segment will be generated if a "1" is placed in this column.
43	Leave this column blank.

<u>Column(s)</u>	<u>Budget Variable and Input Instructions</u>
44	<u>Schedule CONT-4</u> --a "Contribution Statement" for each product sold by the firm will be generated if a "1" is placed in this column.
45	Leave this column blank.
46	<u>Schedule CONT-5</u> --a "Contribution Statement" for each product sold in every Level 2 Sales Segment will be generated if a "1" is inserted in this column.
47	Leave this column blank.
48	<u>Schedule CONT-6</u> --a "Contribution Statement" for each product sold in every Level 3 Sales Segment will be generated if a "1" is placed in this column.
49	Leave this column blank.
50	<u>Schedule CONT-7</u> --a "Budget of Other Income and Expenses" will be an output of the budget model if a "1" is placed in this column.
51	Leave this column blank.
52	<u>Schedule CB-1</u> --a "Cash Budget" will be an output of the budget model if a "1" is placed in this column.
53-80	Leave these columns blank.

Organization Name (ØE) Card

The purpose of the "Organization Name Card" is to input the name of the organization for which the budget is being prepared. This name will be used in all headings. Prepare this necessary data card as follows:

<u>Column(s)</u>	<u>Budget Variable and Input Instructions</u>
1-2	<u>Card Code</u> --insert a "Ø" in column 1 and a "E" in column 2.
3-42	<u>Organization Name</u> --insert the name of the organization for which the budget is being prepared in these columns. This name will be used in all budget report headings. Center the name in these columns. For example, if the name of the organization is "Hypothetical Corporation" (24 spaces) this would be centered in columns 3-42 (40 spaces) as follows:

Column(s) Budget Variable and Input Instructions

<u>Columns</u>	<u>Data</u>
3-10	spaces
11-34	HYPOTHETICAL CORPORATION
35-42	spaces

43-80 Leave these columns blank.

Marketing Function Data Cards

The purpose of the "Marketing Function Data Cards" is to input projected revenues and expenses relating to the sales activity. In order to conserve computer working storage space the data will be input into the model from "top to bottom," i.e., from the level 1 sales segment through the level 3 sales segment. This is, of course, the opposite direction from which the data was accumulated (see "Bottom Up Approach").

Marketing Fixed Cost Cards

The budget model developed in this study requires that all marketing fixed costs be identified with the planning segment to which they are traceable. Therefore, the first eight columns of each marketing fixed cost data input card are reserved for identification purposes. The remaining columns (9 through 80) are used to input the amount of fixed costs traceable to each budget period. These columns are prepared consistently with the following instructions on all marketing fixed cost data input cards.⁶

In designing the model it was recognized that certain fixed costs (e.g., depreciation, rent, administrative salaries, etc.) are frequently the same amount in each budget period while other fixed costs (e.g., advertising, promotion, etc.) are anticipated to be different amounts

in each budget period. Therefore, two alternative formats for columns 9 through 80 of the marketing fixed cost data input cards are provided.

Format #1. The user will minimize coding time by using format #1 whenever the marketing fixed costs traceable to each budget period are the same amount.⁷ Whenever this format is used prepare columns 9 through 80 as follows:

Column(s) Budget Variable and Input Instructions

- 9-73 Leave these columns blank.
- 74 Period Code--insert an "S" in this column signifying that the amount is the same in all budget periods.
- 75-80 Amount of Traceable Fixed Costs--insert and right justify the amount of traceable marketing fixed costs associated with each of the budget periods in these columns. Round amount to nearest whole dollar. For example, if fixed costs are estimated to be \$7,985 in each budget period then this would be coded as follows:

74	75	76	77	78	79	80
S			7	9	8	5

Alternatively the user could insert zeros in columns 75 and 76.

Format #2. Whenever the marketing fixed costs traceable to each budget period are different, prepare the marketing fixed cost data input card using format #2., preparing columns 9 through 80 as follows:

Column(s) Budget
Period Budget Variable and Input Instructions

- Amount of Traceable Fixed Costs--insert and right justify the amount of marketing fixed costs traceable to each budget period in the columns noted below. Round amount to nearest whole dollar.
- 9-14 1
- 15-20 2
- 21-26 3
- 27-32 4
- 33-38 5
- 39-44 6
- 45-50 7

<u>Column(s)</u>	<u>Budget Period</u>	<u>Budget Variable and Input Instructions</u>
51-56	8	
57-62	9	
63-68	10	
69-74	11	
75-80	12	

Sequence of Marketing Function Data Cards

Input the sales department data cards into the model in the sequence outlined in Table XV, page 237. Coding instructions for the marketing function data cards is presented below.

1. Marketing Fixed Cost Name (1A,1B,1C) Card(s). The budget model has been designed to allow flexibility in naming the marketing fixed costs that are significant for the user's firm. It is possible to use from one to three marketing fixed cost classifications. In order to identify the marketing fixed cost being input into the model, the suffix "A," "B," or "C" will be used for all marketing fixed cost data input cards.

The first fixed cost classification named will be denoted by the suffix "A," the second by the suffix "B," and the third by the suffix "C." The managers of the Hypothetical Corporation decided to use three marketing fixed cost classifications and, therefore, prepare three "Marketing Fixed Cost Name Cards" using the card codes as noted below:

<u>Cost Classification</u>	<u>Card Code</u>
Administration	1A
Promotion	1B
Rent	1C

The managers of another company, on the other hand, find two marketing fixed cost classifications sufficient. Therefore, they

TABLE XV

SEQUENCE OF MARKETING FUNCTION DATA CARDS

Card/Group Name	Details on Page Number	Card Code	Number of Cards	Determining Factors
1. Marketing Fixed Cost Name Card(s)	236-238	1A,1B,1C	1-3	Depends on the number of fixed cost classifications desired by user.
<u>LEVEL 1 SALES SEGMENT</u>				
2. Marketing Product Fixed Cost Cards	238-239	2A,2B,2C	1-3 for <u>each</u> product (max=50)	Depends on the number of fixed cost classifications, number of products and characteristics of fixed cost.
3. Marketing Fixed Cost Card(s)	239-240	3A,3B,3C	1-3	Depends on number of fixed cost classifications and fixed cost characteristics.
<u>LEVEL 2 AND/OR LEVEL 3 SALES SEGMENTS</u>				
4. GROUPS of Sales Segment Cards	240-253	4-9	1-99 GROUPS of cards	Depends on the number of sales levels, the number of sales segments, the number of fixed cost classifications, and the characteristics of the fixed cost.
5. "SS" Card	253			

prepare two "Marketing Fixed Cost Name Cards" using the card codes noted below:

<u>Cost Classification</u>	<u>Card Code</u>
Advertising	1A
Other	1B

The suffixes "A," "B," and "C" will be used consistently for all marketing fixed cost data cards. For example, if Sam Snead estimates that he will expend \$60 in each of the budget periods for advertising, he will put this into the model on a 9B-card. The suffix "B" denoting the cost classification "promotion" (see Hypothetical Corporation example above).

Prepare each "Marketing Fixed Cost Name Card" as follows:

<u>Column(s)</u>	<u>Budget Variable and Input Instructions</u>
1-2	<u>Code Card</u> --insert a "1" in column 1. For the first fixed cost classification insert an "A" in column 2, for the second a "B" and for the third a "C."
3-8	Leave these columns blank.
9-28	<u>Marketing Fixed Cost Name</u> --insert and right justify the name of the marketing fixed cost classification as it will appear on the budgets in these columns. For example, if the managers of the Hypothetical Corporation were to prepare a "Fixed Cost Name Card" for Rent, they would code it as follows:

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	C							R	E	N	T				

29-80 Leave these columns blank.

2. Marketing Product Fixed Cost (2A,2B,2C) Card(s). The purpose of the "Marketing Product Fixed Cost Card(s)" is to input those marketing fixed costs that are traceable to a product at the level 1 sales segment but were not traceable to that same product at a level 2 sales segment or a level 3 sales segment. For the Hypothetical Corporation,

such costs would include the national advertising campaign management plans on initiating to promote the sale of their product Red.

There will be a card or set of these cards for each product to which such costs are traceable.⁸ The model provides for 50 products and three fixed cost classifications and, therefore, 150 of these cards are possible. Input each set of cards in the sequence: A, B, C. The sets of cards should be submitted in product number sequence, i.e., product #1, product #2, . . . , product #n.

Prepare each "Marketing Product Fixed Cost Card" as follows:

<u>Column(s)</u>	<u>Budget Variable and Input Instructions</u>
1-2	<u>Card Code</u> --insert a "2" in column 1. For the first fixed cost classification insert an "A" in column 2, for the second a "B" and for the third a "C."
3-4	<u>Product Number</u> --insert and right justify the number of the product to which such fixed costs are traceable in these two columns. For example, if the management of the Hypothetical Corporation were preparing one of these cards for product Red they would insert a "1" in column 4 (see Table XIV, page 223).
5-8	Leave these columns blank.
9-80	<u>Amount of Traceable Fixed Costs</u> --see instructions on pages 230 to 236 for coding these columns.

3. Marketing Fixed Cost (3A,3B,3C) Card(s). The purpose of the "Marketing Fixed Cost Card(s)" is to input those marketing fixed costs that are traceable to the marketing function but were not traceable to a level 2 sales segment or a level 3 sales segment. For the Hypothetical Corporation such costs would include the salary of the Vice-President of Marketing, the salary of his secretary, the costs involved in maintaining his office, as well as advertising and promotion expenses not traceable to the lower levels of the organization. Because the

model accumulates contribution data by (1) organization segment and (2) product segment, there will be a double counting of the marketing product fixed costs. Therefore, the costs input on this card will include those costs input on the 2A-, 2B-, and 2C-cards.

Prepare one of these cards for each marketing fixed cost classification that is appropriate. There will be a maximum of three of these cards prepared. Prepare each of the "Marketing Fixed Cost Cards" as follows:

<u>Column(s)</u>	<u>Budget Variable and Input Instructions</u>
1-2	<u>Card Code</u> --insert a "3" in column 1. For the first fixed cost classification insert an "A" in column 2, for the second a "B" and for the third a "C."
3-8	Leave these columns blank.
9-80	<u>Amount of Traceable Fixed Costs</u> --see instructions on pages 234 to 236 for these columns.

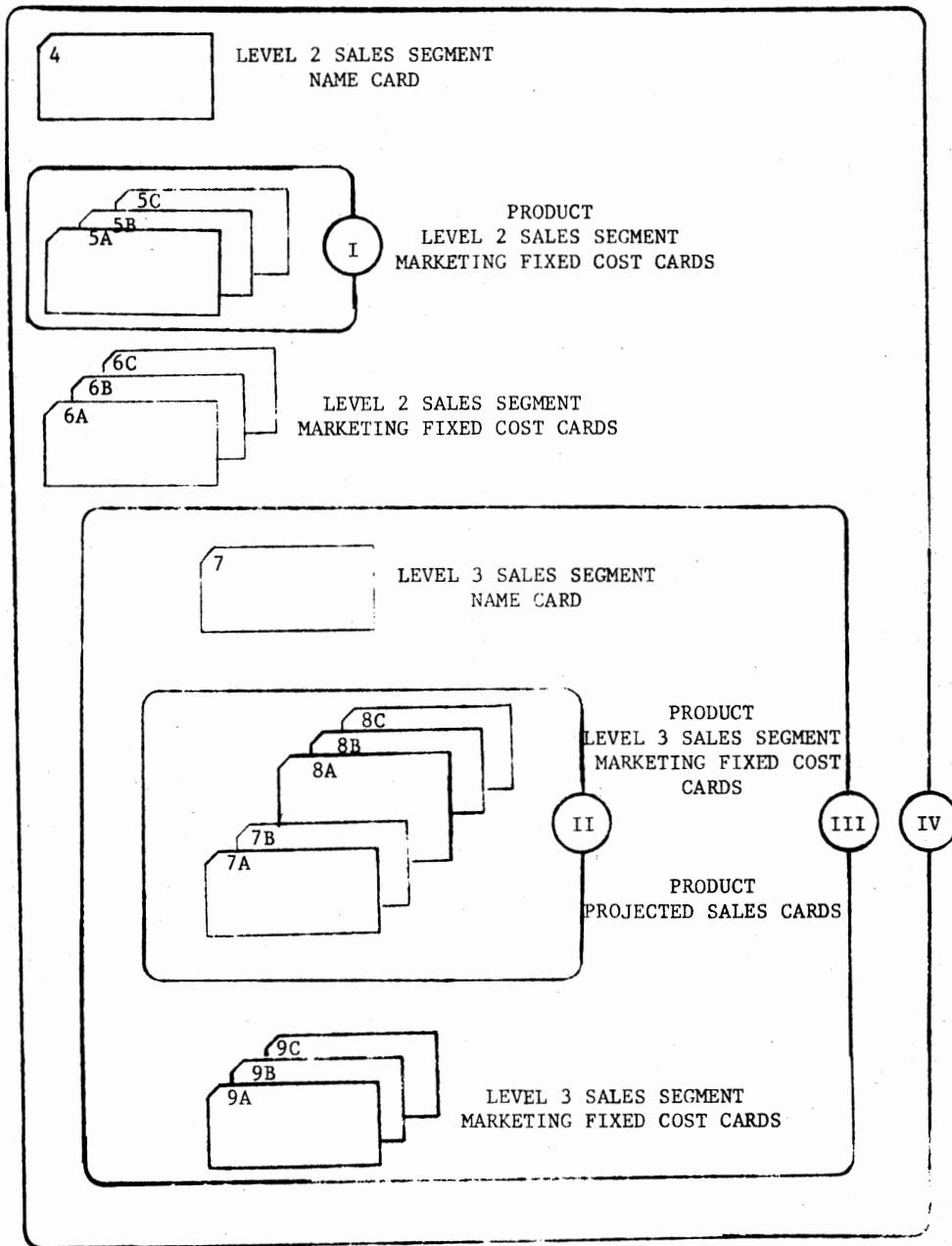
4. Groups of Sales Segment Cards. If three levels of marketing organization segments are utilized in developing the budget, input groups of level 2 sales segment cards at this point. If on the other hand, only two levels of marketing organization segments are used then the user should prepare groups of level 3 sales segment cards.⁹ The groups of sales segment cards will be discussed in detail below.

Groups of Level 2 Sales Segment Cards. When three levels of sales segments are utilized in developing the budget, prepare a group of data input cards for each level 2 sales segment and input them into the budget model in the sequence outlined in Table XVI, page 241, and Figure 13, page 242. The groups of cards should be input into the model in level 2 sales segment number sequence. For example, the Hypothetical

TABLE XVI

SEQUENCE OF EACH GROUP OF LEVEL 2 SALES SEGMENT CARDS

Card/Group Name	Details on Page Number	Card Code	Number of Cards	Determining Factors
<u>LEVEL 2 SALES SEGMENT</u>				
4.1 Level 2 Sales Segment Name Card	243-244	4	1	None.
4.2 Level 2 Marketing Product Fixed Cost Card(s)	244-245	5A,5B,5C	1-3 for each product (max=150)	Depends on the number of fixed cost classifications, number of products, and characteristics of fixed cost.
4.3 Level 2 Marketing Fixed Cost Card(s)	245	6A,6B,6C	1-3	Depends on the number of fixed cost classifications and fixed cost characteristics.
<u>LEVEL 3 SALES SEGMENTS</u>				
4.4 GROUPS of Level 3 Sales Segment Cards	245-252	7-9	1-99 GROUPS of cards	Depends on the number of level 3 sales segments within the group.



- I II There will be a set of these cards for each product to which fixed costs can be traced.
- III There will be a set of these cards for each Level 3 Sales Segment within the Level 2 Sales Segment.
- IV There will be a set of these cards for each Level 2 Sales Segment.

Figure 13. Sequence of Each Group of Level 2 Sales Segment Cards

Corporation submits the group of cards for the Eastern Territory first then the cards for the Western Territory, and finally the cards for the Southern Territory (for identifying level 2 sales segment number see Table XIV, page 223). Instructions for the necessary data input cards for each level 2 sales segment is presented below.

4.1. Level 2 Sales Segment Name (4) Card. The first card submitted for each level 2 sales segment group is the "Level 2 Sales Segment Name Card." All data cards relating to the level 2 sales segment named will be input behind the 4-card. This includes the data input cards for the level 3 sales segments within the level 2 planning segment. For example, the data input cards for Sam Snead and Lawrence Welk will be input with the data cards for the Eastern Territory.

Prepare each "Level 2 Sales Segment Name Card" as follows:¹⁰

<u>Column(s)</u>	<u>Budget Variable and Input Instructions</u>
1-2	<u>Card Code</u> ---leave column 1 blank and insert a "4" in column 2. ¹¹
3-4	Leave these columns blank.
5-6	<u>Level 2 Sales Segment Number</u> ---insert and right justify the identifying number of the level 2 sales segment in these columns. This unique identifying number should have been derived as the initial step of the coding process (see page 222). If the management of the Hypothetical Corporation were preparing a 4-card for the Eastern Territory, they would insert a "1" in column 6 (see Table XIV, page 223).
7-8	Leave these columns blank.
9-34	<u>Level 2 Sales Segment Name</u> ---insert and left justify the name of the level 2 sales segment in these columns. Place the name on the card in exactly the way it is to be printed on the budget schedules. If the management of the Hypothetical Corporation were preparing a 4-card for the Eastern Territory they would code it as follows:

9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
E	A	S	T	E	R	N		T	E	R	R	I	T	O	R	Y	

Column(s) Budget Variable and Input Instructions

35-80 Leave these columns blank.

4.2. Level 2 Marketing Product Fixed Cost (5A,5B,5C) Card(s). The purpose of the "Level 2 Marketing Product Fixed Cost Card" is to input those marketing fixed costs that are traceable to a product at the level 2 sales segment but were not traceable to the same product at a level 3 sales segment. Prepare a card or set of these cards for each product to which such marketing fixed costs are traceable. Since the budget model provides for a maximum of three marketing fixed cost classifications and 50 products, 150 of these cards are possible. Each set of cards should be input in the sequence: A, B, C. The sets of cards should be submitted in product number sequence.

If the manager of the Western Territory was planning to initiate a special advertising campaign to promote the sale of product Blue in the Western Territory he would prepare a 5B-card. Each "Level 2 Marketing Product Fixed Cost Card" should be prepared according to the following instructions:

Column(s) Budget Variable and Input Instructions

- 1-2 Card Code--insert a "5" in column 1. For the first fixed cost classification insert an "A" in column 2, for the second a "B" and for the third a "C."
- 3-4 Product Number--place the product number of the product to which the such fixed costs are traceable in these two columns. If for example, the management of the Hypothetical Corporation were preparing a 5B-card for product Blue they would insert a "2" in column 4 (see Table XIV, page 223).
- 5-6 Level 2 Sales Segment Number--insert the level 2 sales segment number in these two columns. For example, if the Hypothetical Corporation personnel were coding a 5B-card for the Western Territory they would insert a "2" in column 6 (see Table XIV, page 223).

<u>Column(s)</u>	<u>Budget Variable and Input Instructions</u>
7-8	Leave these columns blank.
9-80	<u>Amount of Traceable Fixed Costs</u> --see instructions on pages 234 and 236 for these columns.

4.3. Level 2 Marketing Fixed Cost (6A,6B,6C) Card(s). The purpose of the "Level 2 Marketing Fixed Cost Card(s)" is to input those marketing fixed costs that are traceable to a level 2 sales segment but were not traceable to a level 3 sales segment. For the Hypothetical Corporation's Western Territory such costs would include the salary of the Territory's manager, the rent on the Territory office, as well as the level 2 marketing product fixed costs identified with the Western Territory (see 6A, 6B, 6C cards above).

One of these cards should be prepared for each marketing fixed cost classification that is appropriate. Since the model provides for a maximum of three marketing fixed cost classifications, a maximum of three cards are prepared according to the following instructions:

<u>Column(s)</u>	<u>Budget Variable and Input Instructions</u>
1-2	Card Code--insert a "6" in column 1. For the first fixed cost classification insert an "A" in column 2, for the second a "B" and for the third a "C."
3-4	Leave these columns blank.
5-6	<u>Level 2 Sales Segment Number</u> --insert the level 2 sales segment number in these columns.
7-8	Leave these columns blank.
9-80	<u>Amount of Traceable Fixed Costs</u> --see instructions on pages 234 to 236 for these columns.

4.4. Groups of Level 3 Sales Segment Cards. When three levels of sales segments are utilized in developing the budget, the user will

prepare a group of data input cards for each level 3 sales segment within the level 2 sales segment. When only two levels of marketing organization segments are utilized, there will be a group of data input cards prepared for each level 3 sales segment. Input each group of level 3 sales segment cards into the budget model in the sequence outlined in Table XVII, page 247. The user may also refer to Figure 13, page 242 (the cards illustrated in enclosure III represent the group of level 3 sales segment cards). Input the cards into the model in level 3 sales segment number sequence. For the Hypothetical Corporation the group of data input cards for Sam Snead should be input first, followed by the cards for Lawrence Welk, etc. (see Table XIV, page 223).

The instructions necessary for preparing each group of level 3 sales segment cards is presented below.

4.4.1. Level 3 Sales Segment Name (7) Card. The "Level 3 Sales Segment Name Card" is the first card submitted for each level 3 sales segment group. Prepare this card as follows:¹²

<u>Column(s)</u>	<u>Budget Variable and Input Instructions</u>
1-2	<u>Card Code</u> --leave column 1 blank and insert a "7" in column 2.
3-4	Leave these columns blank.
5-6	<u>Level 2 Sales Segment Number</u> --insert and right justify the level 2 sales segment number to which the level 3 sales segment belongs in these two columns. For example, Sam Snead is a salesman in the Eastern Territory. Therefore, on the 7-card prepared for him a "1" would be inserted in column 6 (see Table XIV, page 223).
7-8	<u>Level 3 Sales Segment Number</u> --insert and right justify the number of the level 3 sales segment for which the 7-card is being prepared in these two columns. For Sam Snead a "1" would be inserted in column 8 (see Table XIV, page 223).

TABLE XVII

SEQUENCE OF EACH GROUP OF LEVEL 3 SALES SEGMENT CARDS

Card Name	Details on Page Number	Card Code	Number of Cards	Determining Factors
4.4.1 Level 3 Sales Segment Name Card	246-247	7	1	None.
4.4.2 Level 3 Product Data Cards	247-252			
.1. Projected Sales Data Card(s)	249-251	7A,7B	1-50 sets	Depends on the number of budget periods and the number of products sold by the segment.
.2. Level 3 Marketing Fixed Cost Card(s)	251-252	8A,8B,8C	1-3 for each product (max=50)	Depends on the number of fixed cost classifications, the number of products, and the characteristics of the fixed cost.
4.4.3 Level 3 Marketing Fixed Cost Card(s)	252-253	9A,9B,9C	1-3	Depends on the number of fixed cost classifications, and fixed cost characteristics.

Column(s) Budget Variable and Input Instructions

- 9-34 Level 3 Sales Segment Name--insert and right justify the name of the level 3 sales segment in these columns. Place the name on the card in the way it is to appear on the budget schedules.
- 35-37 Transportation Variable Cost Rate--insert the expected transportation-out per sales dollar in these columns. The implied decimal point is between columns 34 and 35. For example, if Sam Snead estimates that transportation-out will be 2 percent of sales then this data would be coded as follows:
- | | | |
|----|----|----|
| 35 | 36 | 37 |
| Ø | 2 | Ø |
- 38-40 Commissions Variable Cost Rate--insert the expected variable cost rate for commissions in these columns. Express the expected commissions as a percentage of sales. For example, if the Hypothetical Corporation expects to pay Sam Snead a 5 percent commission on all sales that he makes this data would be coded as follows:
- | | | |
|----|----|----|
| 38 | 39 | 40 |
| Ø | 5 | Ø |
- The implied decimal point for the variable cost rate for commissions is between columns 37 and 38.
- 41-43 Other Marketing Variable Cost Rate--express any marketing variable costs other than transportation and commissions as a percentage of sales and place in these columns. The implied decimal point is between columns 40 and 41. The Hypothetical Corporation does not expect any other marketing variable costs for Sam Snead and, therefore, leaves these columns blank.
- 44-80 Leave these columns blank.

4.4.2 Level 3 Product Data Cards. For each product sold by the level 3 sales segment submit the following set of cards (as required) in the sequence noted below (see the cards illustrated in "II," Figure 13, page 242).

<u>Card Code</u>	<u>Card Name</u>
7A	Projected Sales Data Card #1
7B	Projected Sales Data Card #2
8A	Level 3 Marketing Product Fixed Cost Card #1
8B	Level 3 Marketing Product Fixed Cost Card #2
8C	Level 3 Marketing Product Fixed Cost Card #3

The sets of level 3 product data cards should be input into the budget model in product number sequence. Instructions for preparing each of the level 3 product data cards is presented below. Since the identifying variables (product number, level 2 sales segment, and level 3 sales segment number) are identical on each card in the set, they will be discussed in detail with the 7A-card instructions only.

.1. Projected Sales Data (7A) Card #1. The purpose of the "Projected Sales Data Card #1" is to input the number of units of product the level 3 sales segment expects to sell in the first six budget periods and the selling price he expects to receive for each unit.¹³ Submit a 7A-card for each product that the segment expects to sell. If for example, Sam Snead does not expect to sell any units of product Green until the seventh budget period it will still be necessary to submit a 7A-card with the card code and expected selling price--otherwise the model will not function properly. Prepare each 7A-card as follows:

<u>Column(s)</u>	<u>Budget Period</u>	<u>Budget Variable and Input Instructions</u>
1-2		<u>Card Code</u> --place a "7" in column 1 and an "A" in column 2.
3-4		<u>Product Number</u> --insert and right justify the identifying product number for these columns. If for example, the Hypothetical Corporation were preparing a 7A-card for product Green they would insert a "3" in column 4 (see Table XIV, page 223).

<u>Column(s)</u>	<u>Budget Period</u>	<u>Budget Variable Input Instructions</u>												
5-6		<u>Level 2 Sales Segment Number</u> --insert and right justify the level 2 sales segment identifying number in these columns. For example, if the card were being prepared for O. J. Simpson, a salesman in the Southern Territory, a "3" would be inserted in column 6 (see Table XIV, page 223).												
7-8		<u>Level 3 Sales Segment Number</u> --insert and right justify the number used to identify the level 3 sales segment in these columns. For O. J. Simpson, a "7" would be inserted in column 8 (see Table XIV, page 223).												
9-32		Leave these columns blank.												
33-38		<u>Unit Selling Price</u> --insert the expected selling price per unit in these columns. The implied decimal point is between columns 36 and 37. For example, if O. J. Simpson plans on selling each unit of Green for \$95.50, this data would be coded as follows: <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>33</th> <th>34</th> <th>35</th> <th>36</th> <th>37</th> <th>38</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td>9</td> <td>5</td> <td>5</td> <td>0</td> </tr> </tbody> </table>	33	34	35	36	37	38			9	5	5	0
33	34	35	36	37	38									
		9	5	5	0									
		<u>Projected Sales in Units</u> --insert and right justify the number of units of product the level 3 sales segment expects to sell in each of the first six budget periods in the columns noted below.												
39-45	1													
46-52	2													
53-59	3													
60-66	4													
67-73	5													
74-80	6													

If less than six budget periods are used in developing the budget, leave the unused budget periods blank. For example, if the budget were being prepared for only four budget periods, then columns 67 through 80 would be left blank.

.1. Projected Sales Data (7B) Card #2. Prepare the "Projected Sales Data Card #2" whenever the number of budget periods is greater than six, i.e., even though no sales are made during these periods.¹⁴

Prepare this card as follows:

<u>Column(s)</u>	<u>Budget Period</u>	<u>Budget Variable and Input Instructions</u>
1-2		<u>Card Code</u> --place a "7" in column 1 and a "B" in column 2.
3-4		<u>Product Number</u>
5-6		<u>Level 2 Sales Segment Number</u>
7-8		<u>Level 3 Sales Segment Number</u>
9-38		Leave these columns blank.
		<u>Projected Sales in Units</u> --insert and right justify the number of units of the product that the level 3 sales segment expects to sell in periods 7 through 12 in the columns noted below.
39-45	7	
46-52	8	
53-59	9	
60-66	10	
67-73	11	
74-80	12	

.2. Level 3 Marketing Product Fixed Cost (8A,8B,8C) Card(s). The "Level 3 Marketing Product Fixed Cost Card" is designed to input marketing fixed costs that are traceable to a product at a level 3 sales segment. Since three marketing fixed cost classifications are possible, it is possible to have three of these cards for each product. Prepare a card only when it is appropriate. For example, O. J. Simpson plans on promoting the sale of product Green by giving away a free pen whenever a customer purchases 10 units of that product. This level 3 sales segment does not expect to expend monies for administration or rent and, therefore, only a 8B-card would be prepared. Prepare each "Level 3 Marketing Product Fixed Cost Card" as follows:

<u>Column(s)</u>	<u>Budget Variable and Input Instructions</u>
1-2	<u>Card Code</u> --place a "8" in column 1. For the first fixed cost classification insert an "A" in column 2, for the second a "B" and the third a "C."
3-4	<u>Product Number</u>
5-6	<u>Level 2 Sales Segment Number</u>
7-8	<u>Level 3 Sales Segment Number</u>
9-80	<u>Amount of Traceable Fixed Costs</u> --see instructions on pages 234 to 236 for these columns.

4.4.3. Level 3 Marketing Fixed Cost (9A,9B,9C) Card(s). The purpose of the "Level 3 Marketing Fixed Cost Card" is to input those marketing fixed costs that are traceable to a level 3 sales segment. Included in such costs for O. J. Simpson would be the depreciation on the car he drives selling the company's products, travel expenses, and any advertising and promotion expended to promote the sales activity. These costs, of course, would include the level 3 marketing product fixed costs input on the 8A-, 8B-, and 8C-cards. Prepare only those cards that are appropriate as follows:

<u>Column(s)</u>	<u>Budget Variable and Input Instructions</u>
1-2	<u>Card Code</u> --insert a "9" in column 1. For the first fixed cost classification insert an "A" in column 2, for the second a "B" and for the third a "C."
3-4	Leave these columns blank.
5-6	<u>Level 2 Sales Segment Number</u>
7-8	<u>Level 3 Sales Segment Number</u>
9-80	<u>Amount of Traceable Fixed Costs</u> --see instructions on pages 234 to 236 for these columns.

5. "SS" Card. The purpose of the "SS-Card" is to signify the end of the sales department data cards. Prepare this card as follows:

Column(s) Budget Variable and Input Instructions

1-2 Card Code--insert a "S" in column 1 and also in column 2.

3-80 Leave these columns blank.

Production Process Data Cards

The purpose of the "Production Process Data Cards" is to input expenses related to the production process and define any production constraints which would conflict with the sales activity. The data cards relating to the production process are input into the model in the following groups:

1. Production Department Cards
2. Raw Material Cards
3. Product Cards
4. "SS" Card

Each group of cards is discussed in greater detail below.

1. Production Department Cards

For each production department submit the following set of cards (as required) in the sequence noted below:

<u>Ref.</u>	<u>Card Code</u>	<u>Card Name</u>
1.1	10	Production Department Detail Card
1.2	11	Fixed Cost Card
1.3	12	Constraint Card
1.4	13	Semifixed Cost Card(s)

Input the sets of production department cards into the model in production department number sequence. For example, the Hypothetical

Corporation would input the cards for the Machinery Department first, then the Grinding Department, and finally the Assembly Department (see Table XIV, page 223). Coding instructions for each of the production department cards is presented below. Since the identifying budget variables (product number and production department number) are identical, they will be discussed in detail on the 10-card only.

1.1. Production Department Detail. The purpose of the "Production Department Detail Card" is to identify the department and specify the department costs and constraints. Prepare the 10-card as follows:

<u>Column(s)</u>	<u>Budget Variable and Input Instructions</u>
1-2	<u>Card Code</u> --place a "1" in column 1 and "0" in column 2.
3-4	<u>Product Number</u> --use these columns only in the situation where a department produces one product only. In such a situation the costs traceable to the department are also traceable to the product. Whenever a department is involved in the production of more than one product, leave these columns blank or alternatively insert zeros.
5-6	<u>Production Department Number</u> --insert and right justify the number that has been assigned to the production department for identification purposes in these columns. For example, if a 10-card was being prepared for the Machinery Department of the Hypothetical Corporation a "1" would be inserted in column 6 (see Table XIV, page 223).
7-8	Leave these columns blank.
9-34	<u>Production Department Name</u> --insert and left justify the name of the production department in these columns. Input the name in these columns exactly the way it is to appear on the budget schedules.
35-38	<u>Production Department Labor Rate</u> --insert the labor rate per hour in these columns. If the department pays different workers different rates, then insert an average rate per hour in these columns. If laborers are paid on a "piece rate" leave these columns blank. The implied decimal point for the labor rate is between columns 36 and 37. For example, if the department labor

Column(s) Budget Variable and Input Instructions

rate is \$5.95 per hour this data would be coded as follows:

35	36	37	38
	5	9	5

39-42 Piece Rate--insert the rate paid to workers for each piece produced in these columns. If workers are paid on an hourly basis leave these columns blank. The implied decimal point is between columns 40 and 41. For example, if workers are paid \$1.95 per unit this data would be coded as follows:

39	40	41	42
	1	9	5

43-49 Leave this columns blank.

50-53 Variable Overhead Rate--insert the variable overhead rate per overhead unit in these columns. The implied decimal point is between columns 51 and 52. For example, if the Assembly Department has a variable overhead rate of \$1.70 per direct labor hour, this would be coded as follows:

50	51	52	53
	1	7	0

54 Variable Overhead Unit Code--the four most frequently encountered overhead units used in industry have been built into the budget model. These are presented below along with the overhead unit code that should be inserted in column 54.

<u>Overhead Unit Code</u>	<u>Overhead Unit</u>	<u>Budget Printout</u>
1	Direct Labor Hours	DLH
2	Machine Hours	MACH HRS
3	Pounds of Materials	LBS MAT
4	Number of Units	NO UNITS

For example, the Machinery Department of the Hypothetical Corporation uses direct labor hours as its variable overhead unit. Therefore, in coding the 10-card for this department the user inserts a "2." On the budget schedules labor hours will be abbreviated to "DLH."

If management chooses/uses an overhead unit other than those built into the model insert a "5" in column 54 and insert the name of the overhead unit in columns 55-62.

55-62 Variable Overhead Unit Name--these columns will be used only when an overhead unit is used by the department that is different than the overhead unit names built into the model,

Column(s) Budget Variable and Input Instructions

i.e., when a "5" is inserted in column 54. Left justify and abbreviate the name so that it fits into the columns assigned.

- 63-69 Maximum Overhead Units Available--use these columns only when the overhead units are a constraint on the production process. For example, the Machinery Department of the Hypothetical Corporation only has 10,000 machine hours available during each budget period. When production is constrained in terms of overhead units, insert and right justify the maximum overhead units available during each budget period in these columns. For example, the constraint of the Machinery Department would be coded as follows:

63	64	65	66	67	68	69
		1	0	0	0	0

- 70 Number of Semifixed Costs--the model provides for a maximum of three semifixed cost items per department.¹⁵ Insert the number of such semifixed costs in this column. When there are semifixed costs a 13-card is prepared for each such cost.

- 71-73 Leave these columns blank.

- 74 Period Code--use this column only when the fixed costs for the department are the same in each budget period. If the fixed costs are different in each period leave columns 74-80 blank and prepare an 11-card.

If the fixed costs of the department are the same in each budget period insert an "S" in column 74.

- 75-80 Same Amount of Traceable Fixed Costs--use these columns only when the fixed costs of the department are the same in each of the budget periods. Insert and right justify the amount of variable fixed costs to each budget period in these columns. Round amount to nearest dollar. The budget model does not distinguish individual fixed overhead cost items. Therefore, total all fixed costs for the department.

1.2. Production Department Fixed Cost (11) Card. This card should be used when the department's estimated fixed costs for each budget are different (i.e., when columns 74 through 80 of the 10-card are blank). When used prepare this card as follows:

<u>Column(s)</u>	<u>Budget Period</u>	<u>Budget Variable and Input Instructions</u>
1-2		<u>Card Code</u> --insert a "1" in column 1 and also in column 2.
3-4		<u>Product Number</u>
5-6		<u>Production Department Number</u>
7-8		Leave these columns blank.
<hr/>		
		<u>Amount of Traceable Fixed Costs</u> --insert and right justify the amount of fixed costs traceable to the production department in each budget period in the columns noted below. Round amount to nearest whole dollar. The budget model does not distinguish individual fixed cost items. Therefore, the user should total the fixed costs for the department.
9-14	1	
15-20	2	
21-26	3	
27-32	4	
33-38	5	
39-44	6	
45-50	7	
51-56	8	
57-62	9	
63-68	10	
69-74	11	
75-80	12	

1.3. Production Department Constraint (12) Card. The budget model developed in this study has been designed to permit management to measure up to three production constraints other than overhead units. For example, the managers of the Hypothetical Corporation have found that machine hours is the best measure for estimating variable overhead expenses. However, management recognizes that production in the department is constrained by labor hours as well as machine hours. Therefore, management can prepare a 12-card to express the second constraint, direct labor hours. Whenever this card is used a 20-card(s) must also

be prepared for each product produced in the department. When used prepare the 12-card as follows:

<u>Column(s)</u>	<u>Constraint Number</u>	<u>Budget Variable and Input Instructions</u>
1-2		<u>Card Code</u> --insert a "1" in column 1 and a "2" in column 2.
3-4		Leave these columns blank.
5-6		<u>Production Department Number</u>
7-31		Leave these columns blank.

Constraint Code--the model has been set up to include the four most frequently encountered production constraints. These constraints and their associated codes are:

<u>Constraint Code</u>	<u>Constraint Name</u>
1	direct labor hours
2	machine hours
3	pounds of materials
4	number of units

If the user wishes to use a constraint other than those provided by the model, place a "5" in the constraint code column and insert the name in the constraint name columns.

Maximum Units Available--insert and right justify the maximum number of the constraint available in the column noted below.

Other Constraint Name--these columns should be used only when a "5" is inserted in the constraint code column. Abbreviate the constraint name to fit in the columns provided.

<u>Constraint Code</u>	<u>Maximum Units Available</u>	<u>Name of Other Constraint</u>	
33	34-40	41-48	1
49	50-56	57-64	2
65	66-72	73-80	3

Insert the additional constraint data in the columns noted below. Three constraints are provided for in the model. Leave unused constraint columns blank.

1.4. Production Semifixed Cost (13) Card(s). The budget model developed in this study provides for up to three semifixed, or step, costs. For example, the management of the Hypothetical Corporation estimates that if the Machinery Department operates at less than 10,000 machine hours one foreman will be necessary, if the department operates at over 10,000 machine hours but less than 20,000 machine hours they will require two foremen. When semifixed costs are evident insert the number of such semifixed costs in column 70 of the 10-card and prepare the corresponding number of 13-cards. For the Hypothetical Corporation, management anticipates on semifixed cost for the Machinery Department and would, therefore, prepare one 13-card as follows:

<u>Column(s)</u>	<u>Step</u>	<u>Budget Variable and Input Instructions</u>
1-2		<u>Card Code</u> --insert a "1" in column 1 and a "3" in column 2.
3-4		<u>Product Number</u>
5-6		<u>Production Department Number</u>
7-19		Leave these columns blank.
20		<u>Number of Steps</u> --place the number of lump sum changes in the semifixed cost in this column. The model provides for a maximum of five steps. For the Machinery Department, management would insert a "2" in column 20.

High Volume--insert and right justify the highest volume expressed in terms of overhead units in these columns. The high volume for step #1 for the Machinery Department is 10,000 machine hours. The high volume for the second step is 20,000 units. The model has been designed to write an error message if sufficient volume is not provided for on the 13-card. The program will be terminated at that point.

<u>Column(s)</u>	<u>Step</u>	<u>Budget Variable and Input Instructions</u>
		<u>Step Cost</u> --insert and right justify the semi-fixed costs associated with the related step in these columns.
High <u>Volume</u>	Step <u>Cost</u>	Insert the High Volume and Step Cost in the columns noted below.
21-26	27-32	1
33-38	39-44	2
45-50	51-56	3
57-62	63-68	4
69-74	75-80	5

2. Raw Materials Cards

For each raw material held in inventory, prepare the following set of cards (as required) and input into the model in the sequence presented below:

<u>Ref.</u>	<u>Card Code</u>	<u>Card Name</u>
2.1	14	Raw Material Detailed Card
2.2	15	Raw Material Desired Inventory Card

Input the sets of raw materials cards into the model in raw material number sequence. For example, the Hypothetical Corporation will input the raw material card(s) for wood first, then the card(s) for kits, etc. (see Table XIV, page 223). Coding instructions for the raw materials cards are presented below.

2.1. Raw Material Detail. For each raw material held in inventory prepare a "Raw Materials Detail Card" as follows:

<u>Column(s)</u>	<u>Budget Variable and Input Instructions</u>
1-2	<u>Card Code</u> --insert a "1" in column 1 and a "4" in column 2.
3-5	<u>Raw Materials Number</u> --insert and right justify the identifying number for the raw material in these columns. If the Hypothetical Corporation were preparing a 14-card for wood they would insert a "1" in column 5 (see Table XIV, page 223).

Column(s) Budget Variables and Input Instructions

- 6-8 Leave these columns blank.
- 9-34 Raw Materials Name--insert and right justify the name of the raw material in these columns. Insert other information to be printed out on the schedules in these columns (e.g., suppliers stock number).
- 35 Leave this column blank.
- 36-42 Costing Unit--insert and left justify the unit of measure used in developing product standard costs in these columns. Examples of units of measure are ounce/oz., pound/lb., gallon/gal., etc.
 The Hypothetical Corporation's product Red requires four feet of wood. Therefore, the raw material wood is costed by the "foot."
- 43-49 Cost per Costing Unit--insert the cost of each unit of material used for costing purposes in these columns. The implied decimal point is between column 46 and 47. For example, if wood costs the Hypothetical Corporation \$4.00 per foot, this data would be coded as follows:
- | | | | | | | |
|----|----|----|----|----|----|----|
| 43 | 44 | 45 | 46 | 47 | 48 | 49 |
| | | | 4 | 0 | 0 | 0 |
- 50-56 Purchasing Unit--these columns are used whenever a raw material is purchased in a unit of measure that is different from the unit used for costing purposes. For example, a company may purchase a chemical in the gallon or barrel but use ounces for costing purposes. It may purchase another raw material by the ton but find it appropriate to use pounds for costing purposes. If the purchasing unit is the same as the costing unit leave these columns blank.
- 57-62 Cost per Purchasing Unit--insert the amount the user expects to pay for each unit of the raw material purchased in these columns. The implied decimal point is between columns 60 and 61. For example, if the Hypothetical Corporation expects to pay \$12.00 per yard for wood this data would be coded as follows:
- | | | | | | |
|----|----|----|----|----|----|
| 57 | 58 | 59 | 60 | 61 | 62 |
| | | 1 | 2 | 0 | 0 |
- 63-67 Denominator of Conversion Factor--whenever the costing unit is different than the purchasing unit insert and right justify the denominator of the conversion factor (i.e., the relationship) in these columns. The following are some examples:

<u>Column(s)</u>	<u>Budget Variable and Input Instructions</u>		
	<u>Costing Unit</u>	<u>Purchasing Unit</u>	<u>Denominator of Conversion Factor</u>
	Foot	Yard	3
	Ounce	Pound	16
	Sq. Ft.	Sq. Yd.	9
	Pound	Ton	2,000
	Piece	Gross	144
	Piece	Dozen	12

68-73 Units in Beginning Inventory--insert and right justify the number of units of the raw material expected to be in the beginning inventory in these columns.

74 Period Code--if the desired ending inventory of the raw material is the same in each of the budget periods insert a "S" in column 74. Otherwise, leave columns 74-80 blank and prepare a 15-card.

75-80 Same Desired Ending Inventory--if the number of units desired in the ending inventory is the same in each of the budget periods insert and right justify the number of units in these columns.

2.2. Raw Material Desired Ending Inventory (15) Card. Prepare the "Raw Materials Desired Ending Inventory Card" whenever the desired ending inventory is not the same in each budget period. When this card is used prepare it as follows:

<u>Column(s)</u>	<u>Budget Period</u>	<u>Budget Variable and Input Instructions</u>
1-2		<u>Card Code</u> --insert a "1" in column 1 and a "5" in column 2.
3-5		<u>Raw Materials Number</u>
6-8		Leave these columns blank.

Desired Ending Inventory--insert and right justify the number of units of desired ending inventory for each budget period in the columns noted below. The inventory is stated in terms of purchasing units.

9-14	1
15-20	2
21-26	3
27-32	4
33-38	5

<u>Column(s)</u>	<u>Budget Period</u>	<u>Budget Variable and Input Instructions</u>
39-44	6	
45-50	7	
51-56	8	
57-62	9	
63-68	10	
69-74	11	
75-80	12	

3. Product Cards

For each product produced submit the following set of cards (as required) in the sequence noted below:

<u>Ref.</u>	<u>Card Code</u>	<u>Card Name</u>
3.1	16	Product Detail Card
3.2	17	Product Desired Ending Inventory Card
3.3	18-21	Product Standard Cost Cards

Input the set of product cards into the model in product number sequence. For example, the Hypothetical Corporation would input the cards for product Red first, then product Blue, and finally the set of cards for product Green (see Table XIV, page 223). Instructions for coding the necessary data input cards are presented below.

3.1. Product Detail (16) Card. Prepare the "Product Detail Card" as follows:

<u>Column(s)</u>	<u>Budget Variable and Input Instructions</u>
1-2	<u>Card Code</u> --insert a "1" in column 1 and a "2" in column 2.
3-4	<u>Product Number</u>
5-8	Leave these columns blank.
9-34	<u>Product Name</u> --insert and left justify the name of the product in these columns. The user can also include other identifying data (e.g., model numbers, etc.) in these columns. All data inserted in these columns will be output on the schedules.

Column(s)	<u>Budget Variable and Input Instructions</u>
35-67	Leave these columns blank.
68-73	<u>Units of Product in Beginning Inventory</u> --insert and right justify the number of units anticipated in the beginning inventory in these columns.
74	<u>Period Code</u> --if the desired ending inventory is the same in each of the budget periods then insert a "S" in this column. Otherwise leave columns 74-80 blank and prepare a 17-card.
75-80	<u>Same Desired Ending Inventory</u> --if the product's desired ending inventory is the same in all budget periods, insert and right justify the number of units desired in each of the budget periods in these columns.

3.2. Product Desired Ending Inventory (17) Card. Whenever the product desired ending inventory is different in some of the budget periods prepare a "Product Desired Ending Inventory Card" as follows:

Column(s)	<u>Budget Variable and Input Instructions</u>
1-2	<u>Card Code</u> --insert a "1" in column 1 and a "2" in column 2.
3-4	<u>Product Number</u>
5-8	Leave these columns blank.
8-80	<u>Desired Ending Inventory</u> --the instructions for these columns are identical to those for the 15-card (see page 262).

3.3. Product Standard Cost Cards. For each production department through which the product passes, prepare the following set of cards (as required) and submit in the sequence presented below:

<u>Ref.</u>	<u>Card Code</u>	<u>Card Name</u>
3.3.1	18	Product Raw Materials Requirement Card #1
3.3.2	19	Product Raw Materials Requirement Card #2
3.3.3	20	Product Constraint Requirements Card
3.3.4	21	Product Labor and Overhead Requirements Card

Insert the sets of department product standard cost cards into the model in production department number sequence. Coding instructions

for each of the above cards is presented below.

3.3.1. Product Raw Materials Requirement (18) Card. The purpose of the "Product Raw Materials Requirement Card(s)" is to input the raw materials added by the production department and to input the quantity of each raw material required. Each 18- and 19-card provides for seven raw materials. Always submit the 18-card first followed by as many 19-cards as necessary to account for the raw materials added by the production department. For example, if the Machinery Department added 75 raw materials in the production of product Red the company would prepare one 18-card and ten 19-cards. Prepare each 18-card as follows:

<u>Column(s)</u>	<u>Raw Material Added</u>	<u>Budget Variable and Input Instructions</u>
1-2		<u>Card Code</u> --insert a "1" in column 1 and an "8" in column 2.
3-4		<u>Product Number</u>
5-6		<u>Production Department Number</u>
7-14		Leave these columns blank.
15-17		<u>Number of Raw Materials Added</u> --the number of raw materials added by the department will be inserted in these columns. In the above example management would insert the data as follows:

15	16	17
	7	5

Raw Material Number--Insert and right justify the identifying number of the raw material (from Table XIV, page 223) in each of the columns assigned below.

Raw Material Quantity--Insert the quantity of the raw material in the columns assigned below.

Column(s)Budget Variable and
and Input Instructions

For the 18-card, RM = 0. For each card prepared thereafter add 7 to RM. For example on the first 19-card RM will equal 7, for the second 19-card RM will equal 14, etc.

<u>RM #</u>	<u>RM QTY</u>	<u>Implied Decimal</u>	<u>Cumulative Number of RM Added</u>
18-20	21-26	23-24	1 + RM
27-29	30-35	32-33	2 + RM
36-38	39-44	40-41	3 + RM
45-47	48-53	50-51	4 + RM
54-56	57-62	59-60	5 + RM
63-65	66-71	68-69	6 + RM
72-74	75-80	77-80	7 + RM

3.3.2. Product Raw Materials Requirement (19) Card #2. Use the second "Product Raw Materials Requirement Card" whenever the number of raw materials used in a production department is greater than seven. Use as many of these cards as necessary to take care of all the raw materials added by a particular department. Prepare the 19-card as follows:

<u>Column(s)</u>	<u>Budget Variable and Input Instructions</u>
------------------	---

1-2	<u>Card Code</u> --insert a "1" in column 1 and a "9" in column 2.
-----	--

7-17	Leave these columns blank.
------	----------------------------

18-80	<u>Raw Material Number and Quantity</u> --add "7" to RM and use instructions for these columns on the 18-card above.
-------	--

3.3.3. Product Constraint Requirements (20) Card. Prepare a "Product Constraint Requirements Card" only when the production department wishes to measure a constraint other than the overhead unit, i.e., when it uses a 12-card. When this card is used prepare it as follows:

<u>Column(s)</u>	<u>Budget Variable and Input Instructions</u>
1-2	<u>Card Code</u> --insert a "2" in column 1 and a "0" in column 2.
3-4	<u>Product Number</u>
5-6	<u>Production Department Number</u>
7-32	Leave these columns blank.
33-38	<u>Quantity of Constraint #1</u> --insert and right justify the quantity per unit of product produced of the first department constraint in these columns. The implied decimal point is between columns 35 and 36.
39-44	<u>Quantity of Constraint #2</u> --insert and right justify the amount of the second department constraint per unit of product (if any) in these columns. The implied decimal point is between columns 41 and 42.
45-50	<u>Quantity of Constraint #3</u> --insert and right justify the quantity of the third department constraint (if any) required to produce a unit of product in these columns. The implied decimal point is between columns 47 and 48.
51-80	Leave these columns blank.

3.3.4. Product Labor and Overhead Requirements (21) Card. The purpose of the "Product Labor and Overhead Requirements Card" is to input the quantity of each that is required per unit of product. Prepare this card as follows:

<u>Column(s)</u>	<u>Budget Variable and Input Instructions</u>
1-2	<u>Card Code</u> --insert a "2" in column 1 and a "1" in column 2.
3-4	<u>Product Number</u>
5-6	<u>Production Department Number</u>
7-13	Leave these columns blank.
14	<u>Labor Code</u> --insert a "P" in this column if the department uses a piece rate, otherwise leave it blank.
15-20	<u>Labor Hours Required</u> --place the amount of labor required per unit of product in these columns. The implied decimal point is between columns 17 and 18.

<u>Column(s)</u>	<u>Budget Variable and Input Instructions</u>
21-24	Leave these columns blank.
25-30	<u>Variable Overhead Units Required</u> --place the quantity of overhead units required per unit of product in these columns. The implied decimal point is between columns 27 and 28.
31-80	Leave these columns blank.

4. "SS" Card

The purpose of the "SS-Card" is to signify the end of the production department data. Prepare this card according to the instructions on page 253.

Other Data Input Cards

The remaining data input cards are input in the following groups in the specified sequence:

1. Service Department Data Cards
2. Other Administrative Department Data Cards
3. Other Income Data Card(s)
4. Other Expense Data Card(s)
5. Desired Cash Balance Card
6. Other Cash Receipt Card(s)
7. Other Cash Disbursement Card(s)
8. Non-Cash Detail Card(s)
9. Accounts Receivable Detail Card
10. Accounts Payable Detail Card

Each card or group of cards will be discussed in detail below.

1. Service Department Data Cards

For each service department submit the following set of cards (as required) in the sequence outlined below:

<u>Ref.</u>	<u>Card Code</u>	<u>Card Name</u>
1.1	22	Service Department Detail Card
1.2	23	Service Department Fixed Cost Card
1.3	24	Interdepartmental Relationship Card #1
1.4	25	Interdepartmental Relationship Card #2
1.5	26	Service Department Semifixed Cost Card

Input the sets of service department cards in service department number sequence. Instructions for coding each of the cards listed above is presented below.

1.1. Service Department Detail (22) Card. Prepare for each service department in the organization a "Service Department Detail Card" as follows:

Column(s) Budget Variable and Input Instructions

- 1-2 Card Code--insert a "2" in column 1 and also in column 2.
- 3-4 Leave these columns blank.
- 5-6 Service Department Number--insert and right justify the number which identifies the service department in these columns. If a 22-card were being prepared for the Maintenance Department of the Hypothetical Corporation, a "5" would be inserted in column 6 (see Table XIV, page 223).
- 7-8 Leave these columns blank.
- 9-34 Service Department Name--insert and left justify the name of the service department in these columns.
- 35-49 Leave these columns blank.
- 50-53 Variable Overhead Rate--insert the variable overhead rate for the service department in these columns. The implied decimal point is between columns 51 and 52.
- 54-62 Service Unit--insert and left justify the name of the service unit in these columns. In most cases it will be necessary to abbreviate the name to fit in the nine columns. For example, the Maintenance Department of the Hypothetical Corporation might code their service unit as follows:

54	55	56	57	58	59	60	61	62
M	A	I	N	.	H	R	.	

<u>Column(s)</u>	<u>Budget Variable and Input Instruction</u>
63-69	<u>Maximum Service Units Available</u> --insert and right justify the number of service units available during each budget period in these columns.
70	<u>Number of Semifixed Costs</u> --the model provides for a maximum of three semifixed costs. Insert the number that is appropriate for the service department in this column. A 26-card is prepared for each of these semifixed costs.
71-73	Leave these columns blank.
74	<u>Period Code</u> --if the estimated fixed costs in all of the budget periods is the same, then insert a "S" in this column. Otherwise, leave columns 74-80 blank and prepare a 23-card. Round amount to the nearest whole dollar.
75-80	<u>Same Amount of Traceable Fixed Costs</u> --if the service department's fixed costs are the same in all budget periods, insert and right justify the amount in these columns. This amount should be rounded to the nearest whole dollar.

1.2. Service Department Fixed Cost (22) Card. Whenever the service department's fixed costs are different prepare a "Service Department Fixed Cost Card" as follows:

<u>Column(s)</u>	<u>Budget Variable and Input Instructions</u>
1-2	<u>Card Code</u> --insert a "2" in column 1 and a "3" in column 2.
3-4	Leave these columns blank.
5-6	<u>Service Department Number</u>
7-8	Leave these columns blank.
9-80	<u>Amount of Traceable Fixed Costs</u> --the instruction for these columns is identical to those for the 11-card (see page 257).

1.3 Interdepartmental Relationship (24) Card. The purpose of this card is to derive the data necessary to determine the total variable costs for the service department. Prepare the 24-card as follows:

<u>Column(s)</u>	<u>Budget Variable and Input Instructions</u>
1-2	<u>Card Code</u> --insert a "2" in column 1 and a "4" in column 2.
3-4	Leave these columns blank.
5-6	<u>Service Department Number</u>
7-12	<u>Number of Production Departments Served</u> --insert and right justify the number of production departments served by the service department in these columns.
13-14	Leave these columns blank.

For each production department served, the following data will be input in the columns designated below.

Number of Production Departments Served--insert and right justify the identifying number of the production department to which the other variables noted below apply in the columns noted below.

Minimum Service Units--insert and right justify the number of service units required by the production department regardless of the level of production in the columns noted below. For example, the Machinery Department requires that the Maintenance Department clean and oil its machinery every Saturday morning regardless of the level of production.

Relationship--insert and right justify the relationship between the level of production in the producing departments as measured in overhead units and the number of service units required in the columns noted below. For example, the Machinery Department estimates that it will require one service unit for every 50 machine hours.¹⁶

<u>Dept. No.</u>	<u>Min. Serv. Units</u>	<u>Relation-ship</u>
15-16	17-21	22-25
26-27	28-32	33-36
37-38	39-43	44-47
48-49	50-54	55-58
59-60	61-65	66-69
70-71	72-76	77-80

1.4. Interdepartmental Relationship (25) Card #2. Whenever the number of production departments served is greater than six prepare an "Interdepartmental Relationship Card #2" according to the following instructions. Prepare as many of these cards as necessary to take care of all the production departments served. For example, if the service department serves 16 producing departments then it will be necessary to prepare one 24-card and two 25-cards.

<u>Column(s)</u>	<u>Budget Variable and Input Instructions</u>
1-2	<u>Card Code</u> --insert a "2" in column 1 and a "5" in column 2.
3-4	Leave these columns blank.
5-6	<u>Service Department Number</u>
8-14	Leave these columns blank.
15-80	These columns are identical to the 24-card. See above for necessary instructions.

1.5. Service Department Semifixed Cost (26) Card(s). Prepare as many "Service Department Semifixed Cost Cards" as specified in column 70 of the 22-card. Prepare each card as follows.

<u>Column(s)</u>	<u>Budget Variable and Input Instructions</u>
1-2	<u>Card Code</u> --insert a "2" in column 1 and a "6" in column 2.
3-4	Leave these columns blank.
5-6	<u>Service Department Number</u>
7-19	Leave these columns blank.
20-80	<u>Step Cost Data</u> --the data input is identical on the 13-card, therefore, see instructions for these columns on page 259.

2. Other Administrative Department Data Cards

For every administrative department other than those associated

with the marketing function or production function prepare the following set of cards (as required):

<u>Ref.</u>	<u>Card Code</u>	<u>Card Name</u>
2.1	27	Administrative Department Detail Card
2.2	28	Administrative Department Fixed Cost Card

Coding instructions for each card in the set is presented below.

Input the sets of cards in administrative department number sequence.

2.1. Administrative Department Detail (27) Card. Prepare each "Administrative Department Detail Card" as follows:

<u>Column(s)</u>	<u>Budget Variable and Input Instructions</u>
1-2	<u>Card Code</u> --place a "2" in column 1 and a "7" in column 2.
3-4	Leave these columns blank.
5-6	<u>Administrative Department Number</u> --insert and right justify the number which identifies the administrative department in these columns. If a 27-card were being prepared for the Vice-President of Finance for the Hypothetical Corporation, a "2" would be inserted in column 6 (see Table XIV, page 223).
7-8	Leave these columns blank.
9-34	<u>Administrative Department Name</u> --insert and left justify the name of the administrative department in these columns.
35-73	Leave these columns blank.
74	<u>Period Code</u> --if the department fixed costs are identical in each budget period insert a "S" in this column. Otherwise, leave columns 74 through 80 blank and prepare a 28-card.
75-80	<u>Same Amount of Traceable Fixed Costs</u> --when the fixed costs in each budget period are the same insert and right justify the amount of fixed costs traceable to each budget period in these columns. Round amount to nearest whole dollar.

2.2. Administrative Department Fixed Cost (28) Card. Prepare an "Administrative Department Fixed Cost Card" whenever the amount of the traceable fixed costs associated with each budget is different.

Prepare each card as follows:

<u>Column(s)</u>	<u>Budget Variable and Input Instructions</u>
1-2	<u>Card Code</u> --insert a "2" in column 1 and a "8" in column 2.
3-4	Leave these columns blank.
5-6	<u>Administrative Department Number</u>
7-8	Leave these columns blank.
9-80	<u>Amount of Traceable Fixed Costs</u> --the instructions for these columns are identical to those for the 11-card. Therefore, see page 257 for coding instructions.

3. Other Income Data Card(s)

Whenever the user expects to earn other income prepare the following set of cards (as required) and input into the model in the sequence given.

<u>Ref.</u>	<u>Card Code</u>	<u>Card Name</u>
3.1	29	Other Income Data Card #1
3.2	30	Other Income Data Card #2

Insert the sets of other income data cards into the model consecutively in the order the user wishes them to appear on the "Projected Income Statement." Coding instructions for each of the above cards are presented below.

3.1. Other Income Data (29) Card #1. Prepare an "Other Income Data Card #1" for each other income item. This is so even though there may be no other income in the first six budget periods (in this case the user may leave the amount columns blank). Prepare each 29-card as follows:

<u>Column(s)</u>	<u>Budget Period</u>	<u>Budget Variable and Input Instructions</u>
1-2		<u>Card Code</u> --insert a "2" in column 1 and a "9" in column 2.
3-8		Leave these columns blank.
9-34		<u>Other Income Name</u> --insert and left justify the name of the other income item as it is to appear on the income statement and cash budget (if appropriate) in these columns.
35-37		Leave these columns blank.
38		<u>Cash Code</u> --the user should insert a "C" in this column if the other income item will result in a cash inflow in the budget period in which the other income is recognized. If the item will <u>not</u> result in a cash inflow, insert an "N" in these columns. If for some reason the other income item is recognized in one period and the cash inflow results in another budget period place an "N" in this column and an "Other Cash Receipt (34,35) Card(s)" to recognize the receipt of the cash.
		<u>Other Income Amount</u> --insert and right justify the amount of the other income to be recognized in each budget period in the columns noted below. Round amount to nearest whole dollar. If other income is recognized in some but not all budget periods insert zeros for unused periods or leave these columns blank.
39-45	1	
46-52	2	
53-59	3	
60-66	4	
67-73	5	
74-80	6	
		NOTE: Whenever the number of budget periods utilized in developing the budget is greater than six, prepare a 30-card even though the other income item does not affect those periods. In such cases the user need only insert the card code.

3.2. Other Income Data (30) Card #2. Prepare an "Other Income Data Card #2" for every other income item when the number of periods utilized in developing the budget is greater than six. Prepare each 30-card as follows:

<u>Column(s)</u>	<u>Budget Period</u>	<u>Budget Variable and Input Instructions</u>
1-2		<u>Card Code</u> --insert a "3" in column 1 and a "0" in column 2.
3-38		Leave these columns blank.
<u>Other Income Amount</u> --insert and right justify the amount of other income in the columns assigned for each budget period in the columns noted below. Round amount to nearest whole dollar.		
39-45	7	
46-52	8	
53-59	9	
60-66	10	
67-73	11	
74-80	12	

4. Other Expense Data Card(s)

Whenever the user expects to incur expenses that are classified as "Other Expenses" on the income statement, prepare the following set of cards (as required) and input into the model in the sequence noted.

<u>Ref.</u>	<u>Card Code</u>	<u>Card Name</u>
4.1	31	Other Expense Data Card #1
4.2	32	Other Expense Data Card #2

Input the sets of other expense cards into the model in the sequence the user wishes them to appear on the "Projected Income Statement." Coding instructions for each of these cards are presented below.

4.1. Other Expense Data (31) Card #1. Prepare an "Other Expense Data Card #1" for each other expense item as follows:

<u>Column(s)</u>	<u>Budget Period</u>	<u>Budget Variable and Input Instructions</u>
1-2		<u>Card Code</u> --insert a "3" in column 1 and a "1" in column 2.
3-8		Leave these columns blank.

<u>Column(s)</u>	<u>Budget Period</u>	<u>Budget Variable and Input Instructions</u>
9-34		<u>Other Expense Name</u> --insert and left justify the name of the other expense item as it will appear on the schedules in these columns.
35-37		Leave these columns blank.
38		<u>Cash Code</u> --insert a "C" if the other expense item will result in a cash outflow in the period in which the item is recognized for financial statement purposes. If the other expense item is recognized in the financial statement in one period and paid in another period, insert a "N" in this column and prepare an "Other Cash Disbursement Card" for the cash outflow.

<u>Column(s)</u>	<u>Budget Period</u>	<u>Budget Variable and Input Instructions</u>
		<u>Amount of Other Expense</u> --insert and right justify the other expense item as it relates to each of the first six budget periods in the columns noted below. Round amount to nearest whole dollar.
39-45	1	
46-52	2	
53-59	3	
60-66	4	
67-73	5	
74-80	6	

NOTE: Whenever the number of budget periods utilized in developing the budget is greater than six, prepare a 32-card even though the other expense item does not affect those periods. In such cases the user need only insert the card code "32" in the first two columns.

4.2. Other Expense Data (32) Card #2. Prepare an "Other Expense Data Card #2" for every other expense item whenever the number of budget periods is greater than six. Prepare this card as follows:

<u>Column(s)</u>	<u>Budget Period</u>	<u>Budget Variable and Input Instructions</u>
1-2		<u>Card Code</u> --insert a "3" in column 1 and a "2" in column 2.
3-38		Leave these columns blank.

<u>Column(s)</u>	<u>Budget Period</u>	<u>Budget Variable and Input Instructions</u>
		<u>Other Income Amount</u> --insert and right justify the amount of other expense for each budget period in the columns noted below. Round amount to nearest whole dollar.
39-45	7	
46-52	8	
53-59	9	
60-66	10	
67-73	11	
74-80	12	

5. Desired Cash Balance (33) Card

Prepare the "Desired Cash Balance Card" whenever a "Cash Budget" is desired by the user. There are two formats possible for this 33-card. Coding instructions for each format are presented below.

Format #1. This format will save the user coding time whenever the desired ending cash balance is the same in each of the budget periods. When appropriate it is prepared as follows:

<u>Column(s)</u>	<u>Budget Variable and Input Instructions</u>
1-2	<u>Card Code</u> --insert a "3" in column 1 and also in column 2.
3-8	<u>Beginning Cash Balance</u> --insert and right justify the cash balance the user anticipates at the beginning of the budget period in these columns. Round amount to nearest whole dollar.
9-73	Leave these columns blank.
74	<u>Period Code</u> --insert a "S" in this column.
75-80	<u>Same Desired Ending Cash Balance</u> --insert and right justify the desired ending cash balance that is appropriate for all budget periods in these columns. Round amount to nearest whole dollar.

Format #2. This format is used whenever the desired ending cash balance is different for the budget periods.

<u>Column(s)</u>	<u>Budget Period</u>	<u>Budget Variable and Input Instructions</u>
1-2		<u>Card Code</u> --insert a "3" in column 1 and also in column 2.
3-8		Beginning Cash Balance--insert and right justify the anticipated beginning cash balance in these columns. Round amount to nearest whole dollar.
<u>Desired Ending Cash Balance</u> --insert and right justify the amount of cash the user wishes to have on hand at the end of each of the budget periods in the columns presented below. Round amount to nearest whole dollar.		
9-14	1	
15-20	2	
21-26	3	
27-32	4	
33-38	5	
39-44	6	
45-50	7	
51-56	8	
57-62	9	
63-68	10	
69-74	11	
75-80	12	

6. Other Cash Receipt Card(s)

Whenever the user anticipates cash receipts from transactions other than sales transactions, prepare the following set of cards (as required) and input into the model in the sequence presented.

<u>Ref.</u>	<u>Card Code</u>	<u>Card Name</u>
6.1	34	Other Cash Receipt Card #1
6.2	35	Other Cash Receipt Card #2

Submit the sets of other cash receipt cards in the sequence the user wishes them to appear on the "Cash Budget." These cards need not be prepared if the user does not want a cash budget.

When used, prepare these cards as presented below.

6.1. Other Cash Receipt (34) Card #1. Prepare an "Other Cash

Receipt Card #1" for every other cash receipt item or group of items. For example, the Hypothetical Corporation plans on securing a bank loan in the month of July. In this case both a 34-card and a 35-card would be prepared to input this data. Prepare each 34-card as follows:

<u>Column(s)</u>	<u>Budget Period</u>	<u>Budget Variable and Input Instructions</u>
1-2		<u>Card Code</u> --insert a "5" in column 1 and a "4" in column 2.
3-8		Leave these columns blank.
9-34		<u>Other Cash Receipt Name</u> --insert and left justify the name of the other cash receipt in these columns as the user wishes it to appear on the cash budget.
35-38		Leave these columns blank.
		<u>Amount of Other Cash Receipt</u> --insert and right justify the amount of cash expected in each budget period in the columns noted below. Round amount to nearest whole dollar. Unused columns can be left blank.
39-45	1	
46-52	2	
53-59	3	
60-66	4	
67-73	5	
74-80	6	

NOTE: Whenever the number of budget periods utilized in developing the budget is greater than six, prepare a 35-card even though the other cash receipt item does not affect those periods. In such cases the user need only insert the card code in the first two columns.

6.2. Other Cash Receipt (35) Card #2. Prepare an "Other Cash Receipt Card #2" for every other cash receipt item when the number of budget periods used in developing the budget is greater than six.

Prepare each 35-card as follows:

<u>Column(s)</u>	<u>Budget Period</u>	<u>Budget Variable and Input Instructions</u>
1-2		<u>Card Code</u> --insert a "3" in column 1 and a "5" in column 2.
3-38		Leave these columns blank.
		<u>Amount of Other Cash Receipt</u> --insert and right justify the amount associated with each budget period in the columns presented below. Round amount to nearest whole dollar.
39-45	7	
46-52	8	
53-59	9	
60-66	10	
67-73	11	
74-80	12	

7. Other Cash Disbursement Card(s)

Whenever the user anticipates cash disbursements resulting from transactions other than those from the ordinary course of business, prepare the following set of cards (as required) and input into the model in the sequence noted below.

<u>Ref.</u>	<u>Card Code</u>	<u>Card Name</u>
7.1	36	Other Cash Disbursement Card #1
7.2	37	Other Cash Disbursement Card #2

Submit the sets of other cash disbursement cards in the sequence the user wishes them to appear on the "Cash Budget." When required prepare these cards according to the following instructions.

7.1. Other Cash Disbursement (36) Card #1. If the user desires a cash budget, prepare an "Other Cash Disbursement Card #1" for every other cash payment item or group of such items. Prepare each 36-card as follows:

<u>Column(s)</u>	<u>Budget Period</u>	<u>Budget Variable and Input Instructions</u>
1-2		<u>Card Code</u> --insert a "3" in column 1 and a "6" in column 2.
3-8		Leave these columns blank.
9-38		<u>Other Cash Disbursement Name</u> --insert and left justify the name of the other cash disbursement item or group of items as it will appear on the cash budget in these columns.

Amount of Other Cash Disbursements--insert and right justify the amount of the other cash disbursement associated with each budget period in the columns noted below. Round amount to nearest whole dollar.

39-45	1
46-52	2
53-59	3
60-66	4
67-73	5
74-80	6

NOTE: Whenever the number of budget periods is greater than six, a 37-card must be prepared even though the cash disbursement does not affect those periods. In such cases the user need only insert the card code "37" in the first two columns.

7.2. Other Cash Disbursement (37) Card #2. An "Other Cash Disbursement Card #2" must be prepared for every other cash disbursement item whenever the number of budget periods is greater than six. Prepare this card as follows:

<u>Column(s)</u>	<u>Budget Period</u>	<u>Budget Variable and Input Instructions</u>
1-2		<u>Card Code</u> --insert a "3" in column 1 and a "7" in column 2.
3-38		Leave these columns blank.

Amount of Other Cash Disbursement--insert and right justify the amount of the cash disbursement associated with each budget period in the columns noted below. Round amount to nearest whole dollar.

<u>Column(s)</u>	<u>Budget Period</u>	<u>Budget Variable and Input Instructions</u>
39-45	7	
46-52	8	
53-59	9	
60-66	10	
67-73	11	
74-80	12	

8. Non-Cash Detail Card(s)

Whenever a cash budget is required by the user the following card(s) should be prepared to account for those expenses which do not require a cash outflow (e.g., depreciation expense). The budget model developed in this study requires that the user sum the amount of all non-cash expenses associated with each budget period and input this data on the following cards. The expenses referred to are those that result from the ordinary course of business (i.e., the user should not include other expense items).

8.1. Non-Cash Detail (38) Card #1. Prepare the "Non-Cash Detail Card #1" as follows:

<u>Column(s)</u>	<u>Budget Period</u>	<u>Budget Variable and Input Instructions</u>
1-2		<u>Card Code</u> --insert a "5" in column 1 and a "8" in column 2.
3-38		Leave these columns blank.

<u>Column(s)</u>	<u>Budget Period</u>	<u>Amount of Non-Cash Expenses</u> --sum the non-cash expenses associated with each budget period and insert that amount in the columns presented below. Round amount to nearest whole dollar and right justify.
39-45	1	
46-52	2	
53-59	3	
60-66	4	
67-73	5	
74-80	6	

8.2. Non-Cash Detail (39) Card #2. A "Non-Cash Detail Card #2" should be prepared whenever the number of budget periods is greater than six. Prepare the 39-card as follows:

<u>Column(s)</u>	<u>Budget Period</u>	<u>Budget Variable and Input Instructions</u>
1-2		<u>Card Code</u> --insert a "3" in column 1 and a "9" in column 2.
3-38		Leave these columns blank.
<hr/>		
		<u>Amount of Non-Cash Expenses</u> --insert and right justify the total amount of expenses associated with each budget period that does not require a cash outflow in the columns noted below. Round amount to nearest whole dollar.
39-45	7	
46-52	8	
53-59	9	
60-66	10	
67-73	11	
74-80	12	

9. Accounts Receivable Detail (40) Card

Prepare an "Accounts Receivable Detail Card" whenever a cash budget is prepared. The purpose of this card is to input data relating to the cash collection of sales transactions. Prepare the 40-card as follows:

<u>Column(s)</u>	<u>Budget Period</u>	<u>Budget Variable and Input Instructions</u>
1-2		<u>Card Code</u> --insert a "4" in column 1 and a "0" in column 2.
3		Leave this column blank.
<hr/>		
		<u>Amount of Cash Collections of Beginning Accounts Receivable</u> --insert and right justify the portion of the beginning balance of accounts receivable that is expected to be collected in each of the first five budget periods. Round amount to nearest whole dollar. Leave any unused columns blank. For example, the Hypothetical Corporation has a beginning accounts receivable balance of \$36,975. It anticipates collecting \$30,000 of this in the first

<u>Column(s)</u>	<u>Budget Period</u>	<u>Budget Variable and Input Instructions</u>				
		budget period and the remaining \$16,975 in the second budget period. These amounts would be inserted in the columns noted below for periods one and two and the remaining columns 16-33 would be left blank. The user should adjust the beginning balance for anticipated bad debts and include in all the columns noted below only the portion it expects to collect in cash.				
4-9	1					
10-15	2					
16-21	3					
22-27	4					
28-33	5					
34-35		Leave these columns blank.				
36-37		<u>Percentage Credit Sales</u> --insert management's estimate of the percentage of sales that will be made on account in these columns. The implied decimal point is between columns 35 and 36. For example, if the Hypothetical Corporation estimates that 80% of all sales will be credit sales, they would code this data as follows: <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="border: none;">36</td> <td style="border: none;">37</td> </tr> <tr> <td style="border: none;">8</td> <td style="border: none;">0</td> </tr> </table>	36	37	8	0
36	37					
8	0					
38-39		Leave these columns blank.				
40-41		<u>Percentage Bad Debts</u> --place management's estimate of the portion of all sales made on account that will result in bad debts in these columns. The implied decimal point is between columns 39 and 40. For example, if the Hypothetical Corporation estimates that 2% of all sales made on account will prove to be uncollectable, they will insert this data as follows: <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="border: none;">40</td> <td style="border: none;">41</td> </tr> <tr> <td style="border: none;">0</td> <td style="border: none;">2</td> </tr> </table>	40	41	0	2
40	41					
0	2					
42-43		Leave these columns blank.				
44		<u>Anticipated Number of Collection Periods</u> --insert the anticipated number of collection periods in this column. The model provides for a maximum of five collection periods.				

<u>Column(s)</u>	<u>Budget Period</u>	<u>Budget Variable and Input Instructions</u>
45-47		Leave these columns blank.
48-49		<u>Percentage of Credit Sales Collected in Period of Sale</u> --insert the percentage of sales made on account and anticipated to be collected in the budget period in which the sale is made. The implied decimal point is between columns 47 and 48.
50-51		Leave these columns blank.
52-53		<u>Percentage of Credit Sales Collectable in the Period Following the Sale</u> --insert the percentage the company expects to collect in the first period following the sales. For example, the percentage of January's sales that will be collected in February. The implied decimal point is between columns 51 and 52.
54-55		Leave these columns blank.
56-57		<u>Percentage of Credit Sales Collected in the Second Period Following the Sale</u> --insert the percentage the business entity expects to collect in the second budget period following the sale. For example, the percentage of January's sales that will be collected in March. The implied decimal point is between columns 55 and 56.
58-59		Leave these columns blank.
60-61		<u>Percentage of Credit Sales Collected in the Third Period Following the Sale</u> --insert the percentage management expects to collect in the third budget period following the sale in these columns. For example, the percentage of January's sales management expects to collect in April. The implied decimal point is between columns 59 and 60.
62-63		Leave these columns blank.
64-65		<u>Percentage of Credit Sales Collected in the Fourth Period Following the Sale</u> --insert the percentage management expects to collect in the fourth budget period following the sale in these columns. For example, the percentage of January's sales management expects to collect in May. The implied decimal point is between columns 63 and 64.
66-80		Leave these columns blank.

10. Accounts Payable Detail (40) Card

Prepare the "Accounts Payable Detail Card" whenever the user requires a cash budget. The purpose of this card is to determine the estimated total cash paid on account in each budget period. The budget model developed in this study calculates the total purchases in each budget period by summing the following items and subtracting the non-cash expenses input on the 38- and 39-cards. The budget variables that increase purchases are:

1. Raw Material Purchases
2. Factory Overhead Expenses
3. Variable Marketing Expenses
4. Fixed Marketing Expenses
5. Other Administrative Expenses

The model assumes that all direct labor will be paid in the period in which benefits are received and accounts for direct labor costs as a separate cash budget item.

Prepare the 40-card as follows:

<u>Column(s)</u>	<u>Budget Period</u>	<u>Budget Variable and Input Instructions</u>
1-2		<u>Card Code</u> --insert a "4" in column 1 and a "0" in column 2.
3		Leave this column blank.
<hr/>		
		<u>Amount of Cash Payments of Beginning Accounts Payable</u> --insert and right justify the anticipated repayment schedule of the beginning accounts payable in the columns presented below. Round amount to nearest whole dollar.
4-9	1	
10-15	2	
16-21	3	
22-27	4	
28-33	5	
<hr/>		
34-35		Leave these columns blank.

<u>Column(s)</u>	<u>Budget Variable and Input Instructions</u>
36-37	<u>Percentage Credit Purchases</u> --insert the percentage of all purchases (as defined on page 287) that will be made on account. The implied decimal point will be between columns 35 and 36.
38-43	Leave these columns blank.
44	<u>Number of Payment Periods</u> --insert the number of periods management anticipates paying for purchases on account in these columns. The model provides for a maximum of five budget periods.
45-47	Leave these columns blank.
48-49	<u>Percentage Paid in Period of Purchase</u> --insert the percentage of all purchases made on account that management expects to pay in the period of the purchase in these columns. The implied decimal point is between columns 47 and 48.
50-51	Leave these columns blank.
52-53	<u>Percentage Paid in First Period Following Purchase</u> --insert the percentage management plans to pay in the first period following the purchase in these columns. For example, the percentage of January's purchases management plans to pay in February. The implied decimal point is between columns 51 and 52.
54-55	Leave these columns blank.
56-57	<u>Percentage Paid in Second Period Following Purchase</u> --insert the percentage management plans on paying the second budget period following the purchase in these columns. The implied decimal point is between columns 55 and 56.
58-59	Leave these columns blank.
60-61	<u>Percentage Paid in the Third Period Following Purchase</u> --insert the percentage management plans on paying during the third budget period following the purchase in these columns. For example, the percentage of January's purchases that will be paid in April. The implied decimal point is between columns 59 and 60.
62-63	Leave these columns blank.

Column(s)Budget Variable and Input Instructions

64-65

Percentage Paid in the Fourth Period Following Purchase--insert the percentage management plans on paying during the fourth budget period following the purchase in these columns. For example, the percentage of January's sales that will be paid in May. The implied decimal point is between columns 63 and 64.

66-80

Leave these columns blank.

FOOTNOTES

¹Germain Böer, Direct Cost and Contribution Accounting: An Integrated Management Accounting System (New York, 1974), pp. 44-45.

²The term "coding" is used here to refer to the process of taking the estimates derived by management for the various budget variables and converting them to a form to be punched on 80 column data input cards.

³This output will include any zeros that have been inserted for blanks.

⁴This approach is strongly encouraged for those individuals using the budget model for the first time.



⁵During this phase decision maker(s) deal with "What if" questions. For example: What would happen if we increased the selling price of product Blue by \$5 per unit? What would happen if the price of our raw material "Wood" increased by 10%? What would happen if we changed our sales mix in the Eastern Territory?

⁶This includes the following data input cards: 2A, 2B, 2C, 3A, 3B, 3C, 5A, 5B, 5C, 6A, 6B, 6C, 8A, 8B, 8C, 9A, 9B, and 9C.

⁷If the user prefers he can use format #2 in such situations as well.

⁸The Hypothetical Corporation has three marketing fixed cost classifications: Administration, Promotion, and Rent. Therefore, three "Marketing Product Fixed Cost Cards" are possible (2A, 2B, 2C) per product. The user should use only those cards which are appropriate for that particular product.

⁹The user using only two levels of organization segments can proceed to the section "Groups of Level 3 Sales Segment Cards" on page 290.

¹⁰For convenience in locating data cards the user may wish to prepare each "4" card on a colored 80 column data card. If colored cards are not available the user may wish to turn the card over so that if all other data cards have cut corner, (i.e., ) the "4" card will have a rounded corner (i.e., )

¹¹Do NOT insert a zero. The program does not interpret a zero as a space.

¹²The user may wish to place the "7" card on 80 column colored cards (see footnote 10 above).

¹³If the user uses less than six budget periods the remaining periods will be left blank.

¹⁴In this case the user need only insert the card code "7B" in columns 1 and 2.

¹⁵Böer, p. 13, defines a semifixed cost as a cost which consists of "layers of fixed costs which are added as specific levels of volume are attained. They change in lump-sum amounts at certain levels of activity instead of changing continuously over at all levels of activity." Since such costs resemble stair steps they are frequently referred to as "step costs."

¹⁶The overhead unit for the Machinery Department is machine hours. The relationship can be derived statistically from historical data.

APPENDIX B

COMPUTER PROGRAM

1 14.42.08 AUG 23, 1977

0J01 00C000 IDENTIFICATION DIVISION.
 0002 000010 PROGRAM-ID. BUDGET-MODEL.
 0003 000020 AUTMOR. FY8.
 00C4 CCC060 REMAPKS.
 0005 00C070 THIS COMPUTER PROGRAM PRODUCES A SET OF BUDGETS FOR
 00C6 CCC080 A SMALL MANUFACTURING COMPANY.
 00C7
 00C8
 00C9 000090 ENVIRONMENT DIVISION.
 0010 000100 CONFIGURATION SECTION.
 0011 000110 SOURCE-COMPUTER. IBM-370.
 0012 000120 OBJECT-COMPUTER. IBM-370.
 0013
 0014
 0015 000150 SPECIAL-NAMES.
 0016 00C160 CO1 IS TO-TOP-OF-PAGE.
 0017 000500 INPLT-OUTPUT SECTION.
 0018
 0019
 002C CCC510 FILE-CONTROL.
 0021 000520 SELECT BUDGET-DATA-FILE ASSIGN TO UT-S-SYSIN.
 0022 000530 SELECT BUDGET-PRINTOUT-FILE ASSIGN TO UT-S-SYSPRINT.
 0023 000540 SELECT CONTRIBUTION-DATA-FILE ASSIGN TO DA-S-STORAGEA.
 0024
 0025
 0026
 0027 001000 DATA DIVISION.
 0028 001010 FILE SECTION.
 0029
 0030
 0031 001020 FD BUDGET-DATA-FILE,
 0032 001030 RECORD CONTAINS 80 CHARACTERS
 0033 001040 LABEL RECORDS ARE OMITTED
 0034 001050 DATA RECORDS ARE
 0035 CC1060 START-UP-DATA-CARD,
 0036 001070 HEADING-DETAIL-CARD,
 0037 001075 PRINTOUT-DATA-CARD,
 0038 CC1080 ORGAN-NAME-CARD,
 0039 001090 SALES-DETAIL-CARD,
 0040 001100 PROJECTED-SALES-DETAIL-CARD,
 0041 001110 FIXED-COST-DETAIL-CARD,
 0042 001120 DEPARTMENT-DETAIL-CARD,
 0043 CC1130 DEPARTMENT-CONSTRAINT-CARD,
 0044 001140 SEMI-FIXED-COST-CARD,
 0045 001150 RAW-MATERIALS-DETAIL-CARD,
 0046 CC1160 DESIRED-EI-DETAIL-CARD,
 0047 001170 REQUIRED-RM-CARD,
 0048 001180 REQUIRED-LABOR-OH-CARD,
 0049 001190 REQUIRED-CONSTRAINT-CARD,
 0050 001200 INTER-DEPT-RELATIONSHIP-CARD,
 0051 001205 CASH-DETAIL-CARD,
 0052 001210 OTHER-DETAIL-CARD,
 0053 ACCOUNTS-REC-AND-PAY-DETAIL.
 0054

0055 001250 01 START-UP-DATA-CARD.
 0056 001260 05 CARD-CODE PICTURE XX.
 0057 001265 05 FILLER PICTURE X(5).
 0058 001270 05 CURR-DATE PICTURE X(8).
 0059 001310 05 FILLER PICTURE X(4).
 0060 001320 05 ORGANIZATION-DATA.
 0061 001330 10 NO-LEVEL-2-SALES-SEGMENTS PICTURE 99.
 0062 001340 10 NO-LEVEL-3-SALES-SEGMENTS PICTURE 99.
 0063 001350 10 NO-PRODUCING-DEPTS PICTURE 99.
 0064 001360 10 NO-SERVICE-DEPTS PICTURE 99.
 0065 001370 10 NO-ADMINISTRATIVE-DEPTS PICTURE 99.
 0066 001380 05 FILLER PICTURE X(10).
 0067 001390 05 INVENTORY-DATA.
 0068 001400 10 NO-PRODUCTS PICTURE 99.
 0069 001410 10 NO-RAW-MATERIALS PICTURE 999.
 0070 001420 05 FILLER PICTURE X(5).
 0071 001430 05 BUDGET-PERIOD-DATA.
 0072 001440 10 NO-BUDGET-PERIODS PICTURE 99.
 0073 001450 10 INITIAL-BUDGET-PERIOD PICTURE 99.
 0074 001460 10 INITIAL-BUDGET-YEAR PICTURE 99.
 0075 001470 10 BUDGET-PERIOD PICTURE 9.
 0076 001530 05 FILLER PICTURE X(24).
 0077
 0078
 0079 001540 01 HEADING-DETAIL-CARD.
 0080 001550 05 FILLER PICTURE XX.
 0081 001560 05 HEADING-DATA.
 0082 001565 10 HEADING-IN PICTURE X(13) OCCURS 6 TIMES.
 0083
 0084
 0085 001570 01 PRINTOUT-DATA-CARD.
 0086 001580 05 FILLER PICTURE X(5).
 0087 001590 05 BUDGET-PRINTOUT OCCURS 27 TIMES.
 0088 001600 10 BUDGET-PRINT PICTURE 9.
 0089 001610 10 FILLER PICTURE X.
 0090 001620 05 FILLER PICTURE X(21).
 0091
 0092
 0093 001625 01 ORGAN-NAME-CARD.
 0094 001626 05 FILLER PICTURE X(2).
 0095 001627 05 ORGAN-NAME PICTURE X(40).
 0096 001628 05 FILLER PICTURE X(38).
 0097
 0098
 0099 001630 01 SALES-DETAIL-CARD.
 0100 001640 05 FILLER PICTURE XX.
 0101 001645 05 SEGMENT-ID.
 0102 001650 10 FILLER PICTURE XX.
 0103 001655 10 L2-SALES-SEGMENT-NO PICTURE 99.
 0104 001660 10 L3-SALES-SEGMENT-NO PICTURE 99.
 0105 001670 10 NAME PICTURE X(26).
 0106 001690 05 MRKTG-VC-RATE-DATA.
 0107 001695 10 MRKTG-VC-RATE PICTURE 9999 OCCURS 3 TIMES.
 0108 001700 05 FILLER PICTURE X(37).
 0109
 0110
 0111 001760 01 PROJECTED-SALES-DATA-CARD.

0112	001770	05	FILLER	PICTURE X(32).
0113	001780	05	UNIT-SELLING-PRICE	PICTURE 9999V99.
0114	CC1785	05	PROJECTED-SALES-DATA.	
0115	001790	10	PROJECTED-SALES	PICTURE 9(7) OCCURS 6 TIMES.
0116				
0117				
0118	001800	01	FIXED-COST-DETAIL-CARD.	
0119	001810	05	FILLER	PICTURE XX.
0120	001820	05	PRODUCT-NO	PICTURE 99.
0121	001830	05	FILLER	PICTURE X(4).
0122	001835	05	FIXED-COST-DATA.	
0123	001840	10	TRACEABLE-FC	PICTURE 9(6) OCCURS 12 TIMES.
0124				
0125				
0126	001850	01	DEPARTMENT-DETAIL-CARD.	
0127	001860	05	FILLER	PICTURE X(4).
0128	001870	05	DEPT-NO	PICTURE 99.
0129	001880	05	FILLER	PICTURE X(28).
0130	001890	05	LABOR-RATE	PICTURE 99V99.
0131	001892	05	PIECE-RATE	PICTURE 99V99.
0132	001894	05	FILLER	PICTURE X(7).
0133	001896	05	OH-VC-RATE	PICTURE 99V99.
0134	CC1900	05	OH-UNIT.	
0135	001910	10	OH-UNIT-CODE	PICTURE 9.
0136	001920	88	DLH	VALUE IS 1.
0137	001930	88	MACH-HRS	VALUE IS 2.
0138	001940	88	LBS-MAT	VALUE IS 3.
0139	001950	88	NO-UNITS	VALUE IS 4.
0140	CC1960	88	UTER	VALUE IS 5.
0141	001970	10	OTHER-OH-UNIT	PICTURE X(8).
0142	001980	05	MAX-UNITS-AVAILABLE	PICTURE 9(7).
0143	002000	05	NO-SEMI-FIXED-COSTS.	PICTURE 9.
0144	002010	05	FILLER	PICTURE XXX.
0145	002020	05	PERIOD-CODE	PICTURE A.
0146	002030	05	SAME-AMOUNT	PICTURE 9(6).
0147				
0148				
0149	CC2050	01	DEPARTMENT-CONSTRAINT-CARD.	
0150	002060	05	FILLER	PICTURE X(31).
0151	002070	05	NO-OF-CONSTRAINTS	PICTURE 9.
0152	002080	05	CONSTRAINT-DETAIL	OCCURS 3 TIMES.
0153	002090	10	CONSTRAINT-CODE	PICTURE 9.
0154	002100	88	DLH	VALUE IS 1.
0155	002110	88	MACH-HRS	VALUE IS 2.
0156	002120	88	LBS-MAT	VALUE IS 3.
0157	002130	88	NO-UNITS	VALUE IS 4.
0158	002140	88	OTHER	VALUE IS 5.
0159	002150	10	MAX-CONST-UNITS	PICTURE 9(7).
0160	002160	10	OTHER-CONSTRAINT	PICTURE X(8).
0161				
0162				
0163	002170	01	SEMI-FIXED-COST-CARD.	
0164	002180	05	FILLER	PICTURE X(19).
0165	002190	05	SEMI-FIXED-DATA.	
0166	002195	10	NO-OF-STEPS	PICTURE 9.
0167	002200	10	STEP-DATA	OCCURS 5 TIMES.
0168	002210	15	HIGH-VOL	PICTURE 9(6).

0169	002220	15	STEP-COST	PICTURE 9(6).
0170				
0171				
0172	002230	01	RAW-MATERIALS-DETAIL-CARD.	
0173	002240	05	FILLER	PICTURE XX.
0174	002250	05	RAW-MATERIALS-NO	PICTURE 999.
0175	002260	05	FILLER	PICTURE X(30).
0176	002270	05	RAW-MATERIALS-DETAIL.	
0177	002275	10	COSTING-UNIT	PICTURE X(7).
0178	002280	10	COSTING-UNIT-COST	PICTURE 9999V999.
0179	002290	10	PURCHASING-UNIT	PICTURE X(7).
0180	002300	10	PURCH-UNIT-COST	PICTURE 9999V99.
0181	002310	10	DENOM-CONV-FACTOR	PICTURE 9(5).
0182	002320	05	BEGINNING-INVENTORY	PICTURE 9(6).
0183	002330	05	FILLER	PICTURE X(7).
0184				
0185				
0186	002360	01	DESIRED-EI-DETAIL-CARD.	
0187	002370	05	FILLER	PICTURE X(8).
0188	002380	05	DESIRED-EI	PICTURE 9(6) OCCURS 12 TIMES.
0189				
0190				
0191	002400	01	REQUIRED-RM-CARD.	
0192	002410	05	FILLER	PICTURE X(14).
0193	002420	05	NO-RM-USED	PICTURE 999.
0194	002430	05	RAW-MATERIALS-DATA	OCCURS 7 TIMES.
0195	002440	10	RAW-MAT-NO	PICTURE 999.
0196	002450	10	RM-QTY	PICTURE 9999V999.
0197				
0198				
0199	002460	01	REQUIRED-LABOR-OH-CARD.	
0200	002470	05	FILLER	PICTURE X(13).
0201	002475	05	LABOR-CODE	PICTURE X.
0202	002480	05	LABOR-HOURS-PER-UNIT	PICTURE 9999V999.
0203	002510	05	FILLER	PICTURE XXXX.
0204	002520	05	VARIABLE-OVERHEAD-QTY	PICTURE 9999V999.
0205	002530	05	FILLER	PICTURE X(50).
0206				
0207				
0208	002540	01	REQUIRED-CONSTRAINT-CARD.	
0209	002550	05	FILLER	PICTURE X(32).
0210	002560	05	QTY-PER-UNIT	OCCURS 3 TIMES PICTURE 9999V999.
0211	002570	05	FILLER	PICTURE X(30).
0212				
0213				
0214	002580	01	INTER-DEPT-RELATIONSHIP-CARD.	
0215	002590	05	FILLER	PICTURE X(12).
0216	002600	05	NO-PROD-DEPTS-SERVED	PICTURE 99.
0217	002610	05	COST-RELATIONSHIP	OCCURS 6 TIMES.
0218	002620	10	INTER-DEPT-NO	PICTURE 99.
0219	002630	10	MIN-SERV-UNITS	PICTURE 9(5).
0220	002640	10	RELATIONSHIP	PICTURE 9999.
0221				
0222				
0223	002650	01	CASH-DETAIL-CARD.	
0224	002660	05	FILLER	PICTURE XX.
0225	002670	05	BEGINNING-CASH-BALANCE	PICTURE 9(6).

0226 002680 05 DESIRED-END-CASH-BALANCE PICTURE 9(6) OCCURS 12 TIMES.

0227

0228

0229 002690 01 OTHER-DETAIL-CARD.

0230 002700 05 FILLER PICTURE X(37).

0231 002704 05 CASH-CODE PICTURE X.

0232 002706 88 CASH VALUE IS 'C'.

0233 002708 88 NON-CASH VALUE IS 'N'.

0234 002710 05 AMOUNT OCCURS 6 TIMES PICTURE 9(7).

0235

0236

0237 002720 01 ACCOUTS-REC-AND-PAY-DETAIL.

0238 002729 05 FILLER PICTURE XX.

0239 002730 03 ZZ.

0240 002731 05 FILLER PICTURE X.

0241 002740 05 CASH-FLOW-BEG-BAL PICTURE 9(6) OCCURS 5 TIMES.

0242 002750 05 FILLER PICTURE XX.

0243 002760 05 CASH-FLOW-STATISTICS.

0244 002770 10 PERCENT-CREDIT-TRANS PICTURE V99.

0245 002780 10 FILLER PICTURE XX.

0246 002790 10 PERCENT-BAO-DEBTS PICTURE V99.

0247 002800 10 FILLER PICTURE XX.

0248 002810 10 NO-CASH-FLOW-PERIODS PICTURE 9.

0249 002820 10 FILLER PICTURE XXX.

0250 002830 10 PERIOD-CASH-FLOW OCCURS 5 TIMES.

0251 002840 15 PERCENT-PER-PERIOD PICTURE V99.

0252 002850 15 FILLER PICTURE XX.

0253 002859 05 FILLER PICTURE X(13).

0254

0255

0256 002860 03 ZZ1 REDEFINES ZZ.

0257 002861 05 Z1 PICTURE X(6).

0258 002862 05 FILLER PICTURE X(7).

0259 002863 05 Z2 PICTURE X(14).

0260 002864 05 FILLER PICTURE X(10).

0261 002865 05 Z3 PICTURE X(5).

0262 002866 05 FILLER PICTURE X(5).

0263 002867 05 Z4 PICTURE X(7).

0264 002868 05 FILLER PICTURE X(11).

0265 002869 05 Z5 PICTURE X(6).

0266 002870 05 FILLER PICTURE X(7).

0267 002871 03 ZZ2 REDEFINES ZZ.

0268 002872 05 FILLER PICTURE X(3).

0269 002873 05 Z6 PICTURE X(54).

0270 002874 05 FILLER PICTURE X(3).

0271 002875 05 Z7 PICTURE X(8).

0272 002876 05 FILLER PICTURE X(4).

0273 002877 05 Z8 PICTURE X(6).

0274 002878 03 Z9 REDEFINES ZZ PICTURE X(78).

0275 002879 03 ZZ3 REDEFINES ZZ.

0276 002880 05 FILLER PICTURE X(12).

0277 002881 05 Z10 PICTURE X(16).

0278 002882 05 FILLER PICTURE X(4).

0279 002883 05 Z11 PICTURE X(9).

0280 002884 05 FILLER PICTURE X(5).

0281 002885 05 Z12 PICTURE X(7).

0282 002886 05 FILLER PICTURE X(9).

0283 002887 05 Z13 PICTURE X(8).

0284 002888 05 FILLER PICTURE X(8).

0285 002889 03 ZZ4 REDEFINES ZZ.

0286 002890 05 FILLER PICTURE X(30).

0287 002891 05 Z14A PICTURE X(6).

0288 002892 05 Z14B PICTURE X(42).

0289 002893 03 ZZ5 REDEFINES ZZ.

0290 002894 05 FILLER PICTURE X(32).

0291 002895 05 Z15 PICTURE X(20).

0292 002896 05 FILLER PICTURE X(8).

0293 002897 05 Z16 PICTURE X(8).

0294 002898 05 FILLER PICTURE X(10).

0295 002899 03 ZZ6 REDEFINES ZZ.

0296 002900 05 FILLER PICTURE X(29).

0297 002901 05 Z17 PICTURE X(9).

0298 002902 05 FILLER PICTURE X(2).

0299 002903 05 Z18 PICTURE X(7).

0300 002904 05 Z19 PICTURE X(4).

0301 002905 05 FILLER PICTURE X(3).

0302 002906 05 Z20 PICTURE X(17).

0303 002907 05 FILLER PICTURE X(7).

0304 002908 03 ZZ7 REDEFINES ZZ.

0305 002909 05 FILLER PICTURE X(30).

0306 002910 05 Z21 PICTURE X(18).

0307 002911 05 FILLER PICTURE X(30).

0308

0309

0310 003000 FD BUDGET-PRINTOUT-FILE,

0311 003010 RECORD CONTAINS 121 CHARACTERS.

0312 003020 LABEL RECORDS ARE OMITTED.

0313 003030 DATA RECORD IS PRINT-LINE, REPORT-LINE.

0314

0315

0316 003230 01 PRINT-LINE PICTURE X(121).

0317

0318

0319 003525 01 REPORT-LINE.

0320 003527 05 FILLER PICTURE X.

0321 003530 05 NAME-PRINT PICTURE X(26).

0322 003532 05 RM-COMP-DATA REDEFINES NAME-PRINT.

0323 003534 10 RM-COST-PRINT PICTURE X(7),9(3).

0324 003536 10 R1 PICTURE X(5).

0325 003537 10 RM-UNIT-PRINT PICTURE X(7).

0326 003538 10 R4 PICTURE Z(3).

0327 003539 05 CONSTRAINT-PR REDEFINES NAME-PRINT.

0328 003540 10 R2 PICTURE Z(3).

0329 003541 10 CONSTRAINT-PRINT PICTURE X(9).

0330 003542 10 R3 PICTURE Z(14).

0331 003544 05 SUB-DETAIL REDEFINES NAME-PRINT.

0332 003546 10 FILLER PICTURE X(6).

0333 003547 10 SUB-NAME PICTURE X(20).

0334 003550 05 RM-DATA REDEFINES NAME-PRINT.

0335 003551 10 FILLER PICTURE X(2).

0336 003552 10 RM1 PICTURE X(17).

0337 003553 10 RM2 PICTURE X(7).

0338 003562 05 AMT-PA OCCURS 6 TIMES PICTURE Z(4),ZZZ,ZZZ-

0339 003563 BLANK WHEN ZERO.

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0340	C03590	05	TOTAL-PRINT	PICTURE Z(3),ZZZ,ZZZ,ZZZ-	D397	020405	77	U	PICTURE 9 VALUE IS 0.
0341	003592			BLANK WHEN ZERO.	D398	020410	77	V	PICTURE 9 VALUE IS 0.
0342					D399	020420	77	VOL-DIFF	PICTURE 59(6).
0343					D400	020450	77	X	PICTURE 99.
0344	CC3750	FD	CONTRIBUTION-DATA-FILE,		D401	020460	77	Y	PICTURE 99 VALUE IS 7.
0345	003760		LABEL RECRDS ARE STANDARD,		D402	020470	77	YEAR	PICTURE 9999.
0346	CC3780		DATA RECORD IS DISK-CONTRIBUTION-RECORD.		D403	020480	77	Z	PICTURE 99 VALUE IS 1.
0347	003800	01	DISK-CONTRIBUTION-RECORD	PICTURE X(690).	D404				
0348					D405				
0349	CC3995		WORKING-STORAGE SECTION.		D406	025000	01	MS-DRGAN-DATA.	
0350					D407	025010	05	NO-LEV-2-SALES-SEGS	PICTURE 99.
0351	020000	77	BI	PICTURE 99 VALUE IS 1.	D408	025020	05	NO-LEV-3-SALES-SEGS	PICTURE 99.
0352	020010	77	BUDGET	PICTURE X(5).	D409	025030	05	NO-PROD-DEPTS	PICTURE 99.
0353	020015	77	CASH-DIFF	PICTURE 59(9).	D410	025040	05	NO-SERV-DEPTS	PICTURE 99.
0354	020020	77	COL	PICTURE 99.	D411	025050	05	NO-ADMIN-DEPTS	PICTURE 99.
0355	020030	77	COLLECTIONS	PICTURE 9(9).	D412				
0356	020040	77	COST-RM-USED	PICTURE 9(7).	D413				
0357	020050	77	CREDIT-PURCHASES	PICTURE 9(9).	D414	025060	01	INV-DATA.	
0358	020060	77	CREDIT-SALES	PICTURE 9(9).	D415	025070	05	NO-PROD	PICTURE 99.
0359	020070	77	DEPT	PICTURE 99.	D416	025080	05	NO-RAW-MAT	PICTURE 999.
0360	020080	77	DEPT-LABOR-COST	PICTURE 9(7).	D417				
0361	020090	77	DEPT-VAR-OH	PICTURE 9(7).	D418				
0362	020100	77	DOLLAR	PICTURE 9.	D419	025090	01	LEV2-SEG-NAME-LINE.	
0363	020110	77	DEPTNO	PICTURE 99.	D420	025095	05	FILLER VALUE IS ' LEVEL 2 SALES SEGMENT: '	
0364	020120	77	EI	PICTURE 99 VALUE IS 2.	D421	025100			PICTURE X(27).
0365	020125	77	ENO-PERIOD	PICTURE 99.	D422	025105	05	LEV2-SEG-NAME-PR	PICTURE X(26).
0366	020127	77	HLD	PICTURE 999.	D423	025110	05	FILLER VALUE IS SPACES	PICTURE X(68).
0367	020130	77	L	PICTURE 99.	D424				
0368	020132	77	L2	PICTURE 99 VALUE IS 0.	D425				
0369	020133	77	L3	PICTURE 9 VALUE IS 0.	D426	025115	01	LEV3-SEG-NAME-LINE.	
0370	020135	77	LC	PICTURE 99.	D427	025120	05	FILLER VALUE IS ' LEVEL 3 SALES SEGMENT: '	
0371	020140	77	LINE-COUNT	PICTURE 99 VALUE IS 1.	D428	025125			PICTURE X(27).
0372	020150	77	N	PICTURE 99 VALUE IS ZERO.	D429	025130	05	LEV3-SEG-NAME-PR	PICTURE X(26).
0373	020160	77	NO-DEPTS	PICTURE 99.	D430	025135	05	FILLER VALUE IS SPACES	PICTURE X(68).
0374	020170	77	NO-RM	PICTURE 999.	D431				
0375	020180	77	NO-PERIODS	PICTURE 99.	D432				
0376	020190	77	PAGE-NO	PICTURE 9(5) VALUE IS 0.	D433	025200	01	PRODUCT-NAME-LINE.	
0377	020200	77	PAYMENTS	PICTURE 9(9).	D434	025210	05	FILLER VALUE IS SPACES	PICTURE X(3).
0378	020210	77	PERIOD	PICTURE 99.	D435	025220	05	FILLER VALUE IS 'PRODUCT: '	PICTURE X(10).
0379	020220	77	PROD-NO	PICTURE 99 VALUE IS 1.	D436	025230	05	PROD-NAME-PR	PICTURE X(26).
0380	020240	77	PROD-DEPT-NO	PICTURE 99.	D437	025240	05	FILLER VALUE IS SPACES	PICTURE X(62).
0381	020245	77	REPTS	PICTURE 99 VALUE IS 0.	D438				
0382	020250	77	REPORT-PAGE-NO	PICTURE 999 VALUE IS 0.	D439				
0383	020270	77	RM-NO	PICTURE 999.	D440	025260	01	PROD-COST-HEADING.	
0384	020280	77	RM-PURCHASES	PICTURE 9(7).	D441	025270	05	FILLER VALUE IS SPACES	PICTURE X(33).
0385	020290	77	RM-STORED	PICTURE 999.	D442	025280	05	FILLER VALUE IS ' QUANTITY '	PICTURE X(13).
0386	020295	77	RM-UNITS-PURCH	PICTURE 9(7).	D443	025290	05	FILLER VALUE IS ' UNIT COST '	PICTURE X(13).
0387	020300	77	SEC	PICTURE 9 VALUE IS 1.	D444	025300	05	FILLER VALUE IS SPACES	PICTURE X(5).
0388	020310	77	SEMI-FC	PICTURE 9.	D445	025310	05	FILLER VALUE IS ' MATERIALS '	PICTURE X(13).
0389	020320	77	SEMI-FC-NO	PICTURE 9.	D446	025320	05	FILLER VALUE IS ' LABOR '	PICTURE X(13).
0390	020330	77	SERV-UNITS	PICTURE 9(5).	D447	025330	05	FILLER VALUE IS ' OVERHEAD '	PICTURE X(13).
0391	020340	77	STRT VALUE IS ZERO	PICTURE 9.	D448	025340	05	FILLER VALUE IS ' TOTAL '	PICTURE X(13).
0392	020360	77	STEP	PICTURE 9.	D449	025350	05	FILLER VALUE IS SPACES	PICTURE X(9).
0393	020370	77	SUB	PICTURE 59(10).	D450				
0394	020375	77	TEMP-HOLD	PICTURE X(26).	D451				
0395	020380	77	TOTAL	PICTURE 9(11)V99.	D452	025360	01	PROD-COST-REPORT-LINE.	
0396	020390	77	TOTAL-DEPT-OH	PICTURE 9(7).	D453	025365	05	A.	

0454 025370 10 FILLER PICTURE X(5).
0455 025375 10 PC-NAME PICTURE X(26).
0456 025380 05 R REDEFINES A.
0457 025382 10 FILLER PICTURE X.
0458 025385 10 PRODU-DEPT-NAME-PR PICTURE X(26).
0459 025390 10 FILLER PICTURE X(4).
0460 025400 05 PC-QTY BLANK WHEN ZERO PICTURE Z(5),ZZZ.999.
0461 025410 05 PC-UNIT-COST BLANK WHEN ZERO PICTURE Z(5),ZZZ.999.
0462 025420 05 FILLER VALUE IS SPACES PICTURE X(5).
0463 025430 05 PC-MATERIALS BLANK WHEN ZERO PICTURE Z(4),ZZZ.9999.
0464 025440 05 PC-LABOR BLANK WHEN ZERO PICTURE Z(4),ZZZ.9999.
0465 025450 05 PC-DM BLANK WHEN ZERO PICTURE Z(4),ZZZ.9999.
0466 025460 05 PC-TOTAL BLANK WHEN ZERO PICTURE Z(4),ZZZ.9999.
0467 025470 05 FILLER VALUE IS SPACES PICTURE X(7).
0468
0469
0470 025471 01 PC-DOLLAR-LINE.
0471 025472 05 FILLER VALUE IS SPACES PICTURE X(5).
0472 025473 05 PC1 VALUE IS SPACES PICTURE X(26).
0473 025474 05 FILLER VALUE IS SPACES PICTURE X(13).
0474 025475 05 PC2 VALUE IS SPACES PICTURE X(13).
0475 025476 05 FILLER VALUE IS SPACES PICTURE X(5).
0476 025477 05 PC3 VALUE IS SPACES PICTURE X(13).
0477 025478 05 PC4 VALUE IS SPACES PICTURE X(13).
0478 025479 05 PC5 VALUE IS SPACES PICTURE X(13).
0479 025480 05 PC6 VALUE IS SPACES PICTURE X(13).
0480 025481 05 FILLER VALUE IS SPACES PICTURE X(7).
0481
0482
0483 025485 01 PAGE-LINE.
0484 025490 05 FILLER VALUE IS SPACES PICTURE X(111).
0485 025500 05 FILLER VALUE IS 'PAGE ' PICTURE X(5).
0486 025510 05 PAGE-NO-PRINT PICTURE ZZZZ9.
0487
0488
0489 025520 01 HEADING-LINE-1.
0490 025530 05 FILLER VALUE IS SPACES PICTURE X(52).
0491 025540 05 SCHEDULE-NO-PRINT PICTURE X(16).
0492 025550 05 FILLER VALUE IS SPACES PICTURE X(53).
0493
0494
0495 025555 01 ORGAN-NAME-LINE.
0496 025556 05 FILLER VALUE IS SPACES PICTURE X(41).
0497 025557 05 ORGAN-NAME-PRINT PICTURE X(40).
0498 025558 05 FILLER VALUE IS SPACES PICTURE X(40).
0499
0500
0501 025560 01 HEADING-LINE-2.
0502 025570 05 FILLER VALUE IS SPACES PICTURE X(40).
0503 025580 05 BUDGET-NAME-PRINT PICTURE X(41).
0504 025590 05 FILLER VALUE IS SPACES PICTURE X(40).
0505
0506
0507 025600 01 HEADING-LINE-3.
0508 025610 05 FILLER VALUE IS ' DATE PREPARED: ' PICTURE X(19).
0509 025620 05 CURRENT-DATE-PRINT PICTURE X(6).
0510 025630 05 FILLER VALUE IS SPACES PICTURE X(15).

0511 025640 05 SUB-HEADING-PRINT PICTURE X(36).
0512 025650 05 FILLER VALUE IS SPACES PICTURE X(12).
0513 025660 05 FILLER VALUE IS 'REPORT PAGE ' PICTURE X(12).
0514 025670 05 REPORT-PAGE-NO-PRINT PICTURE ZZ9.
0515 025680 05 FILLER VALUE IS SPACES PICTURE X(16).
0516
0517
0518 0256E5 01 HEADING-LINE-4-DETAIL.
0519 025690 05 HEADING-LINE-4 OCCURS 2 TIMES.
0520 025700 10 FILLER PICTURE X.
0521 025710 10 COLUMN-DESCRIPTION PICTURE X(26).
0522 025720 10 HEADINGS.
0523 025730 15 PERIOD-HEADING PICTURE X(13) OCCURS 6 TIMES.
0524 025740 10 TOTAL-HEADING PICTURE X(16).
0525
0526
0527 025750 01 DOLLAR-LINE-DETAIL.
0528 025760 05 DOLLAR-LINE OCCURS 2 TIMES.
0529 025770 10 FILLER PICTURE X(27).
0530 025780 10 DOLLAR-SIGN OCCURS 6 TIMES.
0531 025790 15 FILLER PICTURE X(2).
0532 025800 15 DOLLAR-PRINT PICTURE X.
0533 025810 15 FILLER PICTURE X(10).
0534 025820 10 TOT-DOLLAR-SIGN.
0535 025830 15 FILLER PICTURE X(2).
0536 025840 15 TOT-DOLLAR PICTURE X.
0537 025850 15 FILLER PICTURE X(13).
0538
0539
0540 025860 01 RULING-DETAIL.
0541 025870 05 RULING-LINE OCCURS 2 TIMES.
0542 025880 10 FILLER PICTURE X(27).
0543 025890 10 RULING PICTURE X(13) OCCURS 6 TIMES.
0544 025900 10 TOTAL-RULE-PR PICTURE X(16).
0545
0546
0547 025910 01 TOT-DETAIL.
0548 025920 05 TOTAL-LINE OCCURS 2 TIMES.
0549 025930 10 FILLER PICTURE X(27).
0550 025940 10 TOT-RULE PICTURE X(13) OCCURS 6 TIMES.
0551 025950 10 TOT-TOT-RULE-PR PICTURE X(16).
0552
0553
0554 026000 01 SCH-LINE.
0555 026010 05 SCHNO.
0556 026020 10 FILLER PICTURE X(5).
0557 026030 10 SCH-NO-PR PICTURE X(6).
0558 026040 10 FILLER PICTURE X(5).
0559 026050 05 SCH-TITLE-PR PICTURE X(45).
0560 026060 05 SCH-PG.
0561 026070 10 FILLER PICTURE X(6).
0562 026080 10 SCH-PG-NO PICTURE Z(5).
0563 026090 10 FILLER PICTURE X(6).
0564
0565
0566 029000 01 ERROR-MESSAGE.
0567 029010 05 FILLER VALUE IS SPACES PICTURE X(4).

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0568	029020	05 F VALUE IS 'CARD OUT OF SEQUENCE: '11'	0625	03C620	10 PRB-1	PICTURE 9.
0569	029030	PICTURE X(32).	0626	030630	10 PRB-2	PICTURE 9.
0570	029040	05 FILLER VALUE IS SPACES	0627	030640	10 MAT-1	PICTURE 9.
0571	029050	05 CARD-PRINT	0628	03C650	10 MAT-2	PICTURE 9.
0572			0629	030660	10 MAT-3	PICTURE 9.
0573			0630	030670	10 MAT-4	PICTURE 9.
0574	029210	01 STEP-COST-ERROR.	0631	03C680	10 MAT-5	PICTURE 9.
0575	029220	05 FILLER VALUE IS SPACES	0632	03C690	10 LAB-1	PICTURE 9.
0576	C29230	05 FILLER VALUE IS 'VOLUME EXCEEDS HIGHEST STEP VOLUME'	0633	030700	10 LAB-2	PICTURE 9.
0577	029240	PICTURE X(8).	0634	03C720	10 OVH-1	PICTURE 9.
0578	029250	05 DEPT-NAME-PR	0635	030725	10 CS-1	PICTURE 9.
0579	C29260	05 FILLER VALUE IS ' STEP COST NO' PICTURE X(18).	0636	030730	10 CONT-1	PICTURE 9.
0580	029270	05 STEP-COST-NO-PR	0637	030740	10 CONT-2	PICTURE 9.
0581	029280	05 FILLER VALUE IS SPACES	0638	030750	10 CONT-3	PICTURE 9.
0582			0639	030760	10 CONT-4	PICTURE 9.
0583			0640	030770	10 CONT-5	PICTURE 9.
0584	030250	01 PERIOD-HEADING-GROUPS.	0641	030780	10 CONT-6	PICTURE 9.
0585	C3C260	05 MONTH-TABLE.	0642	03C790	10 CONT-7	PICTURE 9.
0586	030270	10 FILLER PICTURE X(13) VALUE IS ' JAN.	0643	030800	10 CB-1	PICTURE 9.
0587	C3C280	10 FILLER PICTURE X(13) VALUE IS ' FEB.	0644	030850	05 PRINT-REPORT REDEFINES BUDGET-REPORTS.	
0588	C3C290	10 FILLER PICTURE X(13) VALUE IS ' MARCH	0645	03C860	10 REPORT-PR	PICTURE 9(1) OCCURS 24 TIMES.
0589	030300	10 FILLER PICTURE X(13) VALUE IS ' APRIL	0646			
0590	030310	10 FILLER PICTURE X(13) VALUE IS ' MAY	0647			
0591	03C320	10 FILLER PICTURE X(13) VALUE IS ' JUNE	0648	03C870	01 INDEX-TABLE.	
0592	030330	10 FILLER PICTURE X(13) VALUE IS ' JULY	0649	03C872	05 INDX OCCURS 24 TIMES.	
0593	C3C340	10 FILLER PICTURE X(13) VALUE IS ' AUG.	0650	030874	10 SCH-NO	PICTURE X(6).
0594	030350	10 FILLER PICTURE X(13) VALUE IS ' SEPT.	0651	03C876	10 HEAD	PICTURE X(41).
0595	030360	10 FILLER PICTURE X(13) VALUE IS ' OCT.	0652	030878	10 SH	PICTURE 9.
0596	03C370	10 FILLER PICTURE X(13) VALUE IS ' NOV.	0653	030890	10 SUB-HEAD	PICTURE X(36).
0597	03C380	10 FILLER PICTURE X(13) VALUE IS ' DEC.	0654	03C882	10 INDEX-PG	PICTURE 9(5).
0598			0655			
0599	C3C390	05 MONTH-HEADING REDEFINES MONTH-TABLE	0656			
0600	030400	OCCURS 12 TIMES.	0657	030900	01 MRK-CLASSIFICATION-DATA.	
0601	030410	10 MONTH-MM PICTURE X(8).	0658	030910	05 MRK-VC-NAMES.	
0602	030420	10 YEAR-MM PICTURE X(4).	0659	030920	10 FILLER PICTURE X(14) VALUE IS 'TRANSPORTATION'	
0603	030430	10 FILLER PICTURE X(13) VALUE IS ' 1ST QTR	0660	030930	10 FILLER PICTURE X(14) VALUE IS 'COMMISSIONS'	
0604	030440	10 FILLER PICTURE X(13) VALUE IS ' 2ND QTR	0661	030940	10 FILLER PICTURE X(14) VALUE IS 'OTHER'	
0605	030450	10 FILLER PICTURE X(13) VALUE IS ' 3RD QTR	0662	030950	05 MRK-VC-NAME REDEFINES MRK-VC-NAMES	
0606	030460	10 FILLER PICTURE X(13) VALUE IS ' 4TH QTR	0663	03C960	OCCURS 3 TIMES PICTURE X(14).	
0607	03C470	10 FILLER PICTURE X(13) VALUE IS ' 4TH QTR	0664			
0608	030480	05 QUARTER-HEADING REDEFINES QUARTER-TABLE	0665			
0609	03C490	OCCURS 4 TIMES.	0666	03C970	01 MRK-FC-TABLE.	
0610	03C500	10 QUARTER-QM PICTURE X(19).	0667	030980	05 NO-MRK-FC-CLASSES	PICTURE 9.
0611	030510	10 YEAR-QM PICTURE 9(4).	0668	030990	05 MRK-FC-NAME OCCURS 3 TIMES	PICTURE X(26).
0612	03C520	05 YEAR-HEADING.	0669			
0613	030530	10 FILLER PICTURE X(5) VALUE IS SPACES.	0670			
0614	030540	10 YEAR-YH PICTURE 9(4) VALUE IS ZERO.	0671	031315	01 MRK-VC-RATE-TABLE.	
0615	030550	10 FILLER PICTURE X(4) VALUE IS SPACES.	0672	031320	05 MRK-VC-RATE	PICTURE V999 OCCURS 3 TIMES.
0616			0673			
0617			0674			
0618	030560	01 BUDGET-REPORT-TABLE.	0675	031330	01 RM-PURCH-TABLE.	
0619	03C570	05 BUDGET-REPORTS.	0676	031340	05 RM-PURCHASED	PICTURE 9(17) OCCURS 12 TIMES.
0620	030575	10 SC-1	0677			
0621	03C580	10 SB-1	0678			
0622	030590	10 SB-2	0679	031750	01 WS-AREA-1A.	
0623	030600	10 SB-3	0680	031760	02 RM-TABLE.	
0624	030610	10 SB-4	0681	031770	05 RM-DATA OCCURS 500 TIMES.	

0682 031780 10 RM-NAME PICTURE X(26).
0683 031790 10 RM-DETAIL.
0684 031800 15 COST-UNIT-NAME PICTURE X(7).
0685 031810 15 CU-COST PICTURE 9999V999.
0686 031820 15 PURCH-UNIT-NAME PICTURE X(7).
0687 031830 15 PU-COST PICTURE 9999V99.
0688 031840 15 CONV-FACTOR PICTURE 9(5).
0689 031850 10 RM-INVENTORY PICTURE 9(6) OCCURS 13 TIMES.
0690 031880 10 RM-REQUIREMENTS-DETAIL.
0691 031890 15 RM-PROD-REQUIREMENTS PICTURE 9(7) OCCURS 12 TIMES.
0692
0693
0694 031950 01 WS-AREA-1B REDEFINES WS-AREA-1A.
0695
0696
0697 032000 03 L3-WS.
0698 032020 05 L3-CONTRIBUTION.
0699 032025 10 FILLER PICTURE X(84).
0700 032030 10 L3-REVENUES PICTURE 9(9) OCCURS 12 TIMES.
0701 032040 10 L3-MRK-VC-DATA OCCURS 3 TIMES.
0702 032050 15 L3-MRK-VC PICTURE 9(6) OCCURS 12 TIMES.
0703 032060 10 L3-MRK-FC-DATA OCCURS 3 TIMES.
0704 032070 15 L3-MRK-FC-DETAIL.
0705 032080 20 L3-MRK-FC PICTURE 9(6) OCCURS 12 TIMES.
0706
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0708 032150 03 L2-WS.
0709 032170 05 L2-PROD-CONTRIB-DATA OCCURS 50 TIMES.
0710 032180 10 L2-UNIT-SALES PICTURE 9(7) OCCURS 12 TIMES.
0711 032190 10 L2-PROD-REVENUES PICTURE 9(9) OCCURS 12 TIMES.
0712 032200 10 L2-PROD-MRK-VC-DATA OCCURS 3 TIMES.
0713 032210 15 L2-PROD-MRK-VC PICTURE 9(6) OCCURS 12 TIMES.
0714 032220 10 L2-PROD-MRK-FC-DATA OCCURS 3 TIMES.
0715 032230 15 L2-PR-MRK-FC-DATA.
0716 032240 20 L2-PROD-MRK-FC PICTURE 9(6) OCCURS 12 TIMES.
0717
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0719 032250 05 L2-CONTRIBUTION.
0720 032255 10 FILLER PICTURE X(84).
0721 032260 10 L2-REVENUES PICTURE 9(9) OCCURS 12 TIMES.
0722 032270 10 L2-MRK-VC-DATA OCCURS 3 TIMES.
0723 032280 15 L2-MRK-VC PICTURE 9(6) OCCURS 12 TIMES.
0724 032290 10 L2-MRK-FC-DATA OCCURS 3 TIMES.
0725 032300 15 L2-MRK-FC-DETAIL.
0726 032310 20 L2-MRK-FC PICTURE 9(6) OCCURS 12 TIMES.
0727
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0729 032330 03 OTHER-DEPT-DETAIL.
0730
0731
0732 032340 05 SERVICE-DEPT-DETAIL OCCURS 10 TIMES.
0733 032350 10 SERVICE-DEPT-NAME PICTURE X(26).
0734 032360 10 SERV-DEPT-OH-RATE PICTURE 99V99.
0735 032370 10 SERV-DEPT-VC PICTURE X(7) OCCURS 12 TIMES.
0736 032380 10 SERVICE-UNIT PICTURE X(9).
0737 032390 10 MAX-SERVICE-UNITS PICTURE 9(7).
0738 032400 10 SERVICE-UNITS-USED PICTURE 9(7) OCCURS 12 TIMES.

0739 032410 10 SERV-DEPT-FC-DATA.
0740 032420 15 SERV-DEPT-FC PICTURE 9(6) OCCURS 12 TIMES.
0741
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0743 032430 05 ADMIN-DEPT-DETAIL.
0744 032440 10 ADMIN-FC PICTURE 9(7) OCCURS 12 TIMES.
0745
0746
0747 032500 03 CASH-BUDGET-DATA.
0748
0749
0750 032510 05 CASH-BALANCE PICTURE 9(9) OCCURS 13 TIMES.
0751 032520 05 CASH-RECEIPTS.
0752 032530 10 CASH-SALES PICTURE 9(7) OCCURS 12 TIMES.
0753 032540 10 AC-REC-COLLECTIONS PICTURE 9(7) OCCURS 12 TIMES.
0754 032550 10 NO-OTHER-CR PICTURE 99.
0755 032560 10 OTHER-CR OCCURS 20 TIMES.
0756 032570 15 OTHER-CR-NAME PICTURE X(26).
0757 032580 15 OTHER-CR-AMT PICTURE 9(7) OCCURS 12 TIMES.
0758 032590 05 CASH-DISBURSEMENTS.
0759 032600 10 DIRECT-LABOR-COSTS PICTURE 9(7) OCCURS 12 TIMES.
0760 032610 10 CASH-PURCHASES PICTURE 9(7) OCCURS 12 TIMES.
0761 032620 10 AC-PAY-PYMTS PICTURE 9(7) OCCURS 12 TIMES.
0762 032625 10 NO-OTHER-CD PICTURE 99.
0763 032630 10 OTHER-CD OCCURS 20 TIMES.
0764 032640 15 OTHER-CD-NAME PICTURE X(26).
0765 032650 15 OTHER-CD-AMT PICTURE 9(7) OCCURS 12 TIMES.
0766 032660 05 FACTORY-OH-EXP PICTURE 9(7) OCCURS 12 TIMES.
0767 032670 05 PURCHASES PICTURE 9(7) OCCURS 12 TIMES.
0768 032680 05 FINANCING PICTURE 9(7) OCCURS 12 TIMES.
0769
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0771 032750 03 OTHER-INC-EXP-DATA.
0772
0773
0774 032760 05 OTHER-INCOME-DATA.
0775 032770 10 NO-OTHER-INC PICTURE 99.
0776 032780 10 OTHER-INC-DETAIL OCCURS 5 TIMES.
0777 032790 15 OTHER-INC-NAME PICTURE X(26).
0778 032800 15 OTHER-INC-AMT PICTURE 9(7) OCCURS 12 TIMES.
0779
0780
0781 032810 05 OTHER-EXPENSE-DATA.
0782 032820 10 NO-OTHER-EXP PICTURE 9.
0783 032830 10 OTHER-EXP-DETAIL OCCURS 5 TIMES.
0784 032840 15 OTHER-EXP-NAME PICTURE X(26).
0785 032850 15 OTHER-EXP-AMT PICTURE 9(7) OCCURS 12 TIMES.
0786
0787
0788 032900 05 MFG-VC-TABLE.
0789 032910 10 L2-MFG-VC-DATA OCCURS 10 TIMES.
0790 032920 15 L2-MFG-VC PICTURE 9(7) OCCURS 12 TIMES.
0791 032930 15 L2-PROD-MFG-VC-DATA OCCURS 50 TIMES.
0792 032940 20 L2-PROD-MFG-VC PICTURE 9(7) OCCURS 12 TIMES.
0793 032950 10 L3-MFG-VC-DATA OCCURS 99 TIMES.
0794 032960 15 L3-MFG-VC PICTURE 9(7) OCCURS 12 TIMES.

0796
0797 032970 01 DK-WS.
0758 032980 05 RECORD-CCODE PICTURE XX.
0799 032990 05 DK-IDENTIFICATION.
0800 033000 10 DK-PRODUCT-NO PICTURE 99.
08C1 033010 10 DK-L2-SEG-NO PICTURE 99.
0802 033020 10 DK-L3-SEG-NO PICTURE 99.
0803 033030 10 DK-L3-NAME PICTURE X(26).
0804 033035 05 DK-L2-NAME PICTURE X(26).
0805 033040 05 DK-UNIT-SALES-PRICE PICTURE 9999V99.
08C6 033050 05 DK-CONTRIBUTION-DATA.
08C7 033060 10 DK-SALS-DATA.
0808 033070 15 DK-PROJECTED-SALES PICTURE 9(7) OCCURS 12 TIMES.
0809 033080 10 DK-PROJ-SALES REDEFINES DK-SALES-DATA.
081C 033090 15 PROJ-7A-SALES PICTURE X(42).
0811 033100 15 PROJ-7B-SALES PICTURE X(42).
0812 033110 10 DK-PROJ-REVENUES PICTURE 9(9) OCCURS 12 TIMES.
0813 033120 10 DK-MRK-VC-DATA OCCURS 3 TIMES.
0814 033130 15 DK-MRK-VC PICTURE 9(6) OCCURS 12 TIMES.
0815 033140 10 DK-MRK-FC-DATA.
0816 033150 15 DK-MRK-FC-DETAIL OCCURS 3 TIMES.
0817 033160 20 DK-MRK-FC PICTURE 9(6) OCCURS 12 TIMES.
0818
0819
0820 035000 01 PRODUCT-TABLE.
0821 035010 03 PRODUCT-DETAIL OCCURS 50 TIMES.
0822 035012 05 PRODUCT-NAME PICTURE X(26).
0823 035015 05 PRODUCT-INVENTORY-DATA.
0824 035035 10 PRODUCT-INV PICTURE 9(6) OCCURS 13 TIMES.
0825 035060 05 PLANNED-PROD-DATA.
0826 035070 10 PLANNED-PRODUCTION PICTURE 9(7) OCCURS 12 TIMES.
0827 035080 05 PROD-SALES-DATA.
0828 035090 10 UNIT-SALES PICTURE 9(7) OCCURS 12 TIMES.
0829 035100 10 PRODUCT-REVENUE PICTURE 9(9) OCCURS 12 TIMES.
083C 035110 05 PROD-VC-DATA.
0831 035120 10 PRODUCT-STD-COST PICTURE 9999V9999.
0832 035130 10 PRODUCT-MRK-VC-DATA OCCURS 3 TIMES.
0833 035140 15 PRODUCT-MRK-VC PICTURE 9(7) OCCURS 12 TIMES.
0834 035150 05 PROD-FC-DATA.
0835 035160 10 PROD-MFG-FC-DATA.
0836 035165 15 PROD-MFG-FC PICTURE 9(7) OCCURS 12 TIMES.
0837 035167 05 PRD-MRK-FC-DATA.
0838 035170 10 PROD-MRK-FC-DATA OCCURS 3 TIMES.
0839 035180 15 PRODUCT-MRK-FC PICTURE 9(7) OCCURS 12 TIMES.
0840
0841
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0843 035250 01 PRODUCTION-DEPT-TABLE.
0844 035260 03 PRODUCTION-DEPT-DETAIL OCCURS 20 TIMES.
0845 035270 05 PRODUCTION-DEPT-NAME PICTURE X(26).
0846 035280 05 LABCR-DATA.
0847 035290 10 LABOR-HR-RATE PICTURE 99V99.
0848 035295 10 LABOR-PIECE-RATE PICTURE 99V99.
0849 035300 10 LAB-HRS-DATA.
0850 035305 15 LABOR-HRS-USED PICTURE 9(7) OCCURS 12 TIMES.
0851 035310 05 VAR-OI-DATA.
0852 035320 10 PROD-DEPT-OH-RATE PICTURE 99V99.

0853 035330 10 VAR-OH-UNIT PICTURE X(8).
0854 035340 10 MAX-OH-UNITS PICTURE 9(7).
0855 035350 10 VAR-OH-UNITS-USED PICTURE 9(7) OCCURS 12 TIMES.
0856 035360 05 SEMI-FC-DATA.
0857 035370 10 NO-SEMI-FC PICTURE 9.
0858 035380 10 SEMI-FC-DETAIL OCCURS 3 TIMES.
0859 035390 15 NO-STFPS PICTURE 9.
0860 035400 15 STEP-DETAIL OCCURS 5 TIMES.
0861 035410 20 HI-VOL PICTURE 9(6).
0862 035420 20 ST-COST PICTURE 9(6).
0863 035430 05 PROD-DEPT-FC-DATA.
0864 035440 10 PROD-DEPT-FC PICTURE 9(6) OCCURS 12 TIMES.
0865 035450 05 CONSTRAINT-DATA.
0866 035460 10 CONSTRAINTS PICTURE 9.
0867 035470 10 CONSTRAINT-DETAIL OCCURS 3 TIMES.
0868 035480 15 CONSTRAINT-NAME PICTURE X(8).
0869 035490 15 MAX-CONSTR-UNITS PICTURE 9(7).
0870 035500 15 CONSTRAINT-UNITS-USED PICTURE 9(7) OCCURS 12 TIMES.
0871 035501
0872
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0874 035520 01 TOTAL-CONTRIBUTION-DETAIL.
0875 035530 05 REVENUES PICTURE 9(9) OCCURS 12 TIMES.
0876 035540 05 VC-DATA.
0877 035550 10 MFG-VC PICTURE 9(7) OCCURS 12 TIMES.
0878 035560 10 MRK-VC-DATA OCCURS 3 TIMES.
0879 035570 15 MRK-VC PICTURE 9(7) OCCURS 12 TIMES.
088C 035580 05 FC-DATA.
0881 035590 10 MFG-FC PICTURE 9(7) OCCURS 12 TIMES.
0882 035600 10 MRK-FC-DATA OCCURS 3 TIMES.
0883 035610 15 MRK-FC PICTURE 9(7) OCCURS 12 TIMES.
0884
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0886 035650 01 WS-TABLE.
0887 035715 05 PROD-MFG-VC PICTURE 9(7) OCCURS 12 TIMES.
0888 035730 05 COL-TOTAL PICTURE 59(9) OCCURS 6 TIMES.
0889 035745 05 COL-GRAND-TOTAL PICTURE 59(9) OCCURS 6 TIMES.
0890 035750 05 ROW-TOTAL PICTURE 59(11).
0891 035760 05 GRAND-TOTAL PICTURE 59(11).
0892 035770 05 FINAL-GRAND-TOTAL PICTURE 59(11).
0893
0894
0895 035800 01 WS-PROD-COST.
0896 035810 05 WS-MATERIALS PICTURE 9999V9999.
0897 035820 05 DEPT-MAT-COST PICTURE 9999V9999.
0898 035830 05 DEPT-LAB-COST PICTURE 9999V9999.
0899 035840 05 DEPT-OH-COST PICTURE 9999V9999.
0900 035850 05 DEPT-UNIT-MC PICTURE 9999V9999.
0901
0902
0903 035860 01 PROD-UNIT-COST.
0904 035870 05 TOT-MAT-COST PICTURE 9999V9999.
0905 035880 05 TOT-LAB-COST PICTURE 9999V9999.
0906 035890 05 TOT-OH-COST PICTURE 9999V9999.
0907 035900 05 TOT-UNIT-COST PICTURE 9999V9999.
0908
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0910 035910 01 PC-RULING-LINE.
 0911 C35920 05 FILLER VALUE IS SPACES PICTURE X(62).
 0912 035930 05 LL1 VALUE IS ' -----' PICTURE X(13).
 0913 035940 05 LL2 VALUE IS ' -----' PICTURE X(13).
 0914 035950 05 LL3 VALUE IS ' -----' PICTURE X(13).
 0915 035960 05 LL4 VALUE IS ' -----' PICTURE X(13).
 0916 035970 05 FILLER VALUE IS SPACES PICTURE X(7).
 0917
 0918
 0919 035980 01 PC-RULE-LINE.
 0920 035990 05 FILLER VALUE IS SPACES PICTURE X(31).
 0921 036000 05 FILLER VALUE IS ' -----' PICTURE X(13).
 0922 036010 05 FILLER VALUE IS ' -----' PICTURE X(13).
 0923 036020 05 FILLER VALUE IS SPACES PICTURE X(64).
 0924
 0925
 0926 036030 01 PC-TOTAL-LINE.
 0927 036040 05 FILLER VALUE IS SPACES PICTURE X(62).
 0928 036050 05 FILLER VALUE IS ' -----' PICTURE X(13).
 0929 036060 05 FILLER VALUE IS ' -----' PICTURE X(13).
 0930 036070 05 FILLER VALUE IS ' -----' PICTURE X(13).
 0931 036080 05 FILLER VALUE IS ' -----' PICTURE X(13).
 0932 036090 05 FILLER VALUE IS SPACES PICTURE X(7).
 0933
 0934
 0935
 0936 050000 PROCEDURE DIVISION.
 0937
 0938
 0939 C50010 START-UP SECTION.
 0940 C50020 OPEN-ROUTINE.
 0941 050030 OPEN INPUT BUDGET-DATA-FILE,
 0942 050040 OUTPUT BUDGET-PRINTOUT-FILE,
 0943 050050 OUTPUT CONTRIBUTION-DATA-FILE.
 0944 050055 MOVE SPACES TO HEADING-LINE-4-DETAIL, DOLLAR-LINE-DETAIL,
 0945 C50056 RULING-DETAIL, TOT-DETAIL, A, SCH-LINE.
 0946 C50062 PERFORM 00-WS1A-CLEAR THRU 00-EXIT.
 0947 050064 PERFORM 03-DISK-CLEAR THRU 03-EXIT.
 0948 C50066 PERFORM 06-WS-CLEAR THRU 06-EXIT.
 0949 050068 PERFORM 10-WS-CLEAR THRU 10-EXIT VARYING PROD-NO FROM 1 BY 1
 0950 C50070 UNTIL PROD-NO > 50.
 0951 C50072 PERFORM 13-WS-CLEAR THRU 13-EXIT VARYING DEPT FROM 1 BY 1
 0952 050074 UNTIL DEPT > 20.
 0953 050076 PERFORM 20-WS-CLEAR THRU 20-EXIT VARYING PERIOD FROM 1 BY 1
 0954 050078 UNTIL PERIOD > 12.
 0955 050080 PERFORM 22-WS-CLEAR THRU 23-EXIT.
 0956 050081 PERFORM 31-WS-CLEAR THRU 31-EXIT.
 0957 050086 PERFORM 33-WS-CLEAR THRU 33-EXIT VARYING N FROM 1 BY 1 UNTIL
 0958 050087 N > 24.
 0959 050088 MOVE ZEROES TO WS-MATERIALS, DEPT-MAT-COST, DEPT-LAB-COST,
 0960 050089 DEPT-OH-COST, DEPT-UNIT-MC, TOT-MAT-COST, TOT-LAB-COST,
 0961 C50090 TOT-OH-COST, TOT-UNIT-COST.
 0962 050092 MOVE 1 TO Z, MOVE 0 TO N.
 0963 C50094 GO TO 001-READ-CARD.
 0964
 0965
 0966 050100 00-WS1A-CLEAR.

0967 050110 PERFORM 01-WS1A-CLEAR THRU 01-EXIT VARYING RM-NO FROM 1 BY 1
 0968 050120 UNTIL RM-NO > 500.
 0969 050130 00-EXIT. EXIT.
 0970
 0971
 0972 C50135 01-WS1A-CLEAR.
 0973 050137 PERFORM 02-WS1A-CLEAR THRU 02-EXIT VARYING PERIOD FROM 1 BY
 0974 050139 1 UNTIL PERIOD > 12.
 0975 050140 MOVE ZEROES TO RM-NAME (RM-NO), COST-UNIT-NAME (RM-NO),
 0976 050150 PURCH-UNIT-NAME (RM-NO), CU-COST (RM-NO), PU-COST (RM-NO)
 0977 050151 CONV-FACTOR (RM-NO).
 0978 C50153 MOVE ZEROES TO RM-INVENTORY (RM-NO, 13).
 0979 050154 01-EXIT. EXIT.
 0980
 0981
 0982 050155 02-WS1A-CLEAR.
 0983 050156 MOVE ZEROES TO RM-INVENTORY (RM-NO, PERIOD),
 0984 050160 RM-PROD-REQUIREMENTS (RM-NO, PERIOD).
 0985 050165 02-EXIT. EXIT.
 0986
 0987
 0988 050170 03-DISK-CLEAR.
 0989 050180 MOVE SPACES TO RECORD-CODE, DK-L3-NAME, DK-L2-NAME.
 0990 050190 MOVE ZEROES TO DK-PRODUCT-NO, DK-L2-SEG-NO, DK-L3-SEG-NO.
 0991
 0992
 0993 050200 03A-DISK-CLEAR.
 0994 050205 MOVE ZEROES TO DK-UNIT-SALES-PRICE.
 0995 C50210 PERFORM 04-DISK-CLEAR THRU 04-EXIT VARYING PERIOD FROM 1 BY
 0996 050220 1 UNTIL PERIOD > 12.
 0997 C50230 03-EXIT. EXIT.
 0998
 0999
 1000 050240 04-DISK-CLEAR.
 1001 050260 MOVE ZEROES TO DK-PROJECTED-SALES (PERIOD),
 1002 050280 DK-PROJ-REVENUES (PERIOD).
 1003 050290 PERFORM 05-DISK-STORE THRU 05-EXIT VARYING Z FROM 1 BY 1
 1004 C50300 UNTIL Z > 3.
 1005 050310 04-EXIT. EXIT.
 1006
 1007
 1008 050320 05-DISK-STORE.
 1009 050330 MOVE ZEROES TO DK-MRK-VC (Z, PERIOD), DK-MRK-FC (Z, PERIOD).
 1010 050340 05-EXIT. EXIT.
 1011
 1012
 1013 050370 06-WS-CLEAR.
 1014 050375 PERFORM 08-WS-CLEAR THRU 08-EXIT.
 1015 050380 MOVE ZEROES TO NO-MRK-FC-CLASSES, MRK-VC-RATE (1),
 1016 050390 MRK-VC-RATE (2), MRK-VC-RATE (3).
 1017 050400 PERFORM 07-WS-CLEAR THRU 07-EXIT VARYING PERIOD FROM 1 BY 1
 1018 050410 UNTIL PERIOD > 12.
 1019 050420 06-EXIT. EXIT.
 1020
 1021
 1022 050430 07-WS-CLEAR.
 1023 050440 MOVE ZEROES TO RM-PURCHASED (PERIOD).

1024 050450 07-EXIT. EXIT.
 1025
 1026
 1027 050455 08-WS-CLEAR.
 1028 050460 MOVE SPACES TO A. MOVE 0 TO PC-QTY, PC-UNIT-COST,
 1029 C50465 PC-MATERIALS, PC-LABOR, PC-OH, PC-TOTAL.
 1030 050470 08-EXIT. EXIT.
 1031
 1032
 1033 050475 10-WS-CLEAR.
 1034 050480 MOVE SPACES TO PRODUCT-NAME (PROD-NO).
 1035 050490 PERFORM 11-WS-CLEAR THRU 11-EXIT VARYING PERIOD FROM 1 BY 1
 1036 C50500 UNTIL PERIOD > 12.
 1037 050510 MOVE ZEROES TO PRODUCT-STD-COST (PROD-NO),
 1038 C50520 PRODUCT-INV (PROD-NO, 13).
 1039 C50530 10-EXIT. EXIT.
 1040
 1041
 1042 050540 11-WS-CLEAR.
 1043 050550 MOVE ZEROES TO PRODUCT-INV (PROD-NO, PERIOD),
 1044 050560 PLANNED-PRODUCTION (PROD-NO, PERIOD),
 1045 C50560 UNIT-SALES (PROD-NO, PERIOD),
 1046 050600 PRODUCT-REVENUE (PROD-NO, PERIOD),
 1047 050610 PROD-MFG-FC (PROD-NO, PERIOD).
 1048 050620 PERFORM 12-WS-CLEAR THRU 12-EXIT VARYING Z FROM 1 BY 1
 1049 050630 UNTIL Z > 3.
 1050 C50640 11-EXIT. EXIT.
 1051
 1052
 1053 050650 12-WS-CLEAR.
 1054 050660 MOVE ZEROES TO PRODUCT-MRK-VC (PROD-NO, Z, PERIOD),
 1055 050670 PRODUCT-MRK-FC (PROD-NO, Z, PERIOD).
 1056 C50680 12-EXIT. EXIT.
 1057
 1058
 1059 050690 13-WS-CLEAR.
 1060 C50700 MOVE SPACES TO PRODUCTION-DEPT-NAME (DEPT),
 1061 050710 VAR-OH-UNIT (DEPT).
 1062 050720 MOVE ZEROES TO LABOR-HR-RATE (DEPT), LABOR-PIECE-RATE (DEPT),
 1063 050730 PROD-DEPT-OH-RATE (DEPT), MAX-OH-UNITS (DEPT),
 1064 C50740 NO-SEMI-FC (DEPT), CONSTRAINTS (DEPT).
 1065 050750 PERFORM 14-WS-CLEAR THRU 14-EXIT VARYING PERIOD FROM 1 BY 1
 1066 050760 UNTIL PERIOD > 12.
 1067 050780 PERFORM 15-WS-CLEAR THRU 15-EXIT VARYING Z FROM 1 BY 1 UNTIL
 1068 C50790 Z > 3.
 1069 050800 13-EXIT. EXIT.
 1070
 1071
 1072 050810 14-WS-CLEAR.
 1073 050820 MOVE ZEROES TO LABOR-HRS-USED (DEPT, PERIOD),
 1074 C50830 VAR-OH-UNITS-USED (DEPT, PERIOD),
 1075 050840 PROD-DEPT-FC (DEPT, PERIOD),
 1076 050850 CONSTRAINT-UNITS-USED (DEPT, 1, PERIOD),
 1077 C50852 CONSTRAINT-UNITS-USED (DEPT, 2, PERIOD),
 1078 050854 CONSTRAINT-UNITS-USED (DEPT, 3, PERIOD).
 1079 050860 14-EXIT. EXIT.
 1080

1081
 1082 050870 15-WS-CLEAR.
 1083 050880 MOVE SPACES TO CONSTRAINT-NAME (DEPT, Z).
 1084 C50890 MOVE ZEROES TO NO-STEPS (DEPT, Z).
 1085 050900 MAX-CONSTA-UNITS (DEPT, Z).
 1086 050910 PERFORM 16-WS-CLEAR THRU 16-EXIT VARYING N FROM 1 BY 1 UNTIL
 1087 050920 N > 5.
 1088 050930 15-EXIT. EXIT.
 1089
 1090
 1091 050940 16-WS-CLEAR.
 1092 050950 MOVE ZEROES TO HI-VOL (DEPT, Z, N), ST-COST (DEPT, Z, N).
 1093 C50960 16-EXIT. EXIT.
 1094
 1095
 1096 050970 20-WS-CLEAR.
 1097 050980 MOVE ZEROES TO REVENUES (PERIOD), MFG-VC (PERIOD),
 1098 050990 MFG-FC (PERIOD).
 1099 051000 PERFORM 21-WS-CLEAR THRU 21-EXIT VARYING Z FROM 1 BY 1 UNTIL
 1100 051010 Z > 3.
 1101 051020 20-EXIT. EXIT.
 1102
 1103
 1104 051030 21-WS-CLEAR.
 1105 051040 MOVE ZEROES TO MRK-VC (Z, PERIOD), MRK-FC (Z, PERIOD).
 1106 051050 21-EXIT. EXIT.
 1107
 1108
 1109 051060 22-WS-CLEAR.
 1110 051070 PERFORM 24-WS-CLEAR THRU 24-EXIT VARYING COL FROM 1 BY 1
 1111 051080 UNTIL COL > 6.
 1112
 1113
 1114 051085 23-WS-CLEAR.
 1115 051090 MOVE ZEROES TO ROW-TOTAL, GRAND-TOTAL, FINAL-GRAND-TOTAL.
 1116 051100 PERFORM 25-WS-CLEAR THRU 25-EXIT VARYING PERIOD FROM 1 BY 1
 1117 051110 UNTIL PERIOD > 12.
 1118 051120 23-EXIT. EXIT.
 1119
 1120
 1121 051130 24-WS-CLEAR.
 1122 051140 MOVE ZEROES TO COL-TOTAL (COL), COL-GRAND-TOTAL (COL).
 1123 051150 24-EXIT. EXIT.
 1124
 1125
 1126 051160 25-WS-CLEAR.
 1127 051170 MOVE ZEROES TO PROD-MFG-VC (PERIOD).
 1128 051180 25-EXIT. EXIT.
 1129
 1130
 1131 051190 26-WS-CLEAR.
 1132 051200 PERFORM 27-WS-CLEAR THRU 27-EXIT VARYING COL FROM 1 BY 1
 1133 051210 UNTIL COL > 6. MOVE 1 TO COL.
 1134 051220 26-EXIT. EXIT.
 1135
 1136
 1137 051230 27-WS-CLEAR.

1138 051240 MOVE ZEROES TO COL-TOTAL (COL).
 1139 051250 27-EXIT. EXIT.
 1140
 1141
 1142 051260 28-WS-CLEAR.
 1143 051280 PERFORM 29-WS-CLEAR THRU 29-EXIT VARYING PERIOD FROM 1 BY 1
 1144 051290 UNTIL PERIOD > 12.
 1145 051300 28-EXIT. EXIT.
 1146
 1147
 1148 051310 29-WS-CLEAR.
 1149 051320 MOVE ZEROES TO L3-REVENUES (PERIOD).
 1150 051330 PERFORM 30-WS-CLEAR THRU 30-EXIT VARYING Z FROM 1 BY 1 UNTIL
 1151 051340 Z > 3.
 1152 051350 29-EXIT. EXIT.
 1153
 1154
 1155 051360 30-WS-CLEAR.
 1156 051370 MOVE ZEROES TO L3-MRK-VC (Z, PERIOD), L3-MRK-FC (Z, PERIOD).
 1157 051380 30-EXIT. EXIT.
 1158
 1159
 1160 051390 31-WS-CLEAR.
 1161 051400 MOVE SPACES TO NAME-PRINT.
 1162 051410 PERFORM 32-WS-CLEAR THRU 32-EXIT VARYING COL FROM 1 BY 1
 1163 051420 UNTIL COL > 6.
 1164 051430 MOVE ZEROES TO TOTAL-PRINT.
 1165 051440 31-EXIT. EXIT.
 1166
 1167
 1168 051450 32-WS-CLEAR.
 1169 051460 MOVE ZEROES TO AMT-PR (COL).
 1170 051470 32-EXIT. EXIT.
 1171
 1172
 1173 051480 33-WS-CLEAR.
 1174 051490 MOVE SPACES TO SCH-NO (N), HEAD (N), SUB-HEAD (N).
 1175 051500 MOVE ZEROES TO SH (N), INDEX-PG (N).
 1176 051510 33-EXIT. EXIT.
 1177
 1178
 1179 100065 001-READ-CARD.
 1180
 1181 100070 READ BUDGET-DATA-FILE, AT END GO TO 2ND-SET-BUDGETS.
 1182
 1183 100071 IF CARD-CODE = '0A' EXAMINE Z2 REPLACING ALL ' ' BY 0,
 1184 100072 EXAMINE Z3 REPLACING ALL ' ' BY 0, EXAMINE Z4 REPLACING
 1185 100073 ALL ' ' BY 0, IF Z2 IS NOT NUMERIC OR Z3 IS NOT NUMERIC
 1186 100074 OR Z4 IS NOT NUMERIC, GO TO 800-ERROR-ROUTINE.
 1187 100075 IF CARD-CODE = '0D' EXAMINE Z9 REPLACING ALL ' ' BY 0,
 1188 100076 IF Z9 IS NOT NUMERIC, GO TO 800-ERROR-ROUTINE.
 1189 100077 IF CARD-CODE = 'SS' EXAMINE Z1 REPLACING ALL ' ' BY 0.
 1190
 1191 100080 IF CARD-CODE = '0A' GO TO 003-START-UP.
 1192 100090 IF CARD-CODE = '0B' MOVE HEADING-DATA TO HEADINGS (1),
 1193 100100 GO TO 001-READ-CARD.
 1194 100110 IF CARD-CODE = '0C' MOVE HEADING-DATA TO HEADINGS (2),

1195 100120 GO TO 001-READ-CARD.
 1196 100130 IF CARD-CODE = '0D' PERFORM 008-STORE THRU 008-EXIT VARYING
 1197 100140 N FROM 1 BY 1 UNTIL N > 27, GO TO 001-READ-CARD.
 1198 100145 IF CARD-CODE = '0E' MOVE ORGAN-NAME TO ORGAN-NAME-PRINT.
 1199 100160 PERFORM 210-CLEARING.
 1200
 1201
 1202 100170 002-TOTAL-RULING.
 1203 100185 PERFORM 009-RULING THRU 009-EXIT VARYING COL FROM 1 BY 1
 1204 100186 UNTIL COL > 6 OR PERIOD > NO-PERIODS.
 1205 100187 IF PERIOD > NO-PERIODS GO TO 002-FINISH ELSE MOVE 1 TO COL,
 1206 100188 ADD 1 TO SEC, GO TO 002-TOTAL-RULING.
 1207
 1208
 1209 100189 002-FINISH.
 1210 100200 MOVE ' TOTAL' TO TOTAL-HEADING (SEC).
 1211 100210 MOVE ' -----' TO TOTAL-RULE-PR (SEC).
 1212 100212 MOVE ' -----' TO TOT-TOT-RULE-PR (SEC).
 1213 100215 MOVE '\$' TO TOT-DOLLAR (SEC).
 1214 100220 GO TO SALES-DEPT-INPUT.
 1215
 1216
 1217 100280 003-START-UP.
 1218 100290 MOVE SPACES TO PRINT-LINE.
 1219 100300 IF NO-RAW-MATERIALS > 500, MOVE ' MAXIMUM NUMBER OF
 1220 100310 'RAW MATERIALS PROVIDED FOR IS 500' TO PRINT-LINE, WRITE
 1221 100320 PRINT-LINE AFTER ADVANCING TO-TOP-OF-PAGE, GO TO
 1222 100321 WIND-UP-PROCEDURE.
 1223 100322 IF NO-BUDGET-PERIODS > 12, MOVE ' MAXIMUM NUMBER OF
 1224 100324 'BUDGET PERIODS PROVIDED FOR IS 12. THIS MAXIMUM CAN NOT
 1225 100326 'BE INCREASED.' TO PRINT-LINE, WRITE PRINT-LINE AFTER
 1226 100328 ADVANCING TO-TOP-OF-PAGE, GO TO WIND-UP-PROCEDURE.
 1227 100330 IF BUDGET-PERIOD = 0 OR BUDGET-PERIOD > 5 MOVE
 1228 100332 ' YOU HAVE AN INVALID BUDGET PERIOD, PLEASE CHANGE 0A
 1229 100334 ' CARD, COLUMN #56' TO PRINT-LINE, WRITE PRINT-LINE
 1230 100336 AFTER ADVANCING TO-TOP-OF-PAGE, GO TO WIND-UP-PROCEDURE.
 1231 100348 IF NO-LEVEL-3-SALES-SEGMENTS = 0, MOVE ' LEVEL 3 SALES
 1232 100350 'SEGMENTS ARE REQUIRED. IF YOU HAVE ONLY 1 LEVEL OF SALES
 1233 100352 'SEGMENTS USE LEVEL 3' TO PRINT-LINE, WRITE PRINT-LINE
 1234 100354 AFTER ADVANCING TO-TOP-OF-PAGE, GO TO WIND-UP-PROCEDURE.
 1235 100356 IF NO-PRODUCING-DEPTS > 20, MOVE ' MAXIMUM NUMBER OF
 1236 100358 'PRODUCING DEPARTMENTS PROVIDED FOR IS 20' TO PRINT-LINE,
 1237 100360 WRITE PRINT-LINE AFTER ADVANCING TO-TOP-OF-PAGE, GO TO
 1238 100362 WIND-UP-PROCEDURE.
 1239 100364 IF NO-SERVICE-DEPTS > 10, MOVE ' MAXIMUM NUMBER OF
 1240 100366 'SERVICE DEPARTMENTS PROVIDED FOR IS 10' TO PRINT-LINE,
 1241 100368 WRITE PRINT-LINE AFTER ADVANCING TO-TOP-OF-PAGE, GO TO
 1242 100370 WIND-UP-PROCEDURE.
 1243 100372 IF NO-PRODUCTS > 50, MOVE ' MAXIMUM NUMBER OF PRODUCTS
 1244 100374 'PROVIDED FOR IS 50' TO PRINT-LINE, WRITE PRINT-LINE
 1245 100376 AFTER ADVANCING TO-TOP-OF-PAGE, GO TO WIND-UP-PROCEDURE.
 1246 100510 MOVE CURR-DATE TO CURRENT-DATE-PRINT.
 1247 100530 MOVE ORGANIZATION-DATA TO WS-ORGAN-DATA.
 1248 100540 MOVE INVENTORY-DATA TO INV-DATA.
 1249 100550 MOVE NO-BUDGET-PERIODS TO NO-PERIODS.
 1250 100560 MOVE INITIAL-BUDGET-PERIOD TO PERIOD.
 1251 100580 COMPUTE YEAR = 1900 + INITIAL-BUDGET-YEAR.

1252 100590 MOVE SPACES TO HEADING-LINE-4-DETAIL.
 1253 100650 IF BUDGET-PERIOD = 1 GO TO 004-MONTHLY-HEADING.
 1254 100660 IF BUDGET-PERIOD = 2 GO TO 005-QUARTERLY-HEADING.
 1255 100670 IF BUDGET-PERIOD = 3 GO TO 006-MONTH-QUARTER-HEADING.
 1256 100680 IF BUDGET-PERIOD = 4 GO TO 007-YEARLY-HEADING.
 1257 100690 GO TO 001-READ-CARD.
 1258
 1259
 1260 100750 004-MONTHLY-HEADING.
 1261 100755 IF N > NO-PERIODS GO TO 001-READ-CARD.
 1262 100760 MOVE YEAR TO YEAR-MH (PERIOD).
 1263 100770 MOVE MCNTH-HEADING (PERIOD) TO PERIOD-HEADING (SEC, Z).
 1264 100790 ADD 1 TO N, ADD 1 TO Z, ADD 1 TO PERIOD.
 1265 100800 IF N = NO-PERIODS, GO TO 001-READ-CARD.
 1266 100820 IF Z = 7, MOVE 1 TO Z, MOVE 2 TO SEC.
 1267 100830 IF PERIOD = 13, COMPUTE YEAR = YEAR + 1, MOVE 1 TO PERIOD.
 1268 100840 GO TO 004-MONTHLY-HEADING.
 1269
 1270
 1271 100850 005-QUARTERLY-HEADING.
 1272 100855 IF N > NO-PERIODS GO TO 001-READ-CARD.
 1273 100860 MOVE YEAR TO YEAR-QH (PERIOD).
 1274 100870 MOVE QUARTER-HEADING (PERIOD) TO PERIOD-HEADING (SEC, Z).
 1275 100900 ADD 1 TO N, ADD 1 TO Z, ADD 1 TO PERIOD.
 1276 100910 IF N = NO-PERIODS, GO TO 001-READ-CARD.
 1277 100930 IF Z = 7, MOVE 1 TO Z, MOVE 2 TO SEC.
 1278 100940 IF PERIOD = 5, COMPUTE YEAR = YEAR + 1, MOVE 1 TO PERIOD.
 1279 100950 GO TO 005-QUARTERLY-HEADING.
 1280
 1281
 1282 100960 006-MONTH-QUARTER-HEADING.
 1283 100965 IF N > NO-PERIODS GO TO 001-READ-CARD.
 1284 100970 MOVE YEAR TO YEAR-MH (PERIOD).
 1285 100980 MOVE MONTH-HEADING (PERIOD) TO PERIOD-HEADING (1, Z).
 1286 100990 ADD 1 TO N, ADD 1 TO Z, ADD 1 TO PERIOD.
 1287 101000 IF PERIOD = 5, MOVE 2 TO PERIOD, GO TO 005-QUARTERLY-HEADING.
 1288 101010 IF PERIOD = 7, MOVE 3 TO PERIOD, GO TO 005-QUARTERLY-HEADING.
 1289 101020 IF PERIOD = 10 MOVE 4 TO PERIOD, GO TO 005-QUARTERLY-HEADING.
 1290 101030 IF PERIOD = 13 MOVE 1 TO PERIOD, COMPUTE YEAR = YEAR + 1,
 1291 101040 GO TO 005-QUARTERLY-HEADING.
 1292 101050 GO TO 006-MONTH-QUARTER-HEADING.
 1293
 1294
 1295 101060 007-YEARLY-HEADING.
 1296 101065 IF N > NO-PERIODS GO TO 001-READ-CARD.
 1297 101070 MOVE YEAR TO YEAR-YH.
 1298 101080 MOVE YEAR-HEADING TO PERIOD-HEADING (SEC, Z).
 1299 101100 ADD 1 TO N, ADD 1 TO Z.
 1300 101110 IF N = NO-PERIODS, GO TO 001-READ-CARD.
 1301 101130 IF Z = 7 MOVE 1 TO Z, MOVE 2 TO SEC.
 1302 101140 GO TO 007-YEARLY-HEADING.
 1303
 1304
 1305 101150 008-STORE.
 1306 101160 MOVE BUDGET-PRINT (N) TO REPORT-PR (N).
 1307 101170 008-EXIT. EXIT.
 1308

1309
 1310 101180 009-RULING.
 1311 101190 MOVE 'S' TO DOLLAR-PRINT (SEC, COL).
 1312 101200 MOVE '-----' TO RULING (SEC, COL).
 1313 101201 MOVE '-----' TO TOT-RULE (SEC, COL).
 1314 101205 ADD 1 TO PERIOD.
 1315 101210 009-EXIT. EXIT.
 1316
 1317
 1318 101250 SALES-DEPT-INPUT SECTION.
 1319
 1320
 1321 101340 011-READ-CARD.
 1322
 1323 101350 READ BUDGET-DATA-FILE, AT END GO TO 2ND-SET-BUDGETS.
 1324
 1325 101351 IF CARD-CODE = '2A' OR = '2B' OR = '2C' OR = '3A' OR = '3B'
 1326 101352 OR = '3C' OR = '5A' OR = '5B' OR = '5C' OR = '6A'
 1327 101353 OR = '6B' OR = '6C' OR = '8A' OR = '8B' OR = '8C'
 1328 101354 OR = '9A' OR = '9B' OR = '9C' OR = 'SS' EXAMINE Z9
 1329 101356 REPLACING ALL ' ' BY 0, PERFORM 080-NUMERIC-TEST THRU
 1330 101357 080-EXIT.
 1331 101358 IF CARD-CODE = '4' EXAMINE Z1 REPLACING ALL ' ' BY 0,
 1332 101359 IF Z1 IS NOT NUMERIC GO TO 800-ERROR-ROUTINE.
 1333 101362 IF CARD-CODE = '7' EXAMINE Z1 REPLACING ALL ' ' BY 0,
 1334 101363 EXAMINE Z11 REPLACING ALL ' ' BY 0, IF Z11 IS NOT NUMERIC
 1335 101364 OR Z1 IS NOT NUMERIC, GO TO 800-ERROR-ROUTINE.
 1336 101366 IF CARD-CODE = '7A' EXAMINE Z14A REPLACING ALL ' ' BY 0,
 1337 101367 IF Z14A IS NOT NUMERIC GO TO 800-ERROR-ROUTINE.
 1338 101368 IF CARD-CODE = '7A' OR = '7B' EXAMINE Z14B REPLACING ALL ' '
 1339 101369 BY 0, IF Z14B IS NOT NUMERIC GO TO 800-ERROR-ROUTINE.
 1340
 1341
 1342 101370 012-BRANCHING.
 1343 101371 IF CARD-CODE = '1A' MOVE 1 TO NO-MRK-FC-CLASSES, MOVE NAME TO
 1344 101372 MRK-FC-NAME (1), GO TO 011-READ-CARD.
 1345 101380 IF CARD-CODE = '1B' MOVE 2 TO NO-MRK-FC-CLASSES, MOVE NAME TO
 1346 101381 MRK-FC-NAME (2), GO TO 011-READ-CARD.
 1347 101382 IF CARD-CODE = '1C' MOVE 3 TO NO-MRK-FC-CLASSES, MOVE NAME TO
 1348 101383 MRK-FC-NAME (3), GO TO 011-READ-CARD.
 1349 101400 IF CARD-CODE = '2A', MOVE 1 TO N, GO TO 013-DISK-STORE.
 1350 101410 IF CARD-CODE = '2B', MOVE 2 TO N, GO TO 013-DISK-STORE.
 1351 101420 IF CARD-CODE = '2C', MOVE 3 TO N, GO TO 013-DISK-STORE.
 1352 101430 IF CARD-CODE = '3A', MOVE 1 TO N, GO TO 014-DISK-STORE.
 1353 101440 IF CARD-CODE = '3B', MOVE 2 TO N, GO TO 014-DISK-STORE.
 1354 101450 IF CARD-CODE = '3C', MOVE 3 TO N, GO TO 014-DISK-STORE.
 1355 101460 IF CARD-CODE = '4' AND L2-SALES-SEGMENT-NO = 0 GO TO
 1356 101465 810-ERROR-ROUTINE.
 1357 101470 IF CARD-CODE = '5A' AND L2-SALES-SEGMENT-NO = 0 GO TO
 1358 101475 810-ERROR-ROUTINE.
 1359 101480 IF CARD-CODE = '5B' AND L2-SALES-SEGMENT-NO = 0 GO TO
 1360 101485 810-ERROR-ROUTINE.
 1361 101490 IF CARD-CODE = '5C' AND L2-SALES-SEGMENT-NO = 0 GO TO
 1362 101495 810-ERROR-ROUTINE.
 1363 101500 IF CARD-CODE = '6A' AND L2-SALES-SEGMENT-NO = 0 GO TO
 1364 101505 810-ERROR-ROUTINE.
 1365 101510 IF CARD-CODE = '6B' AND L2-SALES-SEGMENT-NO = 0 GO TO

1366 101515 810-ERROR-ROUTINE.
 1367 101520 IF CARD-CODE = '6C' AND L2-SALES-SEGMENT-NO = 0 GO TO
 1368 101525 810-ERROR-ROUTINE.
 1369 101560 IF CARD-CODE = '4' GO TO 015-DISK-STORE.
 1370 101570 IF CARD-CODE = '5A' MOVE 1 TO N, GO TO 020-DISK-STORE.
 1371 101580 IF CARD-CODE = '5B' MOVE 2 TO N, GO TO 020-DISK-STORE.
 1372 101590 IF CARD-CODE = '5C' MOVE 3 TO N, GO TO 020-DISK-STORE.
 1373 101600 IF CARD-CODE = '6A' MOVE 1 TO N, GO TO 030-DISK-STORE.
 1374 101610 IF CARD-CODE = '6B' MOVE 2 TO N, GO TO 030-DISK-STORE.
 1375 101620 IF CARD-CODE = '6C' MOVE 3 TO N, GO TO 030-DISK-STORE.
 1376 101630 IF CARD-CODE = '7' GO TO 040-DISK-STORE.
 1377 101640 IF CARD-CODE = '7A' GO TO 050-DISK-STORE.
 1378 101650 IF CARD-CODE = '8A' MOVE 1 TO N, GO TO 060-DISK-STORE.
 1379 101660 IF CARD-CODE = '8B' MOVE 2 TO N, GO TO 060-DISK-STORE.
 1380 101670 IF CARD-CODE = '8C' MOVE 3 TO N, GO TO 060-DISK-STORE.
 1381 101680 IF CARD-CODE = '9A' MOVE 1 TO N, GO TO 070-DISK-STORE.
 1382 101690 IF CARD-CODE = '9B' MOVE 2 TO N, GO TO 070-DISK-STORE.
 1383 101700 IF CARD-CODE = '9C' MOVE 3 TO N, GO TO 070-DISK-STORE.
 1384 101710 IF CARD-CODE NOT = 'SS' GO TO 900-ERROR-ROUTINE.
 1385 101715 IF NO-LEV-2-SALES-SEGS NOT > 0, PERFORM 040-DISK-STORE,
 1386 101720 PERFORM 00-WS1A-CLEAR.
 1387 101730 IF NO-LEV-2-SALES-SEGS > 0, PERFORM 015-DISK-STORE.
 1388 101740 PERFORM 03-DISK-CLEAR THRU 03-EXIT. MOVE 'SS' TO RECORD-CODE.
 1389 101750 WRITE DISK-CONTRIBUTION-RECORD FROM DK-WS.
 1390 101760 CLOSE CONTRIBUTION-DATA-FILE. GO TO PRODUCTION-DEPT-INPUT.
 1391
 1392
 1393 101800 013-DISK-STORE.
 1394 101810 IF PERIOD-CODE = 'S' PERFORM 013A-DISK-STORE THRU 013A-EXIT
 1395 101820 VARYING PERIOD FROM 1 BY 1 UNTIL PERIOD > NO-PERIODS,
 1396 101830 ELSE MOVE FIXED-COST-DATA TO
 1397 101840 PROD-MRK-FC-DATA (PRODUCT-NO, N).
 1398 101850 GO TO 011-READ-CARD.
 1399
 1400
 1401 101860 013A-DISK-STORE.
 1402 101870 MOVE SAME-AMOUNT TO PRODUCT-MRK-FC (PRODUCT-NO, N, PERIOD).
 1403 101880 013A-EXIT. EXIT.
 1404
 1405
 1406 101890 014-DISK-STORE.
 1407 101900 IF PERIOD-CODE = 'S' PERFORM 014A-DISK-STORE THRU 014A-EXIT
 1408 101910 VARYING PERIOD FROM 1 BY 1 UNTIL PERIOD > NO-PERIODS,
 1409 101920 ELSE MOVE FIXED-COST-DATA TO
 1410 101925 GO TO 011-READ-CARD.
 1411
 1412 101930 014A-DISK-STORE.
 1413 101940 MOVE SAME-AMOUNT TO MRK-FC (N, PERIOD).
 1414 101950 014A-EXIT. EXIT.
 1415
 1416
 1417 102000 015-DISK-STORE.
 1418 102010 IF STRT = 0, GO TO 016-DISK-STORE.
 1419 102018 PERFORM 040-DISK-STORE. MOVE 0 TO STRT.
 1420 102050 PERFORM 017-DISK-STORE THRU 017-EXIT VARYING PROD-NO
 1421 102060 FROM 1 BY 1 UNTIL PROD-NO > NO-PROD.
 1422 102065 MOVE 'L2' TO RECORD-CODE, MOVE L2-CONTRIBUTION TO

1423 102070 DK-CONTRIBUTION-DATA, WRITE DISK-CONTRIBUTION-RECORD FROM
 1424 102080 DK-WS, PERFORM 03-DISK-CLEAR THRU 03-EXIT. MOVE 1 TO
 1425 102085 PROD-NO, PERFORM 00-WS1A-CLEAR.
 1426
 1427
 1428 102100 016-DISK-STORE.
 1429 102105 MOVE L2-SALES-SEGMENT-NO TO DK-L2-SEG-NO.
 1430 102110 MOVE NAME TO DK-L2-NAME, GO TO 011-READ-CARD.
 1431
 1432
 1433 102120 017-DISK-STORE.
 1434 102125 IF L2-PROD-CONTRIB-DATA (PROD-NO) = ZEROES GO TO 017-EXIT.
 1435 102127 MOVE 'P2' TO RECORD-CODE.
 1436 102130 MOVE PROD-NO TO DK-PRODUCT-NO.
 1437 102140 MOVE L2-PROD-CONTRIB-DATA (PROD-NO) TO DK-CONTRIBUTION-DATA.
 1438 102150 WRITE DISK-CONTRIBUTION-RECORD FROM DK-WS.
 1439 102155 PERFORM 03A-DISK-CLEAR.
 1440 102160 017-EXIT. EXIT.
 1441
 1442
 1443 102250 020-DISK-STORE.
 1444 102255 IF L2-SALES-SEGMENT-NO NOT = DK-L2-SEG-NO, GO TO
 1445 102256 900-ERROR-ROUTINE.
 1446 102260 IF PERIOD-CODE = 'S', PERFORM 062-DISK-STORE THRU 062-EXIT
 1447 102270 VARYING PERIOD FROM 1 BY 1 UNTIL PERIOD > NO-PERIODS
 1448 102280 ELSE PERFORM 064-DISK-STORE THRU 064-EXIT VARYING PERIOD
 1449 102290 FROM 1 BY 1 UNTIL PERIOD > NO-PERIODS.
 1450 102300 GO TO 011-READ-CARD.
 1451
 1452
 1453 102330 030-DISK-STORE.
 1454 102335 IF L2-SALES-SEGMENT-NO NOT = DK-L2-SEG-NO, GO TO
 1455 102336 900-ERROR-ROUTINE.
 1456 102340 IF PERIOD-CODE = 'S', PERFORM 072-DISK-STORE THRU 072-EXIT
 1457 102350 VARYING PERIOD FROM 1 BY 1 UNTIL PERIOD > NO-PERIODS
 1458 102360 ELSE PERFORM 074-DISK-STORE THRU 074-EXIT VARYING PERIOD
 1459 102370 FROM 1 BY 1 UNTIL PERIOD > NO-PERIODS.
 1460 102380 GO TO 011-READ-CARD.
 1461
 1462
 1463 102500 040-DISK-STORE.
 1464 102505 IF CARD-CODE = '7' AND L2-SALES-SEGMENT-NO NOT =
 1465 102506 DK-L2-SEG-NO, GO TO 900-ERROR-ROUTINE.
 1466 102510 IF STRT = 0 GO TO 041-DISK-STORE.
 1467 102511 WRITE DISK-CONTRIBUTION-RECORD FROM DK-WS.
 1468 102513 PERFORM 03A-DISK-CLEAR THRU 03-EXIT. MOVE 0 TO STRT.
 1469 102520 MOVE 'L3' TO RECORD-CODE.
 1470 102530 MOVE L3-CONTRIBUTION TO DK-CONTRIBUTION-DATA.
 1471 102540 WRITE DISK-CONTRIBUTION-RECORD FROM DK-WS.
 1472 102550 PERFORM 03A-DISK-CLEAR THRU 03-EXIT. MOVE 0 TO DK-L3-SEG-NO.
 1473 102560 PERFORM 28-WS-CLEAR THRU 28-EXIT.
 1474
 1475
 1476 102570 041-DISK-STORE.
 1477 102580 MOVE SEGMENT-ID TO DK-IDENTIFICATION.
 1478 102590 MOVE MRKTC-VC-RATE-DATA TO MRK-VC-RATE-TABLE.
 1479 102600 MOVE 'P3' TO RECORD-CODE. GO TO 011-READ-CARD.

1480
1481
1482 102610 050-DISK-STORE.
1483 102615 PERFORM 055-CARD-CHECK THRU 055-EXIT.
1484 102620 IF STRT = 0, MOVE 1 TO STRT, GO TO 051-DISK-STORE.
1485 102630 WRITE DISK-CONTRIBUTION-RECORD FRGM DK-MS.
1486 1C2640 PERFORM 03A-DISK-CLEAR.
1487
1488
1489 103000 051-DISK-STORE.
1490 103010 MOVE PRODUCT-NO TO DK-PRODUCT-NO.
1491 103020 MOVE UNIT-SELLING-PRICE TO DK-UNIT-SALES-PRICE.
1492 103030 MOVE PROJECTED-SALES-DATA TO PROJ-7A-SALES.
1493 1C3040 IF NO-PERIODS > 6, PERFORM 056-7B-CARD THRU 056-EXIT.
1494 103070 PERFORM 052-DISK-STORE THRU 052-EXIT VARYING PERIOD FROM 1
1495 1C3080 BY 1 UNTIL PERIOD > NO-PERIODS.
1496 103090 GO TO 011-READ-CARD.
1497
1498
1499 103110 052-DISK-STORE.
1500 103120 IF L2-SALES-SEGMENT-NO > 0 ADD DK-PROJECTED-SALES (PERIOD) TO
1501 103130 L2-UNIT-SALES (DK-PRODUCT-NO, PERIOD).
1502 103140 ADD DK-PROJECTED-SALES (PERIOD) TO
1503 103150 UNIT-SALES (DK-PRODUCT-NO, PERIOD).
1504 103160 MULTIPLY DK-PROJECTED-SALES (PERIOD) BY DK-UNIT-SALES-PRICE
1505 1C3170 GIVING DK-PROJ-REVENUES (PERIOD) ROUNDED.
1506 103180 ADD DK-PROJ-REVENUES (PERIOD) TO L3-REVENUES (PERIOD).
1507 1C3190 IF L2-SALES-SEGMENT-NO > 0 ADD DK-PROJ-REVENUES (PERIOD) TO
1508 103200 L2-PROD-REVENUES (DK-PRODUCT-NO, PERIOD).
1509 103205 IF L2-SALES-SEGMENT-NO > 0 ADD DK-PROJ-REVENUES (PERIOD) TO
1510 1C3210 L2-REVENUES (PERIOD).
1511 103220 ADD DK-PROJ-REVENUES (PERIOD) TO
1512 103230 PRODUCT-REVENUE (DK-PRODUCT-NO, PERIOD).
1513 103240 ADD DK-PROJ-REVENUES (PERIOD) TO REVENUES (PERIOD).
1514 103260 PERFORM 054-DISK-STORE THRU 054-EXIT VARYING N FROM 1 BY 1
1515 103270 UNTIL N > 3.
1516 1C3280 052-EXIT. EXIT.
1517
1518
1519 103380 054-DISK-STORE.
1520 103390 IF MRK-VC-RATE (N) = 0 GO TO 054-EXIT.
1521 103400 MULTIPLY MRK-VC-RATE (N) BY DK-PROJ-REVENUES (PERIOD) GIVING
1522 103410 DK-MRK-VC (N, PERIOD) ROUNDED.
1523 103420 ADD DK-MRK-VC (N, PERIOD) TO L3-MRK-VC (N, PERIOD).
1524 103430 IF L2-SALES-SEGMENT-NO > 0 ADD DK-MRK-VC (N, PERIOD) TO
1525 1C3440 L2-PROD-MRK-VC (DK-PRODUCT-NO, N, PERIOD).
1526 103450 IF L2-SALES-SEGMENT-NO > 0 ADD DK-MRK-VC (N, PERIOD) TO
1527 1C3455 L2-MRK-VC (N, PERIOD).
1528 103460 ADD DK-MRK-VC (N, PERIOD) TO
1529 103470 PRODUCT-MRK-VC (DK-PRODUCT-NO, N, PERIOD).
1530 103480 ADD DK-MRK-VC (N, PERIOD) TO MRK-VC (N, PERIOD).
1531 103490 054-EXIT. EXIT.
1532
1533
1534 103491 055-CARD-CHECK.
1535 103492 IF L2-SALES-SEGMENT-NO NOT = DK-L2-SEG-NO, GO TO
1536 103493 900-ERRCR-ROUTINE.

1537 103494 IF L3-SALES-SEGMENT-NO NOT = DK-L3-SEG-NO, GO TO
1538 103495 900-ERROR-ROUTINE.
1539 103496 055-EXIT. EXIT.
1540
1541
1542 103497 056-7B-CARD.
1543 103498 PERFORM 011-READ-CARD.
1544 1C3499 IF CARD-CODE NOT = '7B' GO TO 900-ERROR-ROUTINE.
1545 103500 PERFORM 055-CARD-CHECK THRU 055-EXIT.
1546 103501 IF PRODUCT-NO NOT = DK-PRODUCT-NO GO TO 900-ERROR-ROUTINE.
1547 103502 MOVE PROJECTED-SALES-DATA TO PROJ-7B-SALES.
1548 103503 056-EXIT. EXIT.
1549
1550
1551 103504 060-DISK-STORE.
1552 103505 PERFORM 055-CARD-CHECK THRU 055-EXIT.
1553 103510 IF PERIOD-CODE = 'S' PERFORM 061-DISK-STORE THRU 062-EXIT
1554 103520 VARYING PERIOD FROM 1 BY 1 UNTIL PERIOD > NO-PERIODS,
1555 103530 ELSE MOVE FIXED-COST-DATA TO DK-MRK-FC-DETAIL (N),
1556 103540 PERFORM 064-DISK-STORE THRU 064-EXIT VARYING PERIOD FROM
1557 103550 1 BY 1 UNTIL PERIOD > NO-PERIODS.
1558 103560 GO TO 011-READ-CARD.
1559
1560
1561 103600 061-DISK-STORE.
1562 103610 MOVE SAME-AMOUNT TO DK-MRK-FC (N, PERIOD).
1563
1564
1565 103620 062-DISK-STORE.
1566 103630 IF L2-SALES-SEGMENT-NO > 0 ADD SAME-AMOUNT TO
1567 103635 L2-PROD-MRK-FC (PRODUCT-NO, N, PERIOD).
1568 103640 ADD SAME-AMOUNT TO PRODUCT-MRK-FC (PRODUCT-NO, N, PERIOD).
1569 103650 062-EXIT. EXIT.
1570
1571
1572 103680 064-DISK-STORE.
1573 103690 IF L2-SALES-SEGMENT-NO > 0 ADD TRACEABLE-FC (PERIOD) TO
1574 103700 L2-PROD-MRK-FC (PRODUCT-NO, N, PERIOD).
1575 103710 ADD TRACEABLE-FC (PERIOD) TO
1576 103720 PRODUCT-MRK-FC (PRODUCT-NO, N, PERIOD).
1577 103730 064-EXIT. EXIT.
1578
1579
1580 103750 070-DISK-STORE.
1581 103755 PERFORM 055-CARD-CHECK THRU 055-EXIT.
1582 103760 IF PERIOD-CODE = 'S' PERFORM 071-DISK-STORE THRU 072-EXIT
1583 103770 VARYING PERIOD FROM 1 BY 1 UNTIL PERIOD > NO-PERIODS,
1584 103780 ELSE MOVE FIXED-COST-DATA TO L3-MRK-FC-DATA (N),
1585 103790 PERFORM 074-DISK-STORE THRU 074-EXIT VARYING PERIOD FROM
1586 103800 1 BY 1 UNTIL PERIOD > NO-PERIODS.
1587 103810 GO TO 011-READ-CARD.
1588
1589
1590 103850 071-DISK-STORE.
1591 103860 ADD SAME-AMOUNT TO L3-MRK-FC (N, PERIOD).
1592
1593

1594 103873 072-DISK-STORE.
 1595 103880 IF L2-SALES-SEGMENT-NO > 0 ADD SAME-AMOUNT TO
 1596 103885 L2-MRK-FC (N, PERIOD).
 1597 103890 ADD SAME-AMOUNT TO MRK-FC (N, PERIOD).
 1598 103900 072-EXIT. EXIT.
 1599
 1600
 1601 103930 074-DISK-STORE.
 1602 103940 IF L2-SALES-SEGMENT-NO > 0 ADD TRACEABLE-FC (PERIOD) TO
 1603 103945 L2-MRK-FC (N, PERIOD).
 1604 103950 ADD TRACEABLE-FC (PERIOD) TO MRK-FC (N, PERIOD).
 1605 103960 074-EXIT. EXIT.
 1606
 1607
 1608 103970 080-NUMERIC-TEST.
 1609 103972 IF PERIOD-CODE NOT = 'S' AND Z9 IS NOT NUMERIC GO TO
 1610 103974 800-ERROR-ROUTINE.
 1611 103976 IF PERIOD-CODE = 'S' AND Z1 IS NOT NUMERIC GO TO
 1612 103978 800-ERROR-ROUTINE.
 1613 103979 080-EXIT. EXIT.
 1614
 1615
 1616 104000 PRODUCTION-DEPT-INPUT SECTION.
 1617
 1618
 1619 104001 SC1-INDEX.
 1620 104002 IF SC-1 = 1, ADD 1 TO REPRTS, MOVE 'SC-1' TO SCH-NO (REPRTS).
 1621 104003 MOVE 'STANDARD COST SHEET' TO HEAD (REPRTS).
 1622 104004 MOVE 1 TO INDEX-PG (REPRTS).
 1623
 1624
 1625 104260 100-READ-CARD.
 1626
 1627 104270 READ BUDGET-DATA-FILE, AT END GO TO ZND-SET-BUDGETS.
 1628 104271 IF CARD-CODE = '10' EXAMINE Z1 REPLACING ALL ' ' BY 0
 1629 104272 EXAMINE Z15 REPLACING ALL ' ' BY 0, EXAMINE Z7 REPLACING
 1630 104273 ALL ' ' BY 0, EXAMINE Z8 REPLACING ALL ' ' BY 0,
 1631 104274 IF Z1 IS NOT NUMERIC OR Z15 IS NOT NUMERIC OR Z7 IS NOT
 1632 104275 NUMERIC OR Z8 IS NOT NUMERIC GO TO 800-ERROR-ROUTINE.
 1633 104276 IF CARD-CODE = '11' OR = '13' OR = '15' OR = '17' OR = '18'
 1634 104277 OR = '19' OR = '20' EXAMINE Z9 REPLACING ALL ' ' BY 0,
 1635 104278 IF Z9 IS NOT NUMERIC GO TO 800-ERROR-ROUTINE.
 1636 104279 IF CARD-CODE = '12' EXAMINE Z17 REPLACING ALL ' ' BY 0,
 1637 104280 EXAMINE Z12 REPLACING ALL ' ' BY 0, EXAMINE Z13 REPLACING
 1638 104281 ALL ' ' BY 0, IF Z17 IS NOT NUMERIC OR Z12 IS NOT NUMERIC
 1639 104282 OR Z13 IS NOT NUMERIC, GO TO 800-ERROR-ROUTINE.
 1640 104283 IF CARD-CODE = '14' EXAMINE Z18 REPLACING ALL ' ' BY 0,
 1641 104284 EXAMINE Z20 REPLACING ALL ' ' BY 0, EXAMINE Z8 REPLACING
 1642 104285 ALL ' ' BY 0, IF DENOM-CONV-FACTOR = 0, MOVE 1 TO
 1643 104286 DENOM-CONV-FACTOR, MOVE COSTING-UNIT TO PURCHASING-UNIT,
 1644 104287 MOVE COSTING-UNIT-COST TO PURCH-UNIT-COST,
 1645 104288 IF Z18 IS NOT NUMERIC OR Z20 IS NOT NUMERIC OR Z8 IS NOT
 1646 104289 NUMERIC GO TO 800-ERROR-ROUTINE.
 1647 104290 IF CARD-CODE = '16' EXAMINE Z1 REPLACING ALL ' ' BY 0,
 1648 104291 EXAMINE Z5 REPLACING ALL ' ' BY 0, EXAMINE Z8 REPLACING
 1649 104292 ALL ' ' BY 0, IF Z1 IS NOT NUMERIC OR Z5 IS NOT NUMERIC
 1650 104293 OR Z8 IS NOT NUMERIC GO TO 800-ERROR-ROUTINE.

1651 104294 IF CARD-CODE = '21' EXAMINE Z1 REPLACING ALL ' ' BY 0,
 1652 104295 EXAMINE Z10 REPLACING ALL ' ' BY 0, IF Z1 IS NOT NUMERIC OR
 1653 104296 Z10 IS NOT NUMERIC GO TO 800-ERROR-ROUTINE.
 1654 104298 IF CARD-CODE = 'SS' EXAMINE Z1 REPLACING ALL ' ' BY 0,
 1655 104299 IF Z1 IS NOT NUMERIC, GO TO 800-ERROR-ROUTINE.
 1656
 1657
 1658 104300 102-BRANCHING.
 1659 104310 IF CARD-CODE = '10' GO TO 110-PROD-DEPT-ST.
 1660 104320 IF CARD-CODE = '12' MOVE NO-CF-CONSTRAINTS TO
 1661 104330 CONSTRAINTS (DEPT-NO) PERFORM 116-PROD-DEPT-ST THRU
 1662 104340 116-EXIT VARYING N FROM 1 BY 1 UNTIL N >
 1663 104350 NO-OF-CONSTRAINTS, GO TO 100-READ-CARD.
 1664 104360 IF CARD-CODE = '13', MOVE 1 TO N, GO TO 118-PROD-DEPT-ST.
 1665 104370 IF CARD-CODE = '14', GO TO 120-RM-STORE.
 1666 104380 IF CARD-CODE = '16', GO TO 130-PROD-DATA-ST.
 1667 104390 GO TO 900-ERROR-ROUTINE.
 1668
 1669
 1670 104750 110-PROD-DEPT-ST.
 1671 104760 MOVE NAME TO PRODUCTION-DEPT-NAME (DEPT-NO).
 1672 104770 MOVE LABOR-RATE TO LABOR-HR-RATE (DEPT-NO).
 1673 104780 MOVE PIECE-RATE TO LABOR-PIECE-RATE (DEPT-NO).
 1674 104790 MOVE OH-VC-RATE TO PROD-DEPT-OH-RATE (DEPT-NO).
 1675 104795 MOVE NO-SEMI-FIXED-COSTS TO NO-SEMI-FC (DEPT-NO).
 1676 104800 IF OH-UNIT-CODE = 1, MOVE 'DLH' TO VAR-OH-UNIT (DEPT-NO).
 1677 104810 IF OH-UNIT-CODE = 2 MOVE 'MACH-HRS' TO VAR-OH-UNIT (DEPT-NO).
 1678 104820 IF OH-UNIT-CODE = 3 MOVE 'LBS-MAT' TO VAR-OH-UNIT (DEPT-NO).
 1679 104830 IF OH-UNIT-CODE = 4 MOVE 'NU-UNITS' TO VAR-OH-UNIT (DEPT-NO).
 1680 104840 IF OH-UNIT-CODE = 5 MOVE OTHER-OH-UNIT TO
 1681 104850 VAR-OH-UNIT (DEPT-NO).
 1682 104860 MOVE MAX-UNITS-AVAILABLE TO MAX-OH-UNITS (DEPT-NO).
 1683 104870 IF PERIOD-CODE = 'S' PERFORM 112-PROD-DEPT-ST THRU 112-EXIT.
 1684 104880 VARYING PERIOD FROM 1 BY 1 UNTIL PERIOD > NO-PERIODS,
 1685 104890 ELSE PERFORM 114-PROD-DEPT-ST THRU 114-EXIT.
 1686 104900 GO TO 100-READ-CARD.
 1687
 1688
 1689 105000 112-PROD-DEPT-ST.
 1690 105010 MOVE SAME-AMOUNT TO PROD-DEPT-FC (DEPT-NO, PERIOD).
 1691 105020 IF PRODUCT-NO > 0, MOVE SAME-AMOUNT TO
 1692 105030 PROD-MFG-FC (PRODUCT-NO, PERIOD).
 1693 105040 112-EXIT. EXIT.
 1694
 1695
 1696 105080 114-PROD-DEPT-ST.
 1697 105090 PERFORM 100-READ-CARD.
 1698 105100 IF CARD-CODE NOT = '11' GO TO 900-ERROR-ROUTINE.
 1699 105110 MOVE FIXED-COST-DATA TO PROD-DEPT-FC-DATA (DEPT-NO).
 1700 105120 IF PRODUCT-NO > 0, MOVE FIXED-COST-DATA TO
 1701 105130 PROD-MFG-FC-DATA (PRODUCT-NO).
 1702 105140 114-EXIT. EXIT.
 1703
 1704
 1705 105170 116-PROD-DEPT-ST.
 1706 105180 IF CONSTRAINT-CODE (N) = 1, MOVE 'OLM' ' TO
 1707 105190 CONSTRAINT-NAME (DEPT-NO, N).

1708 105200 IF CONSTRAINT-CODE (N) = 2, MOVE 'MACH-HRS' TO
 1709 105210 CONSTRAINT-NAME (DEPT-NO, N).
 1710 105220 IF CONSTRAINT-CODE (N) = 3, MOVE 'LBS-MAT' TO
 1711 105230 CONSTRAINT-NAME (DEPT-NO, N).
 1712 105240 IF CONSTRAINT-CODE (N) = 4, MOVE 'NO-UNITS' TO
 1713 105250 CONSTRAINT-NAME (DEPT-NO, N).
 1714 105260 IF CONSTRAINT-CODE (N) = 5, MOVE OTHER-CONSTRAINT (N) TO
 1715 105270 CONSTRAINT-NAME (DEPT-NO, N).
 1716 105280 MOVE MAX-CONST-UNITS (N) TO MAX-CONST-UNITS (DEPT-NO, N).
 1717 105300 116-EXIT. EXIT.
 1718
 1719
 1720 105340 118-PROD-DEPT-ST.
 1721 105345 IF N > NO-SEMI-FC (DEPT-NO) GO TO 100-READ-CARD.
 1722 105350 MOVE SEMI-FIXED-DATA TO SEMI-FC-DETAIL (DEPT-NO, N).
 1723 105360 IF NO-SEMI-FC (DEPT-NO) > N, PERFORM 100-READ-CARD.
 1724 105370 IF CARD-CODE NOT = '13' GO TO 900-ERROR-ROUTINE, ELSE
 1725 105380 ADD 1 TO N, GO TO 118-PROD-DEPT-ST.
 1726 105390 GO TO 100-READ-CARD.
 1727
 1728
 1729 105500 120-RM-STORE.
 1730 105520 MOVE NAME TO RM-NAME (RAW-MATERIALS-NO).
 1731 105530 MOVE RAW-MATERIALS-DETAIL TO RM-DETAIL (RAW-MATERIALS-NO).
 1732 105540 MOVE BEGINNING-INVENTORY TO
 1733 105542 RM-INVENTORY (RAW-MATERIALS-NO, 1).
 1734 105543 COMPUTE END-PERIOD = NO-PERIODS + 1.
 1735 105550 IF PERIOD-CODE = 'S', PERFORM 122-RM-STORE THRU 122-EXIT
 1736 105560 VARYING PERIOD FROM 2 BY 1 UNTIL PERIOD > END-PERIOD
 1737 105570 ELSE PERFORM 124-RM-STORE THRU 124-EXIT.
 1738 105580 GO TO 100-READ-CARD.
 1739
 1740
 1741 105630 122-RM-STORE.
 1742 105640 MOVE SAME-AMOUNT TO RM-INVENTORY (RAW-MATERIALS-NO, PERIOD).
 1743 105650 122-EXIT. EXIT.
 1744
 1745
 1746 105670 124-RM-STORE.
 1747 105680 PERFORM 100-READ-CARD.
 1748 105690 IF CARD-CODE NOT = '15' GO TO 900-ERROR-ROUTINE.
 1749 105699 COMPUTE END-PERIOD = NO-PERIODS + 1. MOVE 1 TO N.
 1750 105700 PERFORM 126-RM-STORE THRU 126-EXIT VARYING PERIOD FROM 2 BY 1
 1751 105702 UNTIL PERIOD > END-PERIOD.
 1752 105710 124-EXIT. EXIT.
 1753
 1754
 1755 105720 126-RM-STORE.
 1756 105730 MOVE DESIRED-EI (N) TO
 1757 105731 RM-INVENTORY (RAW-MATERIALS-NO, PERIOD).
 1758 105740 ADD 1 TO N.
 1759 105750 126-EXIT. EXIT.
 1760
 1761
 1762 105751 130-PROD-DATA-ST.
 1763 105760 IF SC-1 = 1 AND PRODUCT-NO > 1, PERFORM 134-PROD-COST-TOT
 1764 105770 THRU 134-EXIT.

1765 105789 IF PRODUCT-NO > 1,
 1766 105790 MOVE TOT-UNIT-COST TO PRODUCT-STD-COST (PROD-NO).
 1767 105810 MOVE ZEROS TO TOT-MAT-COST, TOT-LAB-COST, TOT-OH-COST,
 1768 105815 TOT-UNIT-COST.
 1769
 1770
 1771 105820 131-PROD-DATA-ST.
 1772 105840 MOVE PRODUCT-NO TO PROD-NO.
 1773 105850 MOVE NAME TO PRODUCT-NAME (PROD-NO).
 1774 105860 MOVE BEGINNING-INVENTORY TO PRODUCT-INV (PROD-NO, 1).
 1775 105870 IF PERIOD-CODE = 'S' PERFORM 135-PROD-DATA-ST THRU 135-EXIT.
 1776 105880 VARYING PERIOD FROM 2 BY 1 UNTIL PERIOD > END-PERIOD
 1777 105890 ELSE PERFORM 136-PROD-DATA-ST.
 1778 105900 MOVE 1 TO PERIOD, 81. MOVE 2 TO EI.
 1779 105910 PERFORM 137-PLAN-PROD THRU 137-EXIT VARYING 81 FROM 1 BY 1
 1780 105920 UNTIL 81 > NO-PERIODS.
 1781 105930 IF SC-1 = 1 MOVE 1 TO V, U, PERFORM 138-SC-HEAD THRU
 1782 105940 138-EXIT.
 1783
 1784
 1785 106000 132-PROD-DATA-ST.
 1786 106010 PERFORM 100-READ-CARD.
 1787 106015 IF CARD-CODE = 'SS' GO TO 170-PROD-DATA-WIND-UP.
 1788 106020 IF CARD-CODE = '16' GO TO 130-PROD-DATA-ST.
 1789 106050 IF PRODUCT-NO NOT = PROD-NO GO TO 900-ERROR-ROUTINE.
 1790
 1791
 1792 106060 133-PROD-DATA-ST.
 1793 106070 IF CARD-CODE = '18' GO TO 140-RM-REQ.
 1794 106080 IF CARD-CODE = '20' PERFORM 150-CONST-REQ THRU 150-EXIT
 1795 106100 VARYING Z FROM 1 BY 1 UNTIL Z > CONSTRAINTS (DEPT-NO).
 1796 106105 IF CARD-CODE = '20' GO TO 132-PROD-DATA-ST.
 1797 106120 IF CARD-CODE = '21' GO TO 160-LAB-OH-REQ.
 1798 106130 GO TO 900-ERROR-ROUTINE.
 1799
 1800
 1801 106170 134-PROD-COST-TOT.
 1802 106180 IF LINE-COUNT > 45, PERFORM 138-SC-HEAD THRU 138-EXIT.
 1803 106200 MOVE ' TOTAL PRODUCT COST' TO PC-NAME.
 1804 106210 MOVE TOT-MAT-COST TO PC-MATERIALS.
 1805 106220 MOVE TOT-LAB-COST TO PC-LABOR.
 1806 106230 MOVE TOT-OH-COST TO PC-OH.
 1807 106240 MOVE TOT-UNIT-COST TO PC-TOTAL.
 1808 106250 WRITE PRINT-LINE FROM PROD-COST-REPORT-LINE AFTER ADVANCING
 1809 106260 2 LINES. PERFORM 08-WS-CLEAR.
 1810 106261 MOVE ' \$' TO PC3, PC4, PC5, PC6. WRITE PRINT-LINE FROM
 1811 106262 PC-DOLLAR-LINE AFTER ADVANCING 0 LINES. MOVE SPACES TO
 1812 106263 PC3, PC4, PC5, PC6.
 1813 106270 WRITE PRINT-LINE FROM PC-TOTAL-LINE AFTER ADVANCING 1 LINES.
 1814 106274 MOVE SPACES TO PC1.
 1815 106290 134-EXIT. EXIT.
 1816
 1817
 1818 106310 135-PROD-DATA-ST.
 1819 106320 MOVE SAME-AMOUNT TO PRODUCT-INV (PROD-NO, PERIOD).
 1820 106330 135-EXIT. EXIT.
 1821

1822
1823 106354 136-PROD-DATA-ST.
1824 1C6360 PERFORM 100-READ-CARD.
1825 106370 IF CARD-CODE NOT = '17' GO TO 900-ERROR-ROUTINE.
1826 106380 IF PRODUCT-NO NOT = PROD-NO GO TO 900-ERROR-ROUTINE.
1827 106391 CCMPUTE END-PERIOD = NO-PERIODS + 1. MOVE 1 TO N.
1828 106352 PERFORM 139-PROD-DATA-ST THRU 139-EXIT VARYING PERIOD
1829 106394 FROM 2 BY 1 UNTIL PERIOD > END-PERIOD.
1830 106400 136-EXIT. EXIT.
1831
1832
1833 106430 137-PLAN-PROD.
1834 1C6440 CCMPUTE PLANNED-PRODUCTION (PROD-NO, PERIOD) =
1835 1C6450 PRODUCT-INV (PROD-NO, EI) + UNIT-SALES (PROD-NO, PERIOD)
1836 106460 - PRODUCT-INV (PROD-NO, BI).
1837 106470 ADD 1 TO EI. ADD 1 TO PERIOD.
1838 106480 137-EXIT. EXIT.
1839
1840
1841 1C6500 138-SC-HFAD.
1842 106550 PERFORM 212-HEADING THRU 212-EXIT.
1843 1C6560 MOVE ' SCHEDULE SC-1 ' TO SCHEDULE-NO-PRINT.
1844 106610 MOVE ' STANDARD COST SHEET' TO BUDGET-NAME-PRINT.
1845 106630 MOVE PRODUCT-NAME (PROD-NO) TO PROD-NAME-PR.
1846 106640 PERFORM 214-HEADING THRU 214-EXIT.
1847 106670 WRITE PRINT-LINE FROM PROD-COST-HEADING AFTER ADVANCING
1848 106680 2 LINES.
1849 1C6690 WRITE PRINT-LINE FROM PC-RULING-LINE AFTER ADVANCING 1 LINES.
1850 106695 WRITE PRINT-LINE FROM PC-RULE-LINE AFTER ADVANCING 0 LINES.
1851 106710 138-EXIT. EXIT.
1852
1853
1854 106720 139-PROD-DATA-ST.
1855 1C6722 MOVE DESIRED-EI (N) TO PRODUCT-INV (PROD-NO, PERIOD).
1856 106724 ADD 1 TO N.
1857 106726 139-EXIT. EXIT.
1858
1859
1860 106750 140-RM-REQ.
1861 106760 MOVE NO-RM-USED TO NO-RM. IF SC-1 = 1.
1862 106770 MOVE PRODUCTION-DEPT-NAME (DEPT-NO) TO PROD-DEPT-NAME-PR.
1863 106780 MOVE ZEROS TO WS-MATERIALS, DEPT-MAT-COST, DEPT-LAB-COST,
1864 106785 DEPT-OH-COST, DEPT-UNIT-MC, RM-STORED.
1865
1866
1867 106790 141-RM-REQ.
1868 1C6800 PERFORM 142-RM-REQ THRU 142-EXIT VARYING Z FROM 1 BY 1
1869 106810 UNTIL Z = 7 OR Z > NO-RM.
1870 106820 ADD 7 TO RM-STORED.
1871 106830 IF RM-STORED < NO-RM PERFORM 132-PROD-DATA-ST.
1872 106840 GO TO 141-RM-REQ.
1873 106870 GO TO 132-PROD-DATA-ST.
1874
1875
1876 107000 142-RM-REQ.
1877 1C7010 IF RAW-MAT-NO (Z) = 0, GO TO 142-EXIT.
1878 107020 MOVE RAW-MAT-NO (Z) TO RM-NO.

1879 107030 COMPUTE WS-MATERIALS ROUNDED = RM-QTY (Z) * CU-COST (RM-NO).
1880 107040 ADD WS-MATERIALS TO TOT-UNIT-COST.
1881 107080 IF SC-1 = 1, PERFORM 144-RM-REQ THRU 144-EXIT.
1882 107100 PERFORM 146-RM-REQ THRU 146-EXIT VARYING PERIOD FROM 1 BY 1
1883 107110 UNTIL PERIOD > NO-PERIODS.
1884 107140 142-EXIT. EXIT.
1885
1886
1887 107250 144-RM-REQ.
1888 1C7260 IF CARD-CODE = '18' AND Z = 1, WRITE PRINT-LINE FROM
1889 107270 PROD-COST-REPORT-LINE AFTER ADVANCING 2 LINES, MOVE
1890 107280 SPACES TO PRINT-LINE, WRITE PRINT-LINE AFTER ADVANCING
1891 107285 1 LINES, PERFORM 08-WS-CLEAR.
1892 107290 MOVE RM-NAME (RM-NO) TO PC-NAME.
1893 107300 MOVE RM-QTY (Z) TO PC-QTY.
1894 107310 MOVE CU-COST (RM-NO) TO PC-UNIT-COST.
1895 107320 ADD WS-MATERIALS TO DEPT-MAT-COST.
1896 107330 ADD WS-MATERIALS TO DEPT-UNIT-MC.
1897 107340 ADD WS-MATERIALS TO TOT-MAT-COST.
1898 107350 MOVE WS-MATERIALS TO PC-MATERIALS.
1899 107360 WRITE PRINT-LINE FROM PROD-COST-REPORT-LINE AFTER
1900 107370 ADVANCING 1 LINES, PERFORM 08-WS-CLEAR.
1901 107380 ADD 2 TO LINE-COUNT. ADD 2 TO LC.
1902 107381 IF LC = 2, MOVE ' S' TO PC2, PC3.
1903 107382 WRITE PRINT-LINE FROM PC-DOLLAR-LINE AFTER ADVANCING 0 LINES.
1904 107383 MOVE SPACES TO PC2, PC3.
1905 107390 IF LINE-COUNT > 50, PERFORM 138-SC-HEAD THRU 138-EXIT.
1906 107410 144-EXIT. EXIT.
1907
1908
1909 107430 146-RM-REQ.
1910 107440 COMPUTE SUB ROUNDED = RM-QTY (Z) *
1911 107450 PLANNED-PRODUCTION (PROD-NO, PERIOD).
1912 107460 ADD SUB TO RM-PROD-REQUIREMENTS (RM-NO, PERIOD).
1913 1C7470 146-EXIT. EXIT.
1914
1915
1916 107500 150-CONST-REQ.
1917 107510 PERFORM 152-CONST-REQ THRU 152-EXIT VARYING PERIOD
1918 107520 FROM 1 BY 1 UNTIL PERIOD > NO-PERIODS.
1919 107530 150-EXIT. EXIT.
1920
1921
1922 107550 152-CONST-REQ.
1923 107560 COMPUTE SUB ROUNDED = QTY-PER-UNIT (Z) *
1924 107565 PLANNED-PRODUCTION (PROD-NO, PERIOD).
1925 107570 ADD SUB TO CONSTRAINT-UNITS-USED (DEPT-NO, Z, PERIOD).
1926 107580 152-EXIT. EXIT.
1927
1928
1929 107600 160-LAB-OH-REQ.
1930 1C7620 IF LABOR-CODE = 'P' MOVE LABOR-PIECE-RATE (DEPT-NO)
1931 107630 TO DEPT-LAB-COST ELSE COMPUTE DEPT-LAB-COST ROUNDED =
1932 107640 LABOR-HR-RATE (DEPT-NO) * LABOR-HOURS-PER-UNIT.
1933 107650 ADD DEPT-LAB-COST TO TOT-UNIT-COST.
1934 107670 COMPUTE DEPT-OH-COST ROUNDED = VARIABLE-OVERHEAD-QTY *
1935 107680 PROD-DEPT-OH-RATE (DEPT-NO).

1936 107690 ADD DEPT-OH-COST TO TOT-UNIT-COST.
 1937 107700 IF SC-1 = 1, PERFORM 162-LAB-OH-REQ THRU 163-EXIT.
 1938 107710 PERFORM 166-LAB-REQ THRU 166-EXIT VARYING PERIOD FROM 1 BY 1
 1939 107720 UNTIL PERIOD > NO-PERIODS.
 1940 107730 GO TO 132-PRDD-DATA-ST.
 1941
 1942
 1943 107750 162-LAB-OH-REQ.
 1944 107760 IF LABOR-CODE = 'P', GO TO 164-LAB-REQ.
 1945 107770 MOVE 'LABOR' TO PC-NAME.
 1946 107780 MOVE LABOR-HOURS-PER-UNIT TO PC-QTY.
 1947 107810 MOVE LABOR-HR-RATE (DEPT-NO) TO PC-UNIT-COST.
 1948
 1949
 1950 107830 163-LAB-OH-REQ.
 1951 107840 MOVE DEPT-LAB-COST TO PC-LABOR.
 1952 107850 ADD DEPT-LAB-COST TO DEPT-UNIT-MC.
 1953 107860 ADD DEPT-LAB-COST TO TOT-LAB-COST.
 1954 107870 WRITE PRINT-LINE FROM PRDD-COST-REPORT-LINE AFTER
 1955 107880 ADVANCING 2 LINES. PERFORM 08-MS-CLEAR.
 1956 107881 MOVE ' \$' TO PC4. WRITE PRINT-LINE FROM PC-DOLLAR-LINE
 1957 107882 AFTER ADVANCING 0 LINES. MOVE SPACES TO PC4.
 1958 107890 ADD 2 TO LINE-COUNT.
 1959 107900 IF LINE-COUNT > 45 PERFORM 138-SC-HEAD THRU 138-EXIT.
 1960 107920 MOVE 'OVERHEAD' TO PC-NAME.
 1961 107930 MOVE VARIABLE-OVERHEAD-QTY TO PC-QTY.
 1962 107940 MOVE PRDD-DEPT-OH-RATE (DEPT-NO) TO PC-UNIT-COST.
 1963 107970 MOVE DEPT-OH-COST TO PC-OH.
 1964 107980 ADD DEPT-OH-COST TO DEPT-UNIT-MC
 1965 107990 ADD DEPT-OH-COST TO TOT-OH-COST.
 1966 108050 WRITE PRINT-LINE FROM PRDD-COST-REPORT-LINE AFTER
 1967 108060 ADVANCING 2 LINES. PERFORM 08-MS-CLEAR.
 1968 108061 MOVE ' \$' TO PC5. WRITE PRINT-LINE FROM PC-DOLLAR-LINE
 1969 108062 AFTER ADVANCING 0 LINES. MOVE SPACES TO PC5.
 1970 108080 MOVE ' DEPARTMENT TOTAL' TO PC-NAME.
 1971 108100 MOVE DEPT-MAT-COST TO PC-MATERIALS.
 1972 108110 MOVE DEPT-LAB-COST TO PC-LABOR.
 1973 108120 MOVE DEPT-OH-COST TO PC-OH.
 1974 108130 MOVE DEPT-UNIT-MC TO PC-TOTAL.
 1975 108140 WRITE PRINT-LINE FROM PC-RULING-LINE AFTER ADVANCING 2 LINES.
 1976 108150 WRITE PRINT-LINE FROM PRDD-COST-REPORT-LINE AFTER
 1977 108160 ADVANCING 1 LINES. PERFORM 08-MS-CLEAR.
 1978 108161 MOVE ' \$' TO PC3, PC4, PC5, PC6. WRITE PRINT-LINE FROM
 1979 108162 PC-DOLLAR-LINE AFTER ADVANCING 0 LINES.
 1980 108163 MOVE SPACES TO PC3, PC4, PC5, PC6.
 1981 108172 WRITE PRINT-LINE FROM PC-RULING-LINE AFTER ADVANCING 1 LINES.
 1982 108175 MOVE SPACES TO PC1. MOVE 0 TO LC. ADD 4 TO LINE-COUNT.
 1983 108220 163-EXIT. EXIT.
 1984
 1985
 1986 108260 164-LAB-REQ.
 1987 108270 MOVE 'LABOR -- PIECE-RATE' TO PC-NAME.
 1988 108280 MOVE 1 TO PC-QTY.
 1989 108290 MOVE LABOR-PIECE-RATE (DEPT-NO) TO PC-UNIT-COST.
 1990 108310 GO TO 163-LAB-OH-REQ.
 1991
 1992

1993 108340 166-LAB-REQ.
 1994 108350 COMPUTE SUB ROUNDED = LABOR-HOURS-PER-UNIT *
 1995 108360 PLANNED-PRODUCTION (PROD-NO, PERIOD).
 1996 108370 ADD SUB TO LABOR-HRS-USED (DEPT-NO, PERIOD).
 1997 108390 COMPUTE SUB ROUNDED = VARIABLE-OVERHEAD-QTY *
 1998 108400 PLANNED-PRODUCTION (PROD-NO, PERIOD).
 1999 108410 ADD SUB TO VAR-OH-UNITS-USED (DEPT-NO, PERIOD).
 2000 108420 166-EXIT. EXIT.
 2001
 2002
 2003 108500 170-PROD-DATA-WIND-UP.
 2004 108540 IF SC-1 = 1 PERFORM 134-PROD-COST-TJT THRU 134-EXIT.
 2005 108545 MOVE TOT-UNIT-COST TO PRODUCT-STD-COST (PROD-NO).
 2006 108560 MOVE 1 TO PROD-DEPT-NO, SEMI-FC-NG, PERIOD.
 2007 108570 PERFORM 172-STEP-COST THRU 172-EXIT.
 2008 108580 MOVE 0 TO V, U, GO TO 1ST-SET-BUDGETS.
 2009
 2010
 2011 108750 172-STEP-COST.
 2012 108751 MOVE 0 TO VOL-DIFF. SUBTRACT 1 FROM VOL-DIFF.
 2013 108755 IF PROD-DEPT-NO > NO-PROD-DEPTS GO TO 172-EXIT.
 2014 108760 IF NO-SEMI-FC (PROD-DEPT-NO) = 0, ADD 1 TO PROD-DEPT-NO GO TO
 2015 108770 172-STEP-COST.
 2016 108780 PERFORM 174-STEP-COST THRU 174-EXIT VARYING STEP FROM 1 BY 1
 2017 108790 UNTIL VOL-DIFF NOT < 0 OR STEP >
 2018 108791 NO-STEPS (PROD-DEPT-NO, SEMI-FC-NO).
 2019 108830 IF STEP > NO-STEPS (PROD-DEPT-NO, SEMI-FC-NO) AND
 2020 108840 VOL-DIFF < 0, GO TO 920-ERROR-ROUTINE.
 2021 108870 IF PERIOD < NO-PERIODS, ADD 1 TO PERIOD, GO TO 172-STEP-COST
 2022 108880 ELSE MOVE 1 TO PERIOD.
 2023 108890 IF SEMI-FC-NO < NO-SEMI-FC (PROD-DEPT-NO), ADD 1 TO
 2024 108900 SEMI-FC-NO, GO TO 172-STEP-COST, ELSE MOVE 1 TO
 2025 108901 SEMI-FC-NO.
 2026 108910 IF PROD-DEPT-NO < NO-PROD-DEPTS, ADD 1 TO PROD-DEPT-NO,
 2027 108920 GO TO 172-STEP-COST.
 2028 108930 172-EXIT. EXIT.
 2029
 2030
 2031 108950 174-STEP-COST.
 2032 108960 COMPUTE VOL-DIFF = HI-VOL (PROD-DEPT-NO, SEMI-FC-NO, STEP) -
 2033 108970 VAR-OH-UNITS-USED (PROD-DEPT-NO, PERIOD).
 2034 108972 IF VOL-DIFF NOT < 0 ADD
 2035 108973 ST-COST (PROD-DEPT-NO, SEMI-FC-NO, STEP) TO
 2036 108974 PROD-DEPT-FC (PROD-DEPT-NO, PERIOD).
 2037 108980 174-EXIT. EXIT.
 2038
 2039 200000 1ST-SET-BUDGETS SECTION.
 2040
 2041
 2042
 2043 200030 200-START.
 2044 200040 IF SB-1 = 1, PERFORM 230-SB1-BUDGET THRU 233-EXIT.
 2045 200050 IF SB-2 = 1, PERFORM 240-SB2-BUDGET THRU 243-EXIT.
 2046 200060 IF NO-LEV-2-SALES-SEGS > 0 AND SB-3 = 1, MOVE ' SB3' TO
 2047 200070 BUDGET, PERFORM 250-SB-BUDGET THRU 253-EXIT.
 2048 200080 IF SB-4 = 1, MOVE ' SB4' TO BUDGET, PERFORM 250-SB-BUDGET
 2049 200090 THRU 253-EXIT. MOVE 0 TO L2.

2050 2C0100 IF PRB-1 = 1, PERFORM 260-PRB1-BUDGET THRU 263-EXIT.
 2051 2C0110 IF PRB-2 = 1, PERFORM 270-PRB2-BUDGET THRU 273-EXIT.
 2052 2C0120 IF MAT-1 = 1, PERFORM 280-MAT1-BUDGET THRU 283-EXIT.
 2053 2C0130 IF MAT-2 = 1, PERFORM 290-MAT2-BUDGET THRU 293-EXIT.
 2054 2C0140 IF MAT-3 = 1, PERFORM 300-MAT3-BUDGET THRU 303-EXIT.
 2055 2C0150 IF MAT-4 = 1, PERFORM 310-MAT4-BUDGET THRU 314-EXIT.
 2056 2C0160 IF MAT-5 = 1, PERFORM 320-MAT5-BUDGET THRU 322-EXIT.
 2057 2C0170 PERFORM 330-RM-PURCHASED THRU 331-EXIT.
 2058 2C0180 PERFORM 00-WS1A-CLEAR.
 2059 2C0190 IF LAB-1 = 1, PERFORM 340-LAB1-BUDGET THRU 343-EXIT.
 2060 2C0200 IF LAB-2 = 1, PERFORM 350-LAB2-BUDGET THRU 353-EXIT.
 2061 2C0220 PERFORM 370-LABOR-COSTS THRU 371-EXIT.
 2062 2C0240 GO TO OTHER-DEPT-INPUT.
 2063
 2064
 2065 2C0241 202-DOLLAR-LINE.
 2066 2C0242 WRITE PRINT-LINE FROM DOLLAR-LINE (SEC) AFTER ADVANCING
 2067 2C0243 L LINES. MOVE SPACES TO PRINT-LINE. ADD L TO LINE-COUNT.
 2068 2C0244 202-EXIT. EXIT.
 2069
 2070
 2071 2C0245 203-BLANK-LINE.
 2072 2C0246 MOVE SPACES TO PRINT-LINE. WRITE PRINT-LINE AFTER ADVANCING
 2073 2C0247 L LINES. ADD L TO LINE-COUNT.
 2074 2C0248 203-EXIT. EXIT.
 2075
 2076
 2077 2C0254 210-CLEARING.
 2078 2C0260 MOVE ZEROS TO REPORT-PAGE-NO.
 2079 2C0264 PERFORM 22-WS-CLEAR THRU 23-EXIT.
 2080 2C0270 MOVE 1 TO PERIOD, SEC, CCL, PROD-NO, N, RM-NO, DEPT.
 2081 2C0280 MOVE SPACES TO PRINT-LINE. MOVE 7 TO Y.
 2082 2C0290 210-EXIT. EXIT.
 2083
 2084
 2085 2C0291 211-CLEARING.
 2086 2C0292 PERFORM 22-WS-CLEAR THRU 23-EXIT.
 2087 2C0294 MOVE 1 TO PERIOD, SEC, COL, N. MOVE 7 TO Y.
 2088 2C0295 MOVE SPACES TO PRINT-LINE. MOVE 0 TO REPORT-PAGE-NO.
 2089 2C0296 211-EXIT. EXIT.
 2090
 2091
 2092 2C0300 212-HEADING.
 2093 2C0301 MOVE SPACES TO SCHEDULE-NO-PRINT, BUDGET-NAME-PRINT, A,
 2094 2C0302 SUB-HEADING-PRINT.
 2095 2C0310 MOVE ZEROS TO REPORT-LINE, MOVE SPACES TO NAME-PRINT.
 2096 2C0320 ADD 1 TO REPORT-PAGE-NO. ADD 1 TO PAGE-NO.
 2097 2C0340 MOVE PAGE-NO TO PAGE-NO-PRINT.
 2098 2C0350 WRITE PRINT-LINE FROM PAGE-LINE AFTER ADVANCING
 2099 2C0360 TO-TOP-OF-PAGE.
 2100 2C0370 MOVE REPORT-PAGE-NO TO REPORT-PAGE-NO-PRINT.
 2101 2C0380 MOVE SPACES TO COLUMN-DESCRIPTION (SEC).
 2102 2C0385 212-EXIT. EXIT.
 2103
 2104
 2105 2C0389 213-HEADING.
 2106 2C0391 IF U = 1, WRITE PRINT-LINE FROM PRODUCT-NAME-LINE AFTER

2107 2C0392 ADVANCING 8 LINES, WRITE PRINT-LINE FROM
 2108 2C0393 HEADING-LINE-4 (SEC) AFTER ADVANCING 2 LINES.
 2109 2C0394 IF U NOT = 1, WRITE PRINT-LINE FROM HEADING-LINE-4 (SEC)
 2110 2C0395 AFTER ADVANCING 8 LINES. MOVE SPACES TO PRINT-LINE.
 2111 2C0396 MOVE '-----' TO PRINT-LINE.
 2112 2C0397 WRITE PRINT-LINE AFTER ADVANCING 1 LINES.
 2113 2C0398 WRITE PRINT-LINE FROM RULING-LINE (SEC) AFTER ADVANCING
 2114 2C0399 0 LINES. MOVE SPACES TO PRINT-LINE.
 2115
 2116
 2117 2C0410 214-HEADING.
 2118 2C0420 WRITE PRINT-LINE FROM HEADING-LINE-1 AFTER ADVANCING 3 LINES.
 2119 2C0425 WRITE PRINT-LINE FROM ORGAN-NAME-LINE AFTER ADVANCING
 2120 2C0426 2 LINES.
 2121 2C0430 WRITE PRINT-LINE FROM HEADING-LINE-2 AFTER ADVANCING 2 LINES.
 2122 2C0440 WRITE PRINT-LINE FROM HEADING-LINE-3 AFTER ADVANCING 2 LINES.
 2123 2C0441 IF L2 = 1, WRITE PRINT-LINE FROM LEV2-SEG-NAME-LINE AFTER
 2124 2C0442 ADVANCING 2 LINES.
 2125 2C0445 IF L3 = 1, WRITE PRINT-LINE FROM LEV3-SEG-NAME-LINE AFTER
 2126 2C0446 ADVANCING 2 LINES.
 2127 2C0447 IF U = 1, WRITE PRINT-LINE FROM PRODUCT-NAME-LINE AFTER
 2128 2C0448 ADVANCING 2 LINES.
 2129 2C0450 IF V NOT = 1 WRITE PRINT-LINE FROM HEADING-LINE-4 (SEC)
 2130 2C0455 AFTER ADVANCING 3 LINES.
 2131 2C0460 IF V NOT = 1 WRITE PRINT-LINE FROM RULING-LINE (SEC)
 2132 2C0469 AFTER ADVANCING 1 LINES. MOVE SPACES TO PRINT-LINE.
 2133 2C0470 IF V NOT = 1, MOVE '-----' TO PRINT-LINE,
 2134 2C0471 WRITE PRINT-LINE AFTER ADVANCING 0 LINES, MOVE SPACES TO
 2135 2C0472 PRINT-LINE.
 2136 2C0473 MOVE 0 TO LINE-COUNT, LC.
 2137 2C0474 214-EXIT. EXIT.
 2138
 2139
 2140 2C0481 215-SECTION-ROUTINE.
 2141 2C0482 ADD 1 TO SEC.
 2142 2C0494 PERFORM 22-WS-CLEAR.
 2143 2C0495 MOVE 7 TO N, MOVE 13 TO Y, MOVE 1 TO COL.
 2144 2C0496 215-EXIT. EXIT.
 2145
 2146
 2147 2C0500 216-REPORT-LINE.
 2148 2C0510 WRITE REPORT-LINE AFTER ADVANCING L LINES.
 2149 2C0520 PERFORM 31-WS-CLEAR THRU 31-EXIT. ADD L TO LINE-COUNT, LC.
 2150 2C0530 MOVE 1 TO COL.
 2151
 2152
 2153 2C0550 217-REPORT-LINE.
 2154 2C0560 IF LINE-COUNT = L WRITE PRINT-LINE FROM DOLLAR-LINE (SEC)
 2155 2C0570 AFTER ADVANCING 0 LINES. MOVE SPACES TO PRINT-LINE.
 2156 2C0580 217-EXIT. EXIT.
 2157
 2158
 2159 2C0600 218-TOTAL-LINE.
 2160 2C0610 WRITE PRINT-LINE FROM RULING-LINE (SEC) AFTER ADVANCING
 2161 2C0611 1 LINES. MOVE SPACES TO PRINT-LINE.
 2162 2C0615 ADD 1 TO LINE-COUNT. MOVE TEMP-HOLD TO NAME-PRINT.
 2163 2C0620 PERFORM 220-TOTALS THRU 220-EXIT VARYING COL FROM 1 BY 1

2164 200630 UNTIL COL > 6 OR COL > NO-PERIODS.
 2165 200640 IF PERIOD > NO-PERIODS MOVE GRAND-TOTAL TO TOTAL-PRINT.
 2166 200650 MOVE 1 TO L. PERFORM 216-REPORT-LINE.
 2167 200655 MOVE SPACES TO TEMP-HOLD. MOVE 1 TO COL.
 2168 200660 IF DOLLAR = 1. WRITE PRINT-LINE FROM DOLLAR-LINE (SEC) AFTER
 2169 200670 ADVANCING 0 LINES. MOVE SPACES TO PRINT-LINE.
 2170 200675 218-EXIT. EXIT.
 2171
 2172
 2173 200680 219-RULING.
 2174 200690 WRITE PRINT-LINE FROM TOTAL-LINE (SEC) AFTER ADVANCING
 2175 200692 1 LINES. MOVE SPACES TO PRINT-LINE.
 2176 200695 ADD 1 TO LINE-COUNT.
 2177 200700 219-EXIT. EXIT.
 2178
 2179
 2180 200710 220-TOTALS.
 2181 200720 MOVE COL-TOTAL (COL) TO AMT-PR (COL).
 2182 200730 220-EXIT. EXIT.
 2183
 2184
 2185 200800 222-GRAND-TOTAL-LINE.
 2186 200809 MOVE N TO PERIOD.
 2187 200810 PERFORM 223-GRAND-TOTALS THRU 223-EXIT VARYING COL FROM 1
 2188 200820 BY 1 UNTIL COL > 6 OR PERIOD > NO-PERIODS.
 2189 200840 IF PERIOD > NO-PERIODS MOVE FINAL-GRAND-TOTAL TO GRAND-TOTAL
 2190 200860 PERFORM 218-TOTAL-LINE.
 2191 200870 222-EXIT. EXIT.
 2192
 2193
 2194 200875 223-GRAND-TOTALS.
 2195 200880 MOVE COL-GRAND-TOTAL (COL) TO COL-TOTAL (COL).
 2196 200881 ADD 1 TO PERIOD.
 2197 200885 223-EXIT. EXIT.
 2198
 2199
 2200 200980 226-TOTAL-ROUTINE.
 2201 200990 MOVE ROW-TOTAL TO TOTAL-PRINT. ADD ROW-TOTAL TO
 2202 201000 GRAND-TOTAL, SUBTRACT ROW-TOTAL FROM
 2203 201005 FINAL-GRAND-TOTAL. MOVE 0 TO ROW-TOTAL.
 2204 201010 226-EXIT. EXIT.
 2205
 2206
 2207 201020 227-TOTAL-ROUTINE.
 2208 201030 MOVE ROW-TOTAL TO TOTAL-PRINT. ADD ROW-TOTAL TO
 2209 201040 FINAL-GRAND-TOTAL, MOVE 0 TO ROW-TOTAL.
 2210 201050 227-EXIT. EXIT.
 2211
 2212
 2213 201070 228-TOTAL-ROUTINE.
 2214 201080 MOVE ROW-TOTAL TO TOTAL-PRINT, ADD ROW-TOTAL TO GRAND-TOTAL,
 2215 201090 ADD ROW-TOTAL TO FINAL-GRAND-TOTAL, MOVE 0 TO ROW-TOTAL.
 2216 201100 228-EXIT. EXIT.
 2217
 2218
 2219 201120 229-TOTAL-ROUTINE.
 2220 201130 MOVE ROW-TOTAL TO TOTAL-PRINT, SUBTRACT ROW-TOTAL FROM

2221 201140 GRAND-TOTAL, SUBTRACT ROW-TOTAL FROM FINAL-GRAND-TOTAL.
 2222 201150 MOVE 0 TO ROW-TOTAL.
 2223 201160 229-EXIT. EXIT.
 2224
 2225
 2226 201500 230-SB1-BUDGET.
 2227 201501 ADD 1 TO REPRTS. MOVE 'SB-1' TO SCH-NO (REPRTS).
 2228 201502 MOVE 'SALES BUDGET - UNITS OF PRODUCT' TO HEAD (REPRTS)
 2229 201503 COMPUTE INDEX-PG (REPRTS) = PAGE-NO + 1.
 2230 201510 PERFORM 210-CLEARING THRU 210-EXIT.
 2231 201530 231-SB1-HEADING.
 2232 201540 PERFORM 212-HEADING THRU 212-EXIT.
 2233 201550 MOVE ' SCHEDULE SB-1 ' TO SCHEDULE-NO-PRINT.
 2234 201560 MOVE ' SALES BUDGET' TO BUDGET-NAME-PRINT.
 2235 201570 MOVE ' UNITS OF PRODUCT' TO SUB-HEADING-PRINT.
 2236 201580 MOVE ' PRODUCT' TO COLUMN-DESCRIPTION (SEC).
 2237 201590 PERFORM 214-HEADING THRU 214-EXIT.
 2238 201600 231-EXIT. EXIT.
 2239
 2240
 2241 201610 232-SB1-BUDGET.
 2242 201615 IF PROD-NO > NO-PROD GO TO 233-EXIT.
 2243 201620 IF PROD-SALES-DATA (PROD-NO) = ZEROES, ADD 1 TO PROD-NO.
 2244 201630 GO TO 232-SB1-BUDGET.
 2245 201640 IF LINE-COUNT > 46 PERFORM 231-SB1-HEADING THRU 231-EXIT.
 2246 201650 MOVE PRODUCT-NAME (PROD-NO) TO NAME-PRINT.
 2247 201660 PERFORM 235-SB1-BUDGET THRU 235-EXIT VARYING PERIOD FROM N
 2248 201670 BY 1 UNTIL PERIOD = Y OR PERIOD > NO-PERIODS.
 2249 201680 MOVE 2 TO L, PERFORM 216-REPORT-LINE.
 2250 201690 IF PROD-NO < NO-PROD, ADD 1 TO PROD-NO, GO TO 232-SB1-BUDGET.
 2251
 2252
 2253 201700 233-SB1-BUDGET.
 2254 201710 IF PERIOD > NO-PERIODS GO TO 233-EXIT, ELSE PERFORM
 2255 201720 215-SECTION-ROUTINE, MOVE 1 TO PROD-NO, GO TO
 2256 201730 231-SB1-HEADING.
 2257 201740 233-EXIT. EXIT.
 2258
 2259
 2260 201750 235-SB1-BUDGET.
 2261 201760 MOVE UNIT-SALES (PROD-NO, PERIOD) TO AMT-PR (COL).
 2262 201770 IF PERIOD = NO-PERIODS PERFORM 237-SB1-BUDGET THRU 237-EXIT
 2263 201780 VARYING PERIOD FROM 1 BY 1 UNTIL PERIOD > NO-PERIODS,
 2264 201790 MOVE ROW-TOTAL TO TOTAL-PRINT, MOVE 0 TO ROW-TOTAL.
 2265 201800 ADD 1 TO COL.
 2266 201810 235-EXIT. EXIT.
 2267
 2268
 2269 201850 237-SB1-BUDGET.
 2270 201860 ADD UNIT-SALES (PROD-NO, PERIOD) TO ROW-TOTAL.
 2271 201870 237-EXIT. EXIT.
 2272
 2273
 2274 202000 240-SB2-BUDGET.
 2275 202001 ADD 1 TO REPRTS. MOVE 'SB-2' TO SCH-NO (REPRTS).
 2276 202002 MOVE 'SALES BUDGET - SALES REVENUE DOLLARS' TO HEAD (REPRTS).
 2277 202003 COMPUTE INDEX-PG (REPRTS) = PAGE-NO + 1.

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2278 202010 PERFORM 210-CLEARING THRU Z10-EXIT.
 2279
 2280
 2281 202030 241-SB2-HEADING.
 2282 202040 PERFORM 212-HEADING THRU 212-EXIT.
 2283 202050 MOVE ' SCHEDULE 58-2 ' TO SCHEDULE-NO-PRINT.
 2284 202060 MOVE ' SALES BUDGET' TO BUDGET-NAME-PRINT.
 2285 202070 MOVE ' SALES REVENUE DOLLARS' TO SUB-HEADING-PRINT.
 2286 202080 MOVE ' PRODUCT' TO COLUMN-DESCRIPTION (ISEC).
 2287 202090 PERFORM 214-HEADING THRU 214-EXIT.
 2288 202100 241-EXIT. EXIT.
 2289
 2290
 2291 202105 242-SB2-BUDGET.
 2292 202110 IF PRCD-NO > NO-PROD GO TO 243-SB2-BUDGET.
 2293 202120 IF PRCD-SALES-DATA (PRCD-NO) = ZEROES, ADD 1 TO PROD-NO,
 2294 202130 GO TO 242-SB2-BUDGET.
 2295 202140 IF LINE-COUNT > 46 PERFORM 241-SB2-HEADING THRU 241-EXIT.
 2296 202150 MOVE PRODUCT-NAME (PROD-NO) TO NAME-PRINT.
 2297 202160 PERFORM 245-SB2-BUDGET THRU 245-EXIT VARYING PERIOD FROM M
 2298 202170 BY 1 UNTIL PERIOD = Y OR PERIOD > NO-PERIODS.
 2299 202180 MOVE 2 TO L, PERFORM 216-REPORT-LINE THRU 217-EXIT.
 2300 202190 IF PROD-NO < NO-PROD, ADD 1 TO PROD-NO, GO TO 242-SB2-BUDGET.
 2301
 2302
 2303 202195 243-SB2-BUDGET.
 2304 202196 MOVE ' TOTAL' TO TEMP-HOLD.
 2305 202200 MOVE 1 TO DOLLAR, PERFORM 218-TOTAL-LINE THRU 219-EXIT.
 2306 202210 IF PERIOD > NO-PERIODS GO TO 243-EXIT, ELSE PERFORM
 2307 202215 219-SECTION-ROUTINE, MOVE 1 TO PROD-NO, GO TO
 2308 202220 241-SB2-HEADING.
 2309 202240 243-EXIT. EXIT.
 2310
 2311
 2312 202250 245-SB2-BUDGET.
 2313 202260 MOVE PRODUCT-REVENUE (PROD-NO, PERIOD) TO AMT-PR (COL).
 2314 202270 ADD PRODUCT-REVENUE (PROD-NO, PERIOD) TO COL-TOTAL (COL).
 2315 202280 ADD PRODUCT-REVENUE (PROD-NO, PERIOD) TO GRAND-TOTAL.
 2316 202290 IF PERIOD = NO-PERIODS PERFORM 247-SB2-BUDGET THRU 247-EXIT
 2317 202300 VARYING PERIOD FROM 1 BY 1 UNTIL PERIOD > NO-PERIODS.
 2318 202310 MOVE ROW-TOTAL TO TOTAL-PRINT, MOVE 0 TO ROW-TOTAL.
 2319 202320 ADD 1 TO COL.
 2320 202330 245-EXIT. EXIT.
 2321
 2322
 2323 202350 247-SB2-BUDGET.
 2324 202360 ADD PRODUCT-REVENUE (PROD-NO, PERIOD) TO ROW-TOTAL.
 2325 202370 247-EXIT. EXIT.
 2326
 2327
 2328 202760 250-SB-BUDGET.
 2329 202761 ADD 1 TO REPTS. MOVE 1 TO SH (REPTS).
 2330 202762 IF BUDGET = ' SB3', MOVE 'SB-3' TO SCH-NO (REPTS), MOVE
 2331 202763 'LEVEL 2 SALES SEGMENT' TO SUB-HEAD (REPTS).
 2332 202764 IF BUDGET = ' SB4', MOVE 'SB-4' TO SCH-NO (REPTS), MOVE
 2333 202765 'LEVEL 3 SALES SEGMENT' TO SUB-HEAD (REPTS).
 2334 202766 MOVE 'SALES BUDGET - SALES REVENUE DOLLARS' TO HEAD (REPTS).

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2335 202767 COMPUTE INDEX-PG (REPTS) = PAGE-NO + 1.
 2336 202770 OPEN INPUT CONTRIBUTION-DATA-FILE.
 2337 202780 PERFORM 210-CLEARING THRU 210-EXIT.
 2338
 2339
 2340 202800 251-SB-HEADING.
 2341 202810 PERFORM 212-HEADING THRU 212-EXIT.
 2342 202820 IF BUDGET = ' SB3', MOVE ' SCHEDULE 58-3' TO
 2343 202830 SCHEDULE-NO-PRINT ELSE MOVE ' SCHEDULE 58-4 ' TO
 2344 202840 SCHEDULE-NO-PRINT.
 2345 202850 MOVE ' SALES BUDGET' TO BUDGET-NAME-PRINT.
 2346 202860 MOVE ' SALES REVENUE DOLLARS' TO SUB-HEADING-PRINT.
 2347 202870 IF BUDGET = ' SB3' MOVE ' LEVEL 2 SALES SEGMENT' TO
 2348 202880 COLUMN-DESCRIPTION (ISEC) ELSE MOVE
 2349 202890 ' LEVEL 3 SALES SEGMENT' TO COLUMN-DESCRIPTION (ISEC).
 2350 202900 PERFORM 214-HEADING THRU 214-EXIT.
 2351 202910 251-EXIT. EXIT.
 2352
 2353
 2354 202940 252-SB-BUDGET.
 2355 202950 READ CONTRIBUTION-DATA-FILE INTO DK-WS AT END GO TO
 2356 202951 253-SB-BUDGET.
 2357 202960 IF BUDGET = ' SB3' AND RECORD-CODE = 'L2' PERFORM
 2358 202970 255-SB-BUDGET THRU 255-EXIT.
 2359 202980 IF BUDGET = ' SB4' AND RECORD-CODE = 'L3' PERFORM
 2360 202990 255-SB-BUDGET THRU 255-EXIT.
 2361 203000 IF RECORD-CODE NOT = 'SS' GO TO 252-SB-BUDGET.
 2362 203010 CLOSE CONTRIBUTION-DATA-FILE.
 2363 203020 IF BUDGET = ' SB4' MOVE ' LEVEL 2 TOTAL' TO TEMP-HOLD,
 2364 203030 PERFORM 218-TOTAL-LINE, PERFORM 26-WS-CLEAR THRU 26-EXIT.
 2365 203050 MOVE ' TOTAL SALES' TO TEMP-HOLD.
 2366 203060 MOVE 1 TO DOLLAR, PERFORM 222-GRAND-TOTAL-LINE. PERFORM
 2367 203061 219-RULING.
 2368
 2369
 2370 203065 253-SB-BUDGET.
 2371 203070 IF PERIOD > NO-PERIODS GO TO 253-EXIT, ELSE OPEN INPUT
 2372 203080 CONTRIBUTION-DATA-FILE, PERFORM 215-SECTION-ROUTINE,
 2373 203090 GO TO 251-SB-HEADING.
 2374 203100 253-EXIT. EXIT.
 2375
 2376
 2377 203260 255-SB-BUDGET.
 2378 203270 IF LINE-COUNT > 46 PERFORM 251-SB-HEADING THRU 251-EXIT.
 2379 203275 IF BUDGET = ' SB4' PERFORM 258-SB-BUDGET THRU 258-EXIT.
 2380 203279 IF BUDGET = ' SB3' MOVE DK-L2-NAME TO NAME-PRINT ELSE MOVE
 2381 203280 DK-L3-NAME TO NAME-PRINT.
 2382 203290 PERFORM 257-SB-BUDGET THRU 257-EXIT VARYING PERIOD FROM M
 2383 203300 BY 1 UNTIL PERIOD = Y OR PERIOD > NO-PERIODS.
 2384 203310 MOVE 2 TO L, PERFORM 216-REPORT-LINE THRU 217-EXIT.
 2385 203320 255-EXIT. EXIT.
 2386
 2387
 2388 203350 257-SB-BUDGET.
 2389 203360 MOVE DK-PROJ-REVENUES (PERIOD) TO AMT-PR (COL).
 2390 203370 ADD DK-PROJ-REVENUES (PERIOD) TO COL-TOTAL (COL).
 2391 203380 ADD DK-PROJ-REVENUES (PERIOD) TO COL-GRAND-TOTAL (COL).

2392 2C3390 IF PERIOD = NO-PERIODS PERFORM 259-SB-BUDGET THRU 259-EXIT
 2393 203400 VARYING PERIOD FROM 1 BY 1 UNTIL PERIOD > NO-PERIODS,
 2394 203410 PERFORM 228-TOTAL-ROUTINE.
 2395 2C3420 ADD 1 TO COL.
 2396 203430 257-EXIT. EXIT.
 2397
 2398
 2399 2C3438 258-SB-BUDGET.
 2400 203442 IF DK-L3-SEG-NO = 1, MOVE 1 TO L2.
 2401 203444 IF DK-L2-SEG-NO = L2 GO TO 258-EXIT.
 2402 203445 MOVE DK-L2-SEG-NO TO L2.
 2403 203446 MOVE ' LEVEL 2 TOTAL' TO TEMP-HOLD. PERFORM 218-TOTAL-LINE.
 2404 203447 PERFORM 26-WS-CLEAR THRU 26-EXIT. MOVE 0 TO GRAND-TOTAL.
 2405 203450 WRITE PRINT-LINE FROM RULING-LINE (SEC) AFTER ADVANCING
 2406 203452 1 LINES. MOVE SPACES TO PRINT-LINE.
 2407 2C3454 258-EXIT. EXIT.
 2408
 2409
 2410 2C3460 259-SB-BUDGET.
 2411 203470 ADD DK-PROJ-REVENUES (PERIOD) TO ROW-TOTAL.
 2412 203480 259-EXIT. EXIT.
 2413
 2414
 2415 203500 260-PRB1-BUDGET.
 2416 203501 ADD 1 TO REPTS. MOVE 'PRB-1' TO SCH-NO (REPTS).
 2417 203502 MOVE 'PRODUCTION BUDGET - SUMMARY' TO HEAD (REPTS).
 2418 203503 COMPUTE INDEX-PG (REPTS) = PAGE-NO + 1.
 2419 2C3510 PERFORM 210-CLEARING THRU 210-EXIT.
 2420
 2421
 2422 203530 261-PRB1-HEADING.
 2423 203540 PERFORM 212-HEADING THRU 212-EXIT.
 2424 2C3550 MOVE ' SCHEDULE PRB-1 ' TO SCHEDULE-NO-PRINT.
 2425 203560 MOVE ' PRODUCTION BUDGET' TO BUDGET-NAME-PRINT.
 2426 203570 MOVE ' SUMMARY' TO SUB-HEADING-PRINT.
 2427 203580 MOVE ' PRODUCT' TO COLUMN-DESCRIPTION (SEC).
 2428 2C3590 PERFORM 214-HEADING THRU 214-EXIT.
 2429 203600 261-EXIT. EXIT.
 2430
 2431
 2432 2C3610 262-PRB1-BUDGET.
 2433 203620 IF PROD-NO > NO-PROD GO TO 263-PRB1-BUDGET.
 2434 203630 IF PLANNED-PROD-DATA (PROD-NO) = ZEROES, ADD 1 TO PROD-NO,
 2435 2C3640 GO TO 262-PRB1-BUDGET.
 2436 203650 IF LINE-COUNT > 46 PERFORM 261-PRB1-HEADING THRU 261-EXIT.
 2437 2C3660 MOVE PRODUCT-NAME (PROD-NO) TO NAME-PRINT.
 2438 203670 PERFORM 265-PRB1-BUDGET THRU 265-EXIT VARYING PERIOD FROM N
 2439 203680 BY 1 UNTIL PERIOD = Y OR PERIOD > NO-PERIODS.
 2440 2C3685 MOVE 2 TO L. PERFORM 216-REPORT-LINE.
 2441 203690 IF PROD-NO < NO-PROD, ADD 1 TO PROD-NO, GO TO
 2442 203700 262-PRB1-BUDGET.
 2443
 2444
 2445 203705 263-PRB1-BUDGET.
 2446 203710 IF PERIOD > NO-PERIODS GO TO 263-EXIT, ELSE PERFORM
 2447 203720 215-SECTION-ROUTINE, MOVE 1 TO PROD-NO, GO TO
 2448 203730 261-PRB1-HEADING.

2449 203740 263-EXIT. EXIT.
 2450
 2451
 2452 2C3750 265-PRB1-BUDGET.
 2453 203760 MOVE PLANNED-PRODUCTION (PROD-NO, PERIOD) TO AMT-PR (COL).
 2454 203770 IF PERIOD = NO-PERIODS PERFORM 267-PRB1-BUDGET THRU 267-EXIT
 2455 203780 VARYING PERIOD FROM 1 BY 1 UNTIL PERIOD > NO-PERIODS.
 2456 203790 MOVE ROW-TOTAL TO TOTAL-PRINT, MOVE 0 TO ROW-TOTAL.
 2457 203800 ADD 1 TO COL.
 2458 203810 265-EXIT. EXIT.
 2459
 2460
 2461 203840 267-PRB1-BUDGET.
 2462 203850 ADD PLANNED-PRODUCTION (PROD-NO, PERIOD) TO ROW-TOTAL.
 2463 2C3860 267-EXIT. EXIT.
 2464
 2465
 2466 204000 270-PRB2-BUDGET.
 2467 2C4001 ADD 1 TO REPTS. MOVE 'PRB-2' TO SCH-NO (REPTS).
 2468 204002 MOVE 'PRODUCTION BUDGET - DETAILED CALCULATIONS' TO
 2469 204003 HEAD (REPTS). COMPUTE INDEX-PG (REPTS) = PAGE-NO + 1.
 2470 204010 PERFORM 210-CLEARING THRU 210-EXIT. MOVE 1 TO U.
 2471
 2472
 2473 2C4030 271-PRB2-HEADING.
 2474 204040 PERFORM 212-HEADING THRU 212-EXIT.
 2475 204050 MOVE ' SCHEDULE PRB-2 ' TO SCHEDULE-NO-PRINT.
 2476 204060 MOVE ' PRODUCTION BUDGET' TO BUDGET-NAME-PRINT.
 2477 204065 MOVE ' DETAILED CALCULATIONS' TO SUB-HEADING-PRINT.
 2478 204070 MOVE PRODUCT-NAME (PROD-NO) TO PROD-NAME-PR.
 2479 204080 PERFORM 214-HEADING THRU 214-EXIT.
 2480 204090 271-EXIT. EXIT.
 2481
 2482
 2483 204100 272-PRB2-BUDGET.
 2484 204170 MOVE ' PROJECTED-SALES' TO NAME-PRINT.
 2485 204180 PERFORM 275-PRB2-BUDGET THRU 275-EXIT VARYING PERIOD FROM N
 2486 204190 BY 1 UNTIL PERIOD = Y OR PERIOD > NO-PERIODS.
 2487 2C4200 MOVE 2 TO L. PERFORM 216-REPORT-LINE.
 2488 204210 MOVE ' ADD ENDING INVENTORY' TO NAME-PRINT.
 2489 204215 COMPUTE SUB = N + 1. COMPUTE X = Y + 1.
 2490 204216 COMPUTE END-PERIOD = NO-PERIODS + 1.
 2491 204220 PERFORM 277-PRB2-BUDGET THRU 277-EXIT VARYING PERIOD FROM
 2492 204230 SUB BY 1 UNTIL PERIOD = X OR PERIOD > END-PERIOD.
 2493 204240 MOVE 1 TO L. PERFORM 216-REPORT-LINE.
 2494 204270 MOVE ' TOTAL UNITS REQUIRED' TO TEMP-HOLD.
 2495 204280 MOVE 0 TO DOLLAR. PERFORM 218-TOTAL-LINE.
 2496 2C4290 MOVE ' LESS BEG. INVENTORY' TO NAME-PRINT.
 2497 204300 PERFORM 278-PRB2-BUDGET THRU 278-EXIT VARYING PERIOD FROM
 2498 204310 N BY 1 UNTIL PERIOD = Y OR PERIOD > NO-PERIODS.
 2499 204320 MOVE 1 TO L. PERFORM 216-REPORT-LINE.
 2500 204330 MOVE ' PLANNED PRODUCTION' TO TEMP-HOLD.
 2501 204360 MOVE 0 TO DOLLAR. PERFORM 218-TOTAL-LINE THRU 218-EXIT.
 2502 204370 IF PERIOD > NO-PERIODS GO TO 273-PRB2-BUDGET.
 2503 204380 PERFORM 215-SECTION-ROUTINE, MOVE SPACES TO
 2504 204385 COLUMN-DESCRIPTION (SEC), PERFORM 213-HEADING.
 2505 204390 GO TO 272-PRB2-BUDGET.

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2508 204415 273-PRB2-BUDGET.
2509 204420 IF PRD-NO = NO-PROD, MOVE 0 TO U, GO TO 273-EXIT.
2510 204430 IF PRD-NO < NO-PROD, ADD 1 TO PRD-NO.
2511 204440 IF PRD-SALES-DATA (PRD-NO) = ZEROES GO TO 273-PRB2-BUDGET.
2512 204442 PERFORM 211-CLEARING, GO TO 271-PRB2-HEADING.
2513 204450 273-EXIT. EXIT.
2514
2515
2516 204500 275-PRB2-BUDGET.
2517 204510 MOVE UNIT-SALES (PRD-NO, PERIOD) TO AMT-PR (COL).
2518 204520 ADD UNIT-SALES (PRD-NO, PERIOD) TO COL-TOTAL (COL).
2519 204530 ADD UNIT-SALES (PRD-NO, PERIOD) TO GRAND-TOTAL.
2520 204550 IF PERIOD = NO-PERIODS PERFORM 276-PRB2-BUDGET THRU 276-EXIT
2521 204560 VARYING PERIOD FROM 1 BY 1 UNTIL PERIOD > NO-PERIODS.
2522 204570 MOVE ROW-TOTAL TO TOTAL-PRINT, MOVE 0 TO ROW-TOTAL.
2523 204580 ADD 1 TO COL.
2524 204590 275-EXIT. EXIT.
2525
2526
2527 204630 276-PRB2-BUDGET.
2528 204640 ADD UNIT-SALES (PRD-NO, PERIOD) TO ROW-TOTAL.
2529 204650 276-EXIT. EXIT.
2530
2531
2532 204750 277-PRB2-BUDGET.
2533 204760 MOVE PRODUCT-INV (PRD-NO, PERIOD) TO AMT-PR (COL).
2534 204770 ADD PRODUCT-INV (PRD-NO, PERIOD) TO COL-TOTAL (COL).
2535 204800 IF PERIOD = END-PERIOD,
2536 204810 MOVE PRODUCT-INV (PRD-NO, PERIOD) TO TOTAL-PRINT.
2537 204820 ADD PRODUCT-INV (PRD-NO, PERIOD) TO GRAND-TOTAL.
2538 204830 ADD 1 TO COL.
2539 204840 277-EXIT. EXIT.
2540
2541
2542 204860 278-PRB2-BUDGET.
2543 204870 MOVE PRODUCT-INV (PRD-NO, PERIOD) TO AMT-PR (COL).
2544 204880 SUBTRACT PRODUCT-INV (PRD-NO, PERIOD) FROM COL-TOTAL (COL).
2545 204890 IF PERIOD = NO-PERIODS, MOVE PRODUCT-INV (PRD-NO, 1) TO
2546 204900 TOTAL-PRINT, SUBTRACT PRODUCT-INV (PRD-NO, 1) FROM
2547 204910 GRAND-TOTAL.
2548 204920 ADD 1 TO COL.
2549 204930 278-EXIT. EXIT.
2550
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2552 205000 280-MAT1-BUDGET.
2553 205001 ADD 1 TO REPTS. MOVE 'MAT-1' TO SCH-NO (REPTS).
2554 205002 MOVE 'MATERIALS BUDGET - UNIT REQUIREMENTS' TO HEAD (REPTS).
2555 205003 COMPUTE INDEX-PC (REPTS) = PAGE-NO + 1.
2556 205010 PERFORM 210-CLEARING THRU 210-EXIT.
2557
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2559 205040 281-MAT1-HEADING.
2560 205050 PERFORM 212-HEADING THRU 212-EXIT.
2561 205060 MOVE 'SCHEDULE MAT-1' TO SCHEDULE-NO-PRINT.
2562 205070 MOVE ' MATERIALS BUDGET' TO BUDGET-NAME-PRINT.

2563 205080 MOVE ' UNIT REQUIREMENTS' TO SUB-HEADING-PRINT.
2564 205090 MOVE ' RAW MATERIAL' TO COLUMN-DESCRIPTION (SEC).
2565 205100 PERFORM 214-HEADING THRU 214-EXIT.
2566 205110 281-EXIT. EXIT.
2567
2568
2569 205120 282-MAT1-BUDGET.
2570 205130 IF RM-NO > NO-RAW-MAT, GO TO 283-MAT1-BUDGET.
2571 205140 IF RM-REQUIREMENTS-DETAIL (RM-NO) = ZEROES, ADD 1 TO RM-NO,
2572 205150 GO TO 282-MAT1-BUDGET.
2573 205160 IF LINE-COUNT > 46 PERFORM 281-MAT1-HEADING THRU 281-EXIT.
2574 205170 MOVE RM-NAME (RM-NO) TO NAME-PRINT.
2575 205171 MOVE 2 TO L. PERFORM 216-REPORT-LINE.
2576 205172 MOVE ' COSTING UNIT: ' TO RM1. MOVE COST-UNIT-NAME (RM-NO)
2577 205173 TO RM2.
2578 205180 PERFORM 285-MAT1-BUDGET THRU 285-EXIT VARYING PERIOD FROM N
2579 205190 BY 1 UNTIL PERIOD = Y OR PERIOD > NO-PERIODS.
2580 205200 MOVE 1 TO L, PERFORM 216-REPORT-LINE.
2581 205210 IF RM-NO < NO-RAW-MAT, ADD 1 TO RM-NO, GO TO 282-MAT1-BUDGET.
2582
2583
2584 205215 283-MAT1-BUDGET.
2585 205220 IF PERIOD > NO-PERIODS GO TO 283-EXIT, ELSE PERFORM
2586 205230 215-SECTION-ROUTINE, MOVE 1 TO RM-NO, GO TO
2587 205240 281-MAT1-HEADING.
2588 205250 283-EXIT. EXIT.
2589
2590
2591 205280 285-MAT1-BUDGET.
2592 205290 MOVE RM-PROD-REQUIREMENTS (RM-NO, PERIOD) TO AMT-PR (COL).
2593 205300 IF PERIOD = NO-PERIODS, PERFORM 287-MAT1-BUDGET THRU 287-EXIT
2594 205310 VARYING PERIOD FROM 1 BY 1 UNTIL PERIOD > NO-PERIODS.
2595 205320 MOVE ROW-TOTAL TO TOTAL-PRINT, MOVE 0 TO ROW-TOTAL.
2596 205330 ADD 1 TO COL.
2597 205340 285-EXIT. EXIT.
2598
2599
2600 205370 287-MAT1-BUDGET.
2601 205380 ADD RM-PROD-REQUIREMENTS (RM-NO, PERIOD) TO ROW-TOTAL.
2602 205390 287-EXIT. EXIT.
2603
2604
2605 205500 290-MAT2-BUDGET.
2606 205501 ADD 1 TO REPTS. MOVE 'MAT-2' TO SCH-NO (REPTS).
2607 205502 MOVE 'MATERIALS BUDGET -' TO HEAD (REPTS). MOVE 1 TO
2608 205503 SH (REPTS), MOVE 'COST OF MATERIALS USED IN PRODUCTION'
2609 205504 TO SUB-HEAD (REPTS).
2610 205505 COMPUTE INDEX-PC (REPTS) = PAGE-NO + 1.
2611 205510 PERFORM 210-CLEARING THRU 210-EXIT.
2612
2613
2614 205530 291-MAT2-HEADING.
2615 205540 PERFORM 212-HEADING THRU 212-EXIT.
2616 205550 MOVE ' SCHEDULE MAT-2 ' TO SCHEDULE-NO-PRINT.
2617 205560 MOVE ' MATERIALS BUDGET' TO BUDGET-NAME-PRINT.
2618 205570 MOVE 'COST OF MATERIALS USED IN PRODUCTION' TO
2619 205580 SUB-HEADING-PRINT.

2620 205590 MOVE ' RAW MATERIAL' TO COLUMN-DESCRIPTION (SEC).
 2621 205603 PERFORM 214-HEADING THRU 214-EXIT.
 2622 2C5610 291-EXIT. EXIT.
 2623
 2624
 2625 205620 292-MAT2-BUDGET.
 2626 2C5630 IF RM-NO > NO-RAW-MAT, GO TO 293-MAT2-BUDGET.
 2627 205640 IF RM-REQUIREMENTS-DETAIL (RM-NO) = ZEROES, ADD 1 TO RM-NO,
 2628 205650 GO TO 292-MAT2-BUDGET.
 2629 205660 IF LINE-COUNT > 46 PERFORM 291-MAT2-HEADING THRU 291-EXIT.
 2630 205670 MOVE RM-NAME (RM-NO) TO NAME-PRINT.
 2631 2C5580 MOVE 2 TO L. PERFORM 216-REPORT-LINE.
 2632 205690 MOVE CU-COST (RM-NO) TO RM-COST-PRINT. MOVE ' PER ' TO R1.
 2633 2C5700 MOVE COST-UNIT-NAME (RM-NO) TO RM-UNIT-PRINT.
 2634 205710 PERFORM 295-MAT2-BUDGET THRU 296-EXIT VARYING PERIOD FROM N
 2635 205720 BY 1 UNTIL PERIOD = Y OR PERIOD > NO-PERIODS.
 2636 205730 MOVE 1 TO L. PERFORM 216-REPORT-LINE. IF LINE-COUNT = 3, MOVE
 2637 205735 0 TO L. PERFORM 202-DOLLAR-LINE.
 2638 205740 IF RM-NO < NO-RAW-MAT, ADD 1 TO RM-NO, GO TO 292-MAT2-BUDGET.
 2639
 2640
 2641 205745 293-MAT2-BUDGET.
 2642 205750 MOVE ' TOTAL' TO TEMP-HOLD. MOVE 1 TO DOLLAR.
 2643 205760 PERFORM 218-TOTAL-LINE THRU 219-EXIT.
 2644 2C5770 IF PERIOD > NO-PERIODS GO TO 293-EXIT, ELSE PERFORM
 2645 205780 215-SECTION-ROUTINE, MOVE 1 TO RM-NO, GO TO
 2646 205785 291-MAT2-HEADING.
 2647 205790 293-EXIT. EXIT.
 2648
 2649
 2650 205820 295-MAT2-BUDGET.
 2651 205830 COMPUTE COST-RM-USED ROUNDED = CU-COST (RM-NO) *
 2652 205840 RM-PROD-REQUIREMENTS (RM-NO, PERIOD).
 2653
 2654
 2655 2C5850 296-MAT2-BUDGET.
 2656 205870 MOVE COST-RM-USED TO AMT-PR (COL).
 2657 205880 ADD COST-RM-USED TO COL-TOTAL (COL).
 2658 2C5890 ADD COST-RM-USED TO GRAND-TOTAL.
 2659 2C5900 IF PERIOD = NO-PERIODS PERFORM 297-MAT2-BUDGET THRU 297-EXIT
 2660 205910 VARYING PERIOD FROM 1 BY 1 UNTIL PERIOD > NO-PERIODS,
 2661 205920 MOVE ROW-TOTAL TO TOTAL-PRINT, MOVE 0 TO ROW-TOTAL.
 2662 2C5930 ADD 1 TO COL.
 2663 2C5940 296-EXIT. EXIT.
 2664
 2665
 2666 2C5960 297-MAT2-BUDGET.
 2667 205970 PERFORM 295-MAT2-BUDGET.
 2668 205980 ADD COST-RM-USED TO ROW-TOTAL.
 2669 2C5990 297-EXIT. EXIT.
 2670
 2671
 2672 2C6000 300-MAT3-BUDGET.
 2673 206001 ADD 1 TO REPTS. MOVE 'MAT-3' TO SCH-NO (REPTS).
 2674 206002 MOVE 'RAW MATERIALS PURCHASE BUDGET -' TO HEAD (REPTS).
 2675 206003 MOVE 1 TO SM (REPTS), MOVE 'UNIT REQUIREMENTS' TO
 2676 206004 SUB-HEAD (REPTS).

2677 2060C5 COMPUTE INDEX-PG (REPTS) = PAGE-NO + 1.
 2678 206010 PERFORM 210-CLEARING THRU 210-EXIT.
 2679
 2680
 2681 206040 301-MAT3-HEADING.
 2682 2C6050 PERFORM 212-HEADING THRU 212-EXIT.
 2683 206060 MOVE ' SCHEDULE MAT-3 ' TO SCHEDULE-NO-PRINT.
 2684 206070 MOVE ' RAW MATERIALS PURCHASE BUDGET' TO
 2685 2C6080 BUDGET-NAME-PRINT.
 2686 2C6090 MOVE ' UNIT REQUIREMENTS' TO SUB-HEADING-PRINT.
 2687 2C6100 MOVE ' RAW MATERIAL' TO COLUMN-DESCRIPTION (SEC).
 2688 206110 PERFORM 214-HEADING THRU 214-EXIT.
 2689 206120 301-EXIT. EXIT.
 2690
 2691
 2692 2C6130 302-MAT3-BUDGET.
 2693 206140 IF RM-NO > NO-RAW-MAT, GO TO 303-MAT3-BUDGET.
 2694 2C6150 IF RM-REQUIREMENTS-DETAIL (RM-NO) = ZEROES, ADD 1 TO RM-NO,
 2695 206160 GO TO 302-MAT3-BUDGET.
 2696 2C6170 IF LINE-COUNT > 46 PERFORM 301-MAT3-HEADING.
 2697 206180 MOVE RM-NAME (RM-NO) TO NAME-PRINT.
 2698 206185 MOVE 2 TO L. PERFORM 216-REPORT-LINE.
 2699 206186 MOVE 'PURCHASING UNIT: ' TO R41. MOVE PURCH-UNIT-NAME (RM-NO)
 2700 206187 TO R2. MOVE N TO B1. COMPUTE EI = B1 + 1.
 2701 206200 PERFORM 305-MAT3-BUDGET THRU 306-EXIT VARYING PERIOD FROM N
 2702 206210 BY 1 UNTIL PERIOD = Y OR PERIOD > NO-PERIODS.
 2703 206250 MOVE 1 TO L. PERFORM 216-REPORT-LINE.
 2704 206260 IF RM-NO < NO-RAW-MAT, ADD 1 TO RM-NO, GO TO 302-MAT3-BUDGET.
 2705
 2706
 2707 206265 303-MAT3-BUDGET.
 2708 206270 IF PERIOD > NO-PERIODS GO TO 303-EXIT, ELSE PERFORM
 2709 2C6280 215-SECTION-ROUTINE, MOVE 1 TO RM-NO, GO TO
 2710 206285 301-MAT3-HEADING.
 2711 206290 303-EXIT. EXIT.
 2712
 2713
 2714 2C6300 305-MAT3-BUDGET.
 2715 206310 COMPUTE SUB ROUNDED = RM-PROD-REQUIREMENTS (RM-NO, PERIOD) /
 2716 206320 CCNV-FACTOR (RM-NO).
 2717 2C6330 COMPUTE RM-UNITS-PURCH = RM-INVENTORY (RM-NO, EI) + SUB -
 2718 206340 RM-INVENTORY (RM-NO, B1), ON SIZE
 2719 206350 EPROR GO TO 910-ERROR-ROUTINE.
 2720 2C6360 ADD 1 TO B1. ADD 1 TO EI.
 2721 2C6370 305-EXIT. EXIT.
 2722
 2723
 2724 206380 306-MAT3-BUDGET.
 2725 206390 MOVE RM-UNITS-PURCH TO AMT-PR (COL).
 2726 2C6400 IF PERIOD = NO-PERIODS, MOVE 1 TO B1. MOVE 2 TO EI. PERFORM
 2727 206410 307-MAT3-BUDGET THRU 307-EXIT VARYING PERIOD FROM 1 BY 1
 2728 2C6420 UNTIL PERIOD > NO-PERIODS, MOVE ROW-TOTAL TO TOTAL-PRINT.
 2729 206430 MOVE 0 TO ROW-TOTAL.
 2730 2C6440 ADD 1 TO COL.
 2731 206450 306-EXIT. EXIT.
 2732
 2733

12734 2C6460 307-MAT3-BUDGET.
 2735 206470 PERFORM 305-MAT3-BUDGET.
 12736 206480 ADD RM-UNITS-PURCH TO ROW-TOTAL.
 12737 206490 307-EXIT. EXIT.
 12738
 12739
 12740 2C6500 310-MAT4-BUDGET.
 12741 206501 ADD 1 TO REPTS. MOVE 'MAT-4' TO SCH-NO (REPTS).
 12742 206502 MOVE 'RAW MATERIALS PURCHASE BUDGET -' TO HEAD (REPTS).
 12743 206503 MOVE 1 TO SH (REPTS). MOVE 'COST OF MATERIALS PURCHASED' TO
 12744 206504 SUB-HEAD (REPTS).
 12745 2C6505 COMPUTE INDEX-PG (REPTS) = PAGE-NO + 1.
 12746 2C6510 PERFORM 210-CLEARING THRU 210-EXIT.
 12747
 12748
 12749 2C6530 311-MAT4-HEADING.
 12750 206540 PERFORM 212-HEADING THRU 212-EXIT.
 12751 2C6550 MOVE ' SCHEDULE MAT-4 ' TO SCHEDULE-NO-PRINT.
 12752 2C6560 MOVE ' RAW MATERIALS PURCHASE BUDGET' TO
 12753 206570 BUDGET-NAME-PRINT.
 12754 2C6580 MOVE ' COST OF MATERIALS PURCHASED' TO SUB-HEADING-PRINT.
 12755 206590 MOVE ' RAW MATERIAL' TO COLUMN-DESCRIPTION (SEC).
 12756 206600 PERFORM 214-HEADING THRU 214-EXIT.
 12757 2C6610 311-EXIT. EXIT.
 12758
 12759
 12760 2C6620 312-MAT4-BUDGET.
 12761 206630 IF RM-NO > NO-RAW-MAT, GO TO 314-MAT4-BUDGET.
 12762 206640 IF RM-REQUIREMENTS-DETAIL (RM-NO) = ZEROES, ADD 1 TO RM-NO.
 12763 206650 GO TO 312-MAT4-BUDGET.
 12764 206660 IF LINE-COUNT > 46 PERFORM 311-MAT4-HEADING THRU 311-EXIT.
 12765 206670 MOVE RM-NAME (RM-NO) TO NAME-PRINT.
 12766
 12767
 12768 206675 313-MAT4-BUDGET.
 12769 206680 MOVE 2 TO L. PERFORM 216-REPORT-LINE.
 12770 206690 MOVE PU-COST (RM-NO) TO RM-COST-PRINT. MOVE ' PER ' TO R1.
 12771 206700 MOVE PURCH-UNIT-NAME (RM-NO) TO RM-UNIT-PRINT.
 12772 2C6710 MOVE N TO B1. COMPUTE EI = B1 + 1.
 12773 206720 PERFORM 315-MAT4-BUDGET THRU 316-EXIT VARYING PERIOD FROM N
 12774 206730 BY 1 UNTIL PERIOD = Y OR PERIOD > NO-PERIODS.
 12775 206740 MOVE 1 TO L. PERFORM 216-REPORT-LINE THRU 217-EXIT.
 12776
 12777
 12778 2C6750 314-MAT4-BUDGET.
 12779 206760 IF RM-NO < NO-RAW-MAT, ADD 1 TO RM-NO, GO TO 312-MAT4-BUDGET.
 12780 2C6770 MOVE ' TOTAL' TO TEMP-HOLD. MOVE 1 TO DOLLAR.
 12781 206780 PERFORM 218-TOTAL-LINE THRU 219-EXIT.
 12782 206790 IF PERIOD > NO-PERIODS GO TO 314-EXIT, ELSE PERFORM
 12783 2C6800 215-SECTION-ROUTINE, MOVE 1 TO RM-NO, GO TO
 12784 206805 311-MAT4-HEADING.
 12785 206810 314-EXIT. EXIT.
 12786
 12787
 12788 206850 315-MAT4-BUDGET.
 12789 206860 PERFORM 305-MAT3-BUDGET THRU 305-EXIT.
 12790 206870 COMPUTE RM-PURCHASES ROUNDED = RM-UNITS-PURCH *

2791 2C6880 PU-COST (RM-NO); ON SIZE ERROR GO TO 910-ERROR-ROUTINE.
 2792
 2793
 2794 2C6920 316-MAT4-BUDGET.
 2795 206930 MOVE RM-PURCHASES TO AMT-PR (COL).
 2796 206940 ADD RM-PURCHASES TO COL-TOTAL (COL).
 2797 2C6950 ADD RM-PURCHASES TO GRAND-TOTAL.
 2798 206960 IF PERIOD = NO-PERIODS, MOVE 1 TO B1, MOVE 2 TO E1, PERFORM
 2799 206970 317-MAT4-BUDGET THRU 317-EXIT VARYING PERIOD FROM 1 BY 1
 2800 2C6975 UNTIL PERIOD > NO-PERIODS, MOVE ROW-TOTAL TO TOTAL-PRINT.
 2801 206980 MOVE 0 TO ROW-TOTAL.
 2802 206990 ADD 1 TO COL.
 2803 2C7000 316-EXIT. EXIT.
 2804
 2805
 2806 2C7020 317-MAT4-BUDGET.
 2807 207030 PERFORM 305-MAT3-BUDGET THRU 305-EXIT.
 2808 207035 COMPUTE RM-PURCHASES = RM-UNITS-PURCH * PU-COST (RM-NO).
 2809 2C7040 ADD RM-PURCHASES TO ROW-TOTAL.
 2810 207050 317-EXIT. EXIT.
 2811
 2812
 2813 2C7250 320-MAT5-BUDGET.
 2814 207251 ADD 1 TO REPTS. MOVE 'MAT-5' TO SCH-NO (REPTS).
 2815 207252 MOVE 'RAW MATERIALS PURCHASE BUDGET -' TO HEAD (REPTS).
 2816 207253 MOVE 1 TO SH (REPTS). MOVE 'DETAILED CALCULATIONS' TO
 2817 207254 SUB-HEAD (REPTS).
 2818 207255 COMPUTE INDEX-PG (REPTS) = PAGE-NO + 1.
 2819 207260 PERFORM 210-CLEARING THRU 210-EXIT.
 2820
 2821
 2822 2C7300 321-MAT5-HEADING.
 2823 207310 PERFORM 212-HEADING THRU 212-EXIT.
 2824 2C7320 MOVE ' SCHEDULE MAT-5 ' TO SCHEDULE-NO-PRINT.
 2825 207330 MOVE ' RAW MATERIALS PURCHASE BUDGET' TO
 2826 207340 BUDGET-NAME-PRINT.
 2827 2C7345 MOVE ' DETAILED CALCULATIONS' TO SUB-HEADING-PRINT.
 2828 2C7350 MOVE ' RAW MATERIAL' TO COLUMN-DESCRIPTION (SEC).
 2829 207360 PERFORM 214-HEADING THRU 214-EXIT.
 2830 207370 321-EXIT. EXIT.
 2831
 2832
 2833 2C7400 322-MAT5-BUDGET.
 2834 207410 IF RM-NO > NO-RAW-MAT, GO TO 322-EXIT.
 2835 207420 IF RM-REQUIREMENTS-DETAIL (RM-NO) = ZEROES, ADD 1 TO RM-NO,
 2836 207430 GO TO 322-MAT5-BUDGET.
 2837 207450 MOVE RM-NAME (RM-NO) TO NAME-PRINT.
 2838 207460 MOVE 2 TO L. PERFORM 216-REPORT-LINE.
 2839 207470 MOVE ' UNITS REQUIRED' TO NAME-PRINT
 2840 207475 MOVE N TO B1. COMPUTE EI = R1 + 1.
 2841 207480 PERFORM 325-MAT5-BUDGET THRU 325-EXIT VARYING PERIOD FROM N
 2842 2C7490 BY 1 UNTIL PERIOD = Y OR PERIOD > NO-PERIODS.
 2843 207500 MOVE 1 TO L. PERFORM 216-REPORT-LINE.
 2844 207510 MOVE ' ADD ENDING INVENTORY' TO NAME-PRINT.
 2845 207515 COMPUTE SUB = N + 1. COMPUTE X = Y + 1.
 2846 207516 COMPUTE END-PERIOD = NO-PERIODS + 1.
 2847 2C7520 PERFORM 327-MAT5-BUDGET THRU 327-EXIT VARYING PERIOD FROM

2848 2C7530 SUB BY 1 UNTIL PERIOD = X OR PERIOD > END-PERIOD.
 2849 207540 MOVE 1 TO L, PERFORM 216-REPORT-LINE.
 2850 207550 MOVE ' TOTAL UNITS REQUIRED' TO TEMP-HOLD.
 2851 2C7560 MOVE 0 TO DOLLAR, PERFORM 218-TOTAL-LINE.
 2852 207570 MOVE ' LESS REG. INVENTORY' TO NAME-PRINT.
 2853 207580 PERFORM 328-MAT5-BUDGET THRU 328-EXIT VARYING PERIOD FROM
 2854 2C7590 N BY 1 UNTIL PERIOD = Y OR PERIOD > NO-PERIODS.
 2855 2C7600 MOVE 1 TO L, PERFORM 216-REPORT-LINE
 2856 2C7610 MOVE ' UNITS TO BE PURCHASED' TO TEMP-HOLD.
 2857 207620 MOVE 0 TO DOLLAR, PERFORM 218-TOTAL-LINE THRU 219-EXIT.
 2858 207630 MOVE ' COST OF RAW MATERIALS' TO NAME-PRINT.
 2859 207640 PERFORM 313-MAT4-BUDGET. MOVE 0 TO L PERFORM 202-DOLLAR-LINE
 2860 2C7650 WRITE PRINT-LINE FROM TOTAL-LINE (SEC) AFTER ADVANCING
 2861 207660 1 LINES.
 2862 2C7680 IF PERIOD < NO-PERIODS, PERFORM 215-SECTION-ROUTINE,
 2863 207685 MOVE SPACES TO COLUMN-DESCRIPTION (SEC), MOVE
 2864 207686 ' RAW MATERIAL' TO COLUMN-DESCRIPTION (SEC),
 2865 2C7687 PERFORM 213-HEADING, GO TO 322-MAT5-BUDGET.
 2866 2C7690 IF RM-NO < NO-RAW-MAT, ADD 1 TO RM-NO, PERFORM 211-CLEARING,
 2867 2C7695 GO TO 321-MAT5-HEADING.
 2868 2C7710 322-EXIT. EXIT.
 2869
 2870
 2871 2C7750 325-MAT5-BUDGET.
 2872 207759 COMPUTE SUB ROUNDED = RM-PROD-REQUIREMENTS (RM-NO, PERIOD) /
 2873 207760 CONV-FACTOR (RM-NO).
 2874 2C7761 MOVE SUB TO AMT-PR (COL).
 2875 207762 IF PERIOD = NO-PERIODS, MOVE 1 TO BI, MOVE 2 TO EI, PERFORM
 2876 207763 326-MAT3-BUDGET THRU 326-EXIT VARYING PERIOD FROM 1 BY 1
 2877 207764 UNTIL PERIOD > NO-PERIODS, MOVE ROW-TOTAL TO TOTAL-PRINT
 2878 207765 MOVE ROW-TOTAL TO GRAND-TOTAL, MOVE 0 TO ROW-TOTAL.
 2879 207770 ADD SUB TO COL-TOTAL (COL).
 2880 2C7781 ADD 1 TO COL.
 2881 2C7790 325-EXIT. EXIT.
 2882
 2883
 2884 2C7791 326-MAT3-BUDGET.
 2885 207792 COMPUTE SUB ROUNDED = RM-PROD-REQUIREMENTS (RM-NO, PERIOD) /
 2886 2C7793 CONV-FACTOR (RM-NO).
 2887 2C7794 ADD SUB TO ROW-TOTAL.
 2888 207795 326-EXIT. EXIT.
 2889
 2890
 2891 207810 327-MAT5-BUDGET.
 2892 207820 MOVE RM-INVENTORY (RM-NO, PERIOD) TO AMT-PR (COL).
 2893 2C7830 ADD RM-INVENTORY (RM-NO, PERIOD) TO COL-TOTAL (COL).
 2894 2C7850 IF PERIOD = END-PERIOD,
 2895 207860 MOVE RM-INVENTORY (RM-NO, PERIOD) TO TOTAL-PRINT,
 2896 2C7870 ADD RM-INVENTORY (RM-NO, PERIOD) TO GRAND-TOTAL.
 2897 207880 ADD 1 TO COL.
 2898 2C7890 327-EXIT. EXIT.
 2899
 2900
 2901 207910 328-MAT5-BUDGET.
 2902 207920 MOVE RM-INVENTORY (RM-NO, PERIOD) TO AMT-PR (COL).
 2903 207930 SUBTRACT RM-INVENTORY (RM-NO, PERIOD) FROM COL-TOTAL (COL).
 2904 207950 IF PERIOD = NO-PERIODS, MOVE RM-INVENTORY (RM-NO, 1)

2905 207960 TO TOTAL-PRINT, SUBTRACT RM-INVENTORY (RM-NO, 1)
 2906 2C7970 FROM GRAND-TOTAL.
 2907 207980 ADD 1 TO COL.
 2908 207990 328-EXIT. EXIT.
 2909
 2910
 2911 208000 330-RM-PURCHASED.
 2912 208010 PERFORM 210-CLEARING THRU 210-EXIT.
 2913
 2914
 2915 208020 331-RM-PURCHASED.
 2916 2C8030 IF RM-NO > NO-RAW-MAT, GO TO 331-EXIT.
 2917 208040 IF RM-REQUIREMENTS-DETAIL (RM-NO) = ZEROES, ADD 1 TO RM-NO,
 2918 2C8050 GO TO 331-RM-PURCHASED.
 2919 208055 MOVE 1 TO BI. MOVE 2 TO EI.
 2920 208060 PERFORM 332-RM-PURCHASED THRU 332-EXIT VARYING PERIOD FROM 1
 2921 2C8070 BY 1 UNTIL PERIOD > NO-PERIODS.
 2922 208080 IF RM-NO < NO-RAW-MAT, ADD 1 TO RM-NO GO TO 331-RM-PURCHASED.
 2923 2C8090 331-EXIT. EXIT.
 2924
 2925
 2926 208110 332-RM-PURCHASED.
 2927 208120 PERFORM 305-MAT3-BUDGET THRU 305-EXIT.
 2928 208125 COMPUTE RM-PURCHASES ROUNDED = RM-UNITS-PURCH
 2929 208126 * PU-COST (RM-NO).
 2930 208130 ADD RM-PURCHASES TO RM-PURCHASED (PERIOD).
 2931 208140 332-EXIT. EXIT.
 2932
 2933
 2934 208250 340-LAB1-BUDGET.
 2935 208251 ADD 1 TO REPRTS. MOVE 'LAB-1' TO SCH-NO (REPRTS).
 2936 2C8252 MOVE 'DIRECT LABOR BUDGET -' TO HEAD (REPRTS). MOVE 1 TO
 2937 208253 SH (REPRTS), MOVE 'LABOR HOURS REQUIRED' TO
 2938 2C8254 SUB-HEAD (REPRTS).
 2939 208255 COMPUTE INDEX-PG (REPRTS) = PAGE-NO + 1.
 2940 208260 PERFORM 210-CLEARING THRU 210-EXIT.
 2941
 2942
 2943 2C8280 341-LAB1-HEADING.
 2944 208290 PERFORM 212-HEADING THRU 212-EXIT.
 2945 2C8300 MOVE ' SCHEDULE LAB-1 ' TO SCHEDULE-NO-PRINT.
 2946 208310 MOVE ' DIRECT LABOR BUDGET' TO BUDGET-NAME-PRINT.
 2947 2C8320 MOVE ' LABOR HOURS REQUIRED' TO SUB-HEADING-PRINT.
 2948 2C8330 MOVE ' DEPARTMENT' TO COLUMN-DESCRIPTION (SEC).
 2949 208340 PERFORM 214-HEADING THRU 214-EXIT.
 2950 208350 341-EXIT. EXIT.
 2951
 2952
 2953 2C8370 342-LAB1-BUDGET.
 2954 2C8380 IF DEPT > NO-PROD-DEPTS, GO TO 343-LAB1-BUDGET.
 2955 2C8390 IF LAB-HRS-DATA (DEPT) = ZEROES, ADD 1 TO DEPT, GO TO
 2956 2C8391 342-LAB1-BUDGET.
 2957 2C8400 IF LINE-COUNT > 46, PERFORM 341-LAB1-HEADING.
 2958 208410 MOVE PRODUCTION-DEPT-NAME (DEPT) TO NAME-PRINT.
 2959 2C8420 PERFORM 345-LAB1-BUDGET THRU 345-EXIT VARYING PERIOD FROM N
 2960 2C8430 BY 1 UNTIL PERIOD = Y OR PERIOD > NO-PERIODS.
 2961 208440 MOVE 2 TO L, PERFORM 216-REPORT-LINE.

2962 208450 IF DEPT < NO-PROD-DEPTS, ADD 1 TO DEPT, GO TO
 2963 2C8460 342-LAB1-BUDGET.
 2964
 2965
 2966 2C8470 343-LAB1-BUDGET.
 2967 208480 MOVE ' TOTAL' TO TEMP-HOLD. MOVE 0 TO DOLLAR.
 2968 208490 PERFORM 218-TOTAL-LINE THRU 219-EXIT.
 2969 2C8500 IF PERIOD > NO-PERIODS GO TO 343-EXIT, ELSE PERFORM
 2970 2C8510 215-SECTION-ROUTINE, MOVE 1 TO DEPT, GO TO
 2971 208515 341-LAB1-HEADING.
 2972 2C8530 343-EXIT. EXIT.
 2973
 2974
 2975 2C8580 345-LAB1-BUDGET.
 2976 2C8590 MOVE LABOR-HRS-USED (DEPT, PERIOD) TO AMT-PR (COL).
 2977 208600 ADD LABOR-HRS-USED (DEPT, PERIOD) TO COL-TOTAL (COL).
 2978 208610 ADD LABOR-HRS-USED (DEPT, PERIOD) TO GRAND-TOTAL.
 2979 2C8620 IF PERIOD = NO-PERIODS, PERFORM 347-LAB1-BUDGET THRU 347-EXIT
 2980 208630 VARYING PERIOD FROM 1 BY 1 UNTIL PERIOD > NO-PERIODS,
 2981 2C8640 MOVE ROW-TOTAL TO TOTAL-PRINT, MOVE 0 TO ROW-TOTAL.
 2982 2C8650 ADD 1 TO COL.
 2983 208660 345-EXIT. EXIT.
 2984
 2985
 2986 208690 347-LAB1-BUDGET.
 2987 2C8700 ADD LABOR-HRS-USED (DEPT, PERIOD) TO ROW-TOTAL.
 2988 2C8710 347-EXIT. EXIT.
 2989
 2990
 2991 2C8750 350-LAB2-BUDGET.
 2992 208751 ADD 1 TO REPTS. MOVE 'LAB-2' TO SCH-NO (REPTS).
 2993 2C8752 MOVE 'DIRECT LABOR COST BUDGET' TO HEAD (REPTS).
 2994 2C8753 COMPUTE INDEX-PG (REPTS) = PAGE-NO + 1.
 2995 208760 PERFORM 210-CLEARING THRU 210-EXIT.
 2996
 2997
 2998 2C8790 351-LAB2-HEADING.
 2999 208800 PERFORM 212-HEADING THRU 212-EXIT.
 3000 2C8810 MOVE ' SCHEDULE LAB-2 ' TO SCHEDULE-NO-PRINT.
 3001 2C8820 MOVE ' DIRECT LABOR COST BUDGET' TO
 3002 2C8830 BUDGET-NAME-PRINT.
 3003 2C8840 MOVE ' DEPARTMENT' TO COLUMN-DESCRIPTION (SEC).
 3004 208850 PERFORM 214-HEADING THRU 214-EXIT.
 3005 2C8860 351-EXIT. EXIT.
 3006
 3007
 3008 2C8880 352-LAB2-BUDGET.
 3009 208890 IF DEPT > NO-PROD-DEPTS, GO TO 353-LAB2-BUDGET.
 3010 2C8900 IF LAB-HRS-DATA (DEPT) = ZEROES, ADD 1 TO DEPT, GO TO
 3011 2C8901 352-LAB2-BUDGET.
 3012 2C8910 IF LINE-COUNT > 46, PERFORM 351-LAB2-HEADING.
 3013 208920 MOVE PRODUCTION-DEPT-NAME (DEPT) TO NAME-PRINT.
 3014 2C8930 PERFORM 355-LAB2-BUDGET THRU 356-EXIT VARYING PERIOD FROM N
 3015 2C8940 BY 1 UNTIL PERIOD = Y OR PERIOD > NO-PERIODS.
 3016 208950 MOVE 2 TO L, PERFORM 216-REPORT-LINE THRU 217-EXIT.
 3017 2C8960 IF DEPT < NO-PROD-DEPTS, ADD 1 TO DEPT, GO TO
 3018 208970 352-LAB2-BUDGET.

3019
 3020
 3021 2C8980 353-LAB2-BUDGET.
 3022 2C8990 MOVE ' TOTAL' TO TEMP-HOLD. MOVE 1 TO DOLLAR.
 3023 209000 PERFORM 218-TOTAL-LINE THRU 219-EXIT.
 3024 2C9010 IF PERIOD > NO-PERIODS GO TO 353-EXIT, ELSE PERFORM
 3025 209020 215-SECTION-ROUTINE, MOVE 1 TO DEPT, GO TO
 3026 209030 351-LAB2-HEADING.
 3027 2C9040 353-EXIT. EXIT.
 3028
 3029
 3030 209090 355-LAB2-BUDGET.
 3031 2C9100 COMPUTE DEPT-LABOR-COST ROUNDED = LABOR-HR-RATE (DEPT) *
 3032 209110 LABOR-HRS-USED (DEPT, PERIOD).
 3033
 3034
 3035 2C9140 356-LAB2-BUDGET.
 3036 209150 MOVE DEPT-LABOR-COST TO AMT-PR (COL).
 3037 209160 ADD DEPT-LABOR-COST TO COL-TOTAL (COL).
 3038 2C9170 ADD DEPT-LABOR-COST TO GRAND-TOTAL.
 3039 209180 IF PERIOD = NO-PERIODS PERFORM 357-LAB2-BUDGET THRU 357-EXIT
 3040 209190 VARYING PERIOD FROM 1 BY 1 UNTIL PERIOD > NO-PERIODS,
 3041 2C9200 MOVE ROW-TOTAL TO TOTAL-PRINT, MOVE 0 TO ROW-TOTAL.
 3042 209210 ADD 1 TO COL.
 3043 2C9220 356-EXIT. EXIT.
 3044
 3045
 3046 2C9270 357-LAB2-BUDGET.
 3047 209280 PERFORM 355-LAB2-BUDGET.
 3048 209290 ADD DEPT-LABOR-COST TO ROW-TOTAL.
 3049 2C9300 357-EXIT. EXIT.
 3050
 3051
 3052 209750 370-LABOR-COSTS.
 3053 2C9760 PERFORM 210-CLEARING THRU 210-EXIT.
 3054
 3055
 3056 2C9790 371-LABOR-COSTS.
 3057 2C9800 IF DEPT > NO-PROD-DEPTS, GO TO 371-EXIT.
 3058 209810 IF LAB-HRS-DATA (DEPT) = ZEROES, ADD 1 TO DEPT, GO TO
 3059 2C9811 371-LABOR-COSTS.
 3060 209820 PERFORM 372-LABOR-COSTS THRU 372-EXIT VARYING PERIOD FROM 1
 3061 209830 BY 1 UNTIL PERIOD > NO-PERIODS.
 3062 2C9840 IF DEPT < NO-PROD-DEPTS, ADD 1 TO DEPT, GO TO
 3063 209850 371-LABOR-COSTS.
 3064 209860 371-EXIT. EXIT.
 3065
 3066
 3067 209890 372-LABOR-COSTS.
 3068 2C9900 PERFORM 355-LAB2-BUDGET.
 3069 209910 ADD DEPT-LABOR-COST TO DIRECT-LABOR-COSTS (PERIOD).
 3070 209920 372-EXIT. EXIT.
 3071
 3072
 3073 220000 OTHER-DEPT-INPUT SECTION.
 3074
 3075

3076 220010 400-READ-CARD.
 3077
 3078 220020 READ BUDGET-DATA-FILE. AT END GO TO 2ND-SET-BUDGETS.
 3079
 3080 220021 IF CARD-CODE = '22' EXAMINE Z1 REPLACING ALL ' ' BY 0,
 3081 220022 EXAMINE Z19 REPLACING ALL ' ' BY 0, EXAMINE Z16
 3082 220023 REPLACING ALL ' ' BY 0, EXAMINE Z8 REPLACING ALL
 3083 220024 ' ' BY 0, IF Z1 IS NOT NUMERIC OR Z19 IS NOT NUMERIC OR Z16
 3084 220025 IS NOT NUMERIC OR Z8 IS NOT NUMERIC GO TO 800-ERROR-ROUTINE.
 3085 220026 IF CARD-CODE = '23' OR = '24' OR = '25' OR = '26' OR = '28'
 3086 220027 OR = '33' OR = '40' OR = '41' OR = '55' EXAMINE Z9
 3087 220028 REPLACING ALL ' ' BY 0, PERFORM 080-NUMERIC-TEST THRU
 3088 220029 080-EXIT.
 3089 220030 IF CARD-CODE = '27' EXAMINE Z8 REPLACING ALL ' ' BY 0,
 3090 220031 EXAMINE Z1 REPLACING ALL ' ' BY 0, IF Z1 IS NOT NUMERIC
 3091 220032 OR Z8 IS NOT NUMERIC GO TO 800-ERROR-ROUTINE.
 3092 220033 IF CARD-CODE = '29' OR = '30' OR = '31' OR = '32' OR = '34'
 3093 220034 OR = '35' OR = '36' OR = '37' OR = '38' OR = '39'
 3094 220035 EXAMINE Z148 REPLACING ALL ' ' BY 0, EXAMINE Z1 REPLACING
 3095 220036 ALL ' ' BY 0, IF Z148 IS NOT NUMERIC OR Z1 IS NOT NUMERIC
 3096 220037 GO TO 800-ERROR-ROUTINE.
 3097
 3098
 3099 220040 402-BRANCHING.
 3100 220050 IF CARD-CODE = '22' GO TO 410-SERV-DEPT.
 3101 220060 IF CARD-CODE = '24' GO TO 420-SERV-DEPT.
 3102 220070 IF CARD-CODE = '26' GO TO 430-SERV-DEPT.
 3103 220080 IF CARD-CODE = '27' GO TO 440-ADMIN-DEPT.
 3104 220090 IF CARD-CODE = '29' GO TO 450-OTHER-INC.
 3105 220100 IF CARD-CODE = '31' GO TO 460-OTHER-EXP.
 3106 220110 IF CARD-CODE = '33' GO TO 470-CASH-BAL.
 3107 220120 IF CARD-CODE = '34' GO TO 480-OTHER-CR.
 3108 220130 IF CARD-CODE = '36' GO TO 490-OTHER-CD.
 3109 220140 IF CARD-CODE = '38' GO TO 500-PURCHASES.
 3110 220150 IF CARD-CODE = '40' GO TO 510-AC-REC.
 3111 220160 IF CARD-CODE = '41' GO TO 520-AC-PAY.
 3112 220170 IF CARD-CODE NOT = '55' GO TO 900-ERROR-ROUTINE.
 3113 220180 GO TO 2ND-SET-BUDGETS.
 3114
 3115
 3116 220250 410-SERV-DEPT.
 3117 220260 MOVE NAME TO SERVICE-DEPT-NAME (DEPT-NO).
 3118 220270 MOVE OH-VC-RATE TO SERV-DEPT-OH-RATE (DEPT-NO).
 3119 220280 MOVE OH-UNIT TO SERVICE-UNIT (DEPT-NO).
 3120 220290 MOVE MAX-UNITS-AVAILABLE TO MAX-SERVICE-UNITS (DEPT-NO).
 3121 220310 IF PERIOD-CODE = '5' PERFORM 412-SERV-DEPT THRU 412-EXIT,
 3122 220320 VARYING PERIOD FROM 1 BY 1 UNTIL PERIOD > NO-PERIODS
 3123 220330 ELSE PERFORM 414-SERV-DEPT THRU 414-EXIT.
 3124 220340 GO TO 400-READ-CARD.
 3125
 3126
 3127 220390 412-SERV-DEPT.
 3128 220400 MOVE SAME-AMOUNT TO SERV-DEPT-FC (DEPT-NO, PERIOD).
 3129 220410 412-EXIT. EXIT.
 3130
 3131
 3132 220430 414-SERV-DEPT.

3133 220440 PERFORM 400-READ-CARD.
 3134 220450 IF CARD-CODE NOT = '23' GO TO 900-ERROR-ROUTINE.
 3135 220460 MOVE FIXED-COST-DATA TO SERV-DEPT-FC-DATA (DEPT-NO).
 3136 220470 414-EXIT. EXIT.
 3137
 3138
 3139 220500 420-SERV-DEPT.
 3140 220510 MOVE NO-PROD-DEPTS-SERVED TO NO-DEPTS. MOVE 1 TO X.
 3141 220520 MOVE DEPT-NO TO DEPTNO.
 3142
 3143
 3144 220530 421-SERV-DEPT.
 3145 220540 PERFORM 422-SERV-DEPT THRU 422-EXIT VARYING Z FROM 1 BY 1
 3146 220550 UNTIL Z > 6 OR X > NO-DEPTS.
 3147 220560 IF DEPT < NO-DEPTS, PERFORM 400-READ-CARD, IF DEPT-NO =
 3148 220570 DEPTNO GO TO 421-SERV-DEPT, ELSE GO TO 900-ERROR-ROUTINE.
 3149 220580 GO TO 400-READ-CARD.
 3150
 3151 220600 422-SERV-DEPT.
 3152 220610 PERFORM 424-SERV-DEPT THRU 424-EXIT VARYING PERIOD FROM 1
 3153 220620 BY 1 UNTIL PERIOD > NO-PERIODS. ADD 1 TO X.
 3154 220640 422-EXIT. EXIT.
 3155
 3156
 3157 220660 424-SERV-DEPT.
 3158 220665 MOVE INTER-DEPT-NO (Z) TO DEPT.
 3159 220670 COMPUTE SUB ROUNDED =
 3160 220680 VAR-OH-UNITS-USED (DEPT, PERIOD) /
 3161 220690 RELATIONSHIP (Z).
 3162 220700 COMPUTE SERV-UNITS = SUB + MIN-SERV-UNITS (DEPT).
 3163 220710 ADD SERV-UNITS TO SERVICE-UNITS-USED (DEPT-NO, PERIOD).
 3164 220720 424-EXIT. EXIT.
 3165
 3166
 3167 220750 430-SERV-DEPT.
 3168 220770 PERFORM 432-SERV-DEPT THRU 432-EXIT VARYING PERIOD FROM 1 BY
 3169 220780 1 UNTIL PERIOD > NO-PERIODS.
 3170 220790 GO TO 400-READ-CARD.
 3171
 3172
 3173 220850 432-SERV-DEPT.
 3174 220855 MOVE 0 TO VOL-DIFF. SUBTRACT 1 FROM VOL-DIFF.
 3175 220860 PERFORM 433-SERV-DEPT THRU 433-EXIT VARYING STEP FROM 1 BY 1
 3176 220870 UNTIL VOL-DIFF NOT < 0 OR STEP > NO-OF-STEPS.
 3177 220880 IF STEP > NO-OF-STEPS AND VOL-DIFF < 0, GO TO
 3178 220881 930-ERROR-ROUTINE.
 3179 220900 432-EXIT.
 3180
 3181
 3182 220940 433-SERV-DEPT.
 3183 220950 COMPUTE VOL-DIFF = HIGH-VOL (STEP) -
 3184 220960 SERVICE-UNITS-USED (DEPT-NO, PERIOD).
 3185 220970 IF VOL-DIFF NOT < 0 ADD STEP-COST (STEP) TO
 3186 220980 SERV-DEPT-FC (DEPT-NO, PERIOD).
 3187 220990 433-EXIT.
 3188
 3189

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 3191 221000 440-ADMIN-DEPT.
 3192 221010 IF PERIOD-CODE = 'S' PERFORM 442-ADMIN-DEPT THRU 442-EXIT
 3193 221020 VARYING PERIOD FROM 1 BY 1 UNTIL PERIOD > NO-PERIODS,
 3194 221025 GO TO 400-READ-CARD.
 3195 221030 PERFORM 400-READ-CARD, IF CARD-CODE NOT = '28' GO TO
 3196 221040 900-EFRCR-ROUTINE.
 3197 221050 PERFORM 444-ADMIN-DEPT THRU 444-EXIT VARYING PERIOD FROM 1
 3198 221060 BY 1 UNTIL PERIOD > NO-PERIODS.
 3199 221070 GO TO 400-READ-CARD.
 3200
 3201
 3202 221090 442-ADMIN-DEPT.
 3203 221100 ADD SAME-AMOUNT TO ADMIN-FC (PERIOD).
 3204 221110 442-EXIT. EXIT.
 3205
 3206
 3207 221140 444-ADMIN-DEPT.
 3208 221150 ADD TRACEABLE-FC (PERIOD) TO ADMIN-FC (PERIOD).
 3209 221160 444-EXIT. EXIT.
 3210
 3211
 3212 221250 450-OTHER-INC.
 3213 221260 MOVE NO-OTHER-INC TO Z. MOVE 1 TO COL. N. MOVE 7 TO Y.
 3214 221280 ADD 1 TO Z. MOVE NAME TO OTHER-INC-NAME (Z).
 3215 221290 MOVE Z TO NO-OTHER-INC.
 3216
 3217
 3218 221300 451-OTHER-INC.
 3219 221310 PERFORM 455-OTHER-INC THRU 455-EXIT VARYING PERIOD FROM N BY
 3220 221320 1 UNTIL PERIOD = Y OR PERIOD > NO-PERIODS.
 3221 221330 IF PERIOD > NO-PERIODS GO TO 452-OTHER-CR.
 3222 221340 PERFORM 400-READ-CARD. IF CARD-CODE NOT = '30' GO TO
 3223 221350 900-ERROR-ROUTINE ELSE MOVE 1 TO COL. MOVE 7 TO N.
 3224 221360 MOVE 13 TO Y. GO TO 451-OTHER-INC.
 3225
 3226
 3227 221380 452-OTHER-CR.
 3228 221390 IF CASH-CODE = 'N' GO TO 400-READ-CARD.
 3229 221400 MOVE NO-OTHER-CR TO L.
 3230 221420 ADD 1 TO L. MOVE OTHER-INC-NAME (Z) TO OTHER-CR-NAME (L).
 3231 221425 MOVE L TO NO-OTHER-CR.
 3232 221450 PERFORM 457-OTHER-CR THRU 457-EXIT VARYING PERIOD FROM 1 BY 1
 3233 221460 UNTIL PERIOD > NO-PERIODS.
 3234 221480 GO TO 400-READ-CARD.
 3235
 3236
 3237 221520 455-OTHER-INC.
 3238 221530 MOVE AMOUNT (COL) TO OTHER-INC-AMT (Z, PERIOD).
 3239 221540 ADD 1 TO COL.
 3240 221550 455-EXIT. EXIT.
 3241
 3242
 3243 221580 457-OTHER-CR.
 3244 221590 MOVE OTHER-INC-AMT (Z, PERIOD) TO OTHER-CR-AMT (L, PERIOD).
 3245 221600 457-EXIT. EXIT.
 3246

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3247
 3248 221750 460-OTHER-EXP.
 3249 221760 MOVE NO-OTHER-EXP TO Z. MOVE 1 TO COL. N. MOVE 7 TO Y.
 3250 221780 ADD 1 TO Z. MOVE NAME TO OTHER-EXP-NAME (Z).
 3251 221790 MOVE Z TO NO-OTHER-EXP.
 3252
 3253
 3254 221800 461-OTHER-EXP.
 3255 221810 PERFORM 465-OTHER-EXP THRU 465-EXIT VARYING PERIOD FROM N BY
 3256 221820 1 UNTIL PERIOD = Y OR PERIOD > NO-PERIODS.
 3257 221830 IF PERIOD > NO-PERIODS GO TO 462-OTHER-CD.
 3258 221840 PERFORM 400-READ-CARD, IF CARD-CODE NOT = '32' GO TO
 3259 221850 900-ERROR-ROUTINE, ELSE MOVE 1 TO COL. MOVE 7 TO N.
 3260 221860 MOVE 13 TO Y. GO TO 461-OTHER-EXP.
 3261
 3262
 3263 221880 462-OTHER-CD.
 3264 221890 IF CASH-CODE = 'N' GO TO 400-READ-CARD.
 3265 221900 MOVE NO-OTHER-CD TO L.
 3266 221920 ADD 1 TO L. MOVE OTHER-EXP-NAME (Z) TO OTHER-CD-NAME (L).
 3267 221925 MOVE L TO NO-OTHER-CD.
 3268 221930 PERFORM 467-OTHER-CD THRU 467-EXIT VARYING PERIOD FROM 1 BY 1
 3269 221940 UNTIL PERIOD > NO-PERIODS.
 3270 221960 GO TO 400-READ-CARD.
 3271
 3272
 3273 222010 465-OTHER-EXP.
 3274 222020 MOVE AMOUNT (COL) TO OTHER-EXP-AMT (Z, PERIOD).
 3275 222030 ADD 1 TO COL.
 3276 222040 465-EXIT. EXIT.
 3277
 3278
 3279 222070 467-OTHER-CD.
 3280 222080 MOVE OTHER-EXP-AMT (Z, PERIOD) TO OTHER-CD-AMT (L, PERIOD).
 3281 222090 467-EXIT. EXIT.
 3282
 3283
 3284 222250 470-CASH-BAL.
 3285 222260 MOVE BEGINNING-CASH-BALANCE TO CASH-BALANCE (1).
 3286 222265 COMPUTE END-PERIOD = NO-PERIODS + 1.
 3287 222270 IF PERIOD-CODE = 'S' PERFORM 475-CASH-BAL THRU 475-EXIT
 3288 222280 VARYING Z FROM 2 BY 1 UNTIL Z > END-PERIOD, ELSE MOVE 1
 3289 222290 TO PERIOD, PERFORM 477-CASH-BAL THRU 477-EXIT VARYING
 3290 222300 Z FROM 2 BY 1 UNTIL Z > END-PERIOD.
 3291 222310 GO TO 400-READ-CARD.
 3292
 3293
 3294 222330 475-CASH-BAL.
 3295 222340 MOVE SAME-AMOUNT TO CASH-BALANCE (Z).
 3296 222350 475-EXIT. EXIT.
 3297
 3298
 3299 222380 477-CASH-BAL.
 3300 222390 MOVE DESIRED-END-CASH-BALANCE (PERIOD) TO CASH-BALANCE (Z).
 3301 222400 ADD 1 TO PERIOD.
 3302 222410 477-EXIT. EXIT.
 3303

3304
 3305 222500 480-OTHER-CR.
 3306 222510 MOVE NO-OTHER-CR TO L. MOVE 1 TO COL. N. MOVE 7 TO Y.
 3307 222520 ADD 1 TO NO-OTHER-CR. ADD 1 TO L.
 3308 222530 MOVE NAME TO OTHER-CR-NAME (L).
 3309
 3310
 3311 222560 481-OTHER-CR.
 3312 222570 PERFORM 485-OTHER-CR THRU 485-EXIT VARYING PERIOD FROM N BY 1
 3313 222580 UNTIL PERIOD = Y OR PERIOD > NO-PERIODS.
 3314 222590 IF PERIOD > NO-PERIODS GO TO 400-READ-CARD.
 3315 222600 PERFORM 400-READ-CARD. IF CARD-CODE NOT = '35' GO TO
 3316 222610 900-ERROR-ROUTINE, ELSE MOVE 1 TO COL, MOVE 7 TO N,
 3317 222620 MOVE 13 TO Y, GO TO 481-OTHER-CR.
 3318 222630 GO TO 400-READ-CARD.
 3319
 3320
 3321 222690 485-OTHER-CR.
 3322 222700 MOVE AMOUNT (COL) TO OTHER-CR-AMT (L, PERIOD).
 3323 222710 ADD 1 TO COL.
 3324 222720 485-EXIT.
 3325
 3326
 3327 222750 490-OTHER-CD.
 3328 222760 MOVE NO-OTHER-CD TO L. MOVE 1 TO COL. N. MOVE 7 TO Y.
 3329 222770 ADD 1 TO NO-OTHER-CD. ADD 1 TO L.
 3330 222780 MOVE NAME TO OTHER-CD-NAME (L).
 3331
 3332
 3333 222800 491-OTHER-CD.
 3334 222810 PERFORM 495-OTHER-CD THRU 495-EXIT VARYING PERIOD FROM N BY 1
 3335 222820 UNTIL PERIOD = Y OR PERIOD > NO-PERIODS.
 3336 222830 IF PERIOD > NO-PERIODS GO TO 400-READ-CARD.
 3337 222840 PERFORM 400-READ-CARD. IF CARD-CODE NOT = '37' GO TO
 3338 222850 900-ERROR-ROUTINE, ELSE MOVE 1 TO COL, MOVE 7 TO N,
 3339 222860 MOVE 13 TO Y, GO TO 491-OTHER-CD.
 3340 222870 GO TO 400-READ-CARD.
 3341
 3342
 3343 222960 495-OTHER-CD.
 3344 222970 MOVE AMOUNT (COL) TO OTHER-CD-AMT (L, PERIOD).
 3345 222980 ADD 1 TO COL.
 3346 222990 495-EXIT. EXIT.
 3347
 3348
 3349 223000 500-PURCHASES.
 3350 223020 PERFORM 210-CLEARING THRU 210-EXIT.
 3351
 3352
 3353 223030 502-FACT-OH.
 3354 223040 PERFORM 505-FACT-OH THRU 505-EXIT VARYING PERIOD FROM 1 BY 1
 3355 223050 UNTIL PERIOD > NO-PERIODS.
 3356 223060 IF DEPT < NO-PROD-DEPTS, ADD 1 TO DEPT, GO TO 502-FACT-OH.
 3357 223070 MOVE 1 TO DEPT.
 3358
 3359
 3360 223080 503-FACT-OH.

3361 223090 PERFORM 506-FACT-OH THRU 506-EXIT VARYING PERIOD FROM 1 BY 1
 3362 223100 UNTIL PERIOD > NO-PERIODS.
 3363 223110 IF DEPT < NO-SERV-DEPTS, ADD 1 TO DEPT, GO TO 503-FACT-OH.
 3364 223120 MOVE 1 TO COL, N. MOVE 7 TO Y.
 3365
 3366
 223130 504-PURCHASES.
 3367 223140 PERFORM 507-PURCHASES THRU 507-EXIT VARYING PERIOD FROM N BY
 3368 223150 1 UNTIL PERIOD = Y OR PERIOD > NO-PERIODS.
 3369 223160 IF PERIOD > NO-PERIODS GO TO 400-READ-CARD.
 3370 223170 PERFORM 400-READ-CARD.
 3371 223180 IF CARD-CODE NOT = '39' GO TO 900-ERROR-ROUTINE, ELSE MOVE
 3372 223190 1 TO COL, MOVE 7 TO N, MOVE 13 TO Y, GO TO 504-PURCHASES.
 3373 223200 GO TO 400-READ-CARD.
 3374
 3375
 3376
 223260 505-FACT-OH.
 3377 223270 PERFORM 535-OVHL-BUDGET THRU 536-EXIT.
 3378 223280 ADD TOTAL-DEPT-OH TO FACTORY-OH-EXP (PERIOD).
 3379 223290 ADD PROD-DEPT-FC (DEPT, PERIOD) TO MFG-FC (PERIOD).
 3380 223300 505-EXIT. EXIT.
 3381
 3382
 3383
 223310 506-FACT-OH.
 3384 223320 ADD SERV-DEPT-FC (DEPT, PERIOD) TO FACTORY-OH-EXP (PERIOD).
 3385 223330 ADD SERV-DEPT-FC (DEPT, PERIOD) TO MFG-FC (PERIOD).
 3386 223340 506-EXIT. EXIT.
 3387
 3388
 3389
 223350 507-PURCHASES.
 3390 223360 PERFORM 508-PURCHASES THRU 508-EXIT VARYING Z FROM 1 BY 1
 3391 223370 UNTIL Z > 3.
 3392 223380 PERFORM 509-PURCHASES THRU 509-EXIT VARYING Z FROM 1 BY 1
 3393 223390 UNTIL Z > NO-MRK-FC-CLASSES.
 3394 223400 ADD FACTORY-OH-EXP (PERIOD) TO PURCHASES (PERIOD).
 3395 223410 ADD ADMIN-FC (PERIOD) TO PURCHASES (PERIOD).
 3396 223420 ADD RM-PURCHASED (PERIOD) TO PURCHASES (PERIOD).
 3397 223430 SUBTRACT AMOUNT (COL) FROM PURCHASES (PERIOD).
 3398 223440 ADD 1 TO COL.
 3399 223450 507-EXIT. EXIT.
 3400
 3401
 3402
 223440 508-PURCHASES.
 3403 223450 IF MRK-VC (Z, PERIOD) = 0 GO TO 508-EXIT.
 3404 223460 ADD MRK-VC (Z, PERIOD) TO PURCHASES (PERIOD).
 3405 223470 508-EXIT. EXIT.
 3406
 3407
 3408
 223480 509-PURCHASES.
 3409 223490 ADD MRK-FC (Z, PERIOD) TO PURCHASES (PERIOD).
 3410 223495 509-EXIT. EXIT.
 3411
 3412
 3413
 223500 510-AC-REC.
 3414 223510 PERFORM 515-AC-REC THRU 515-EXIT VARYING PERIOD FROM 1 BY 1
 3415 223520 UNTIL PERIOD > 5.
 3416 223530 PERFORM 517-AC-REC THRU 517-EXIT VARYING PERIOD FROM 1 BY 1
 3417

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3418 223540 UNTIL PERIOD > NO-PERIODS.
 3419 223550 GO TO 400-READ-CARD.
 3420
 3421
 3422 223660 515-AC-REC.
 3423 223670 IF CASH-FLOW-BEG-BAL (PERIOD) = 0 GO TO 515-EXIT.
 3424 223680 ADD CASH-FLOW-BEG-BAL (PERIOD) TO
 3425 223681 AC-REC-COLLECTIONS (PERIOD).
 3426 223690 515-EXIT.
 3427
 3428
 3429 223710 517-AC-REC.
 3430 223720 COMPUTE CREDIT-SALES ROUNDED = REVENUES (PERIOD) *
 3431 223730 PERCENT-CREDIT-TRANS.
 3432 223740 COMPUTE CASH-SALES (PERIOD) = REVENUES (PERIOD) -
 3433 223750 CREDIT-SALES.
 3434 223760 MOVE PERIOD TO N.
 3435 223770 PERFORM 518-AC-REC THRU 518-EXIT VARYING Z FROM 1 BY 1 UNTIL
 3436 223780 Z > NO-CASH-FLOW-PERIODS.
 3437 223790 517-EXIT.
 3438
 3439
 3440 223800 518-AC-REC.
 3441 223810 IF N > NO-PERIODS GO TO 518-EXIT.
 3442 223820 COMPUTE COLLECTIONS = CREDIT-SALES * PERCENT-PER-PERIOD (Z).
 3443 223830 ADD COLLECTIONS TO AC-REC-COLLECTIONS (N).
 3444 223840 ADD 1 TO N.
 3445 223850 518-EXIT. EXIT.
 3446
 3447
 3448 224000 520-AC-PAY.
 3449 224010 PERFORM 525-AC-PAY THRU 525-EXIT VARYING PERIOD FROM 1 BY 1
 3450 224020 UNTIL PERIOD > 5.
 3451 224030 PERFORM 527-AC-PAY THRU 527-EXIT VARYING PERIOD FROM 1 BY 1
 3452 224040 UNTIL PERIOD > NO-PERIODS.
 3453 224050 GO TO 400-READ-CARD.
 3454
 3455
 3456 224080 525-AC-PAY.
 3457 224090 IF CASH-FLOW-BEG-BAL (PERIOD) = 0, GO TO 525-EXIT.
 3458 224100 ADD CASH-FLOW-BEG-BAL (PERIOD) TO AC-PAY-PYMTS (PERIOD).
 3459 224110 525-EXIT. EXIT.
 3460
 3461
 3462 224130 527-AC-PAY.
 3463 224140 COMPUTE CREDIT-PURCHASES ROUNDED = PURCHASES (PERIOD) *
 3464 224150 PERCENT-CREDIT-TRANS.
 3465 224160 COMPUTE CASH-PURCHASES (PERIOD) ROUNDED = PURCHASES (PERIOD)
 3466 224170 - CREDIT-PURCHASES.
 3467 224180 MOVE PERIOD TO N.
 3468 224190 PERFORM 528-AC-PAY THRU 528-EXIT VARYING Z FROM 1 BY 1 UNTIL
 3469 224200 Z > NO-CASH-FLOW-PERIODS.
 3470 224210 527-EXIT. EXIT.
 3471
 3472
 3473 224250 528-AC-PAY.
 3474 224260 IF N > NO-PERIODS GO TO 528-EXIT.

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3475 224270 COMPUTE PAYMENTS ROUNDED = CREDIT-PURCHASES *
 3476 224271 PERCENT-PER-PERIOD (Z).
 3477 224280 ADD PAYMENTS TO AC-PAY-PYMTS (N).
 3478 224290 ADD 1 TO N.
 3479 224300 528-EXIT. EXIT.
 3480
 3481
 3482 224500 2ND-SET-BUDGETS SECTION.
 3483
 3484
 3485 224510 529-START.
 3486 224520 IF OVH-1 = 1, PERFORM 530-OVH1-BUDGET THRU 534-EXIT.
 3487 224530 IF CS-1 = 1, PERFORM 550-CS1-BUDGET THRU 553-EXIT.
 3488 224540 IF CCNT-1 = 1 OR CONT-2 = 1 OR CONT-3 = 1 OR CONT-5 = 1 OR
 3489 224550 CONT-6 = 1, PERFORM 585-CONT-BUDGET THRU 587-EXIT.
 3490 224580 IF CONT-1 = 1, PERFORM 590-CONT1-BUDGET THRU 591-EXIT.
 3491 224600 IF NO-LEV-2-SALES-SEGS > 0 AND CONT-2 = 1, MOVE 'CONT2' TO
 3492 224610 BUDGET, PERFORM 210-CLEARING THRU 210-EXIT, PERFORM
 3493 224615 640-CONT-BUDGET THRU 641-EXIT.
 3494 224620 IF CONT-3 = 1, MOVE 'CONT3' TO BUDGET, PERFORM 210-CLEARING
 3495 224630 THRU 210-EXIT, PERFORM 640-CONT-BUDGET THRU 641-EXIT.
 3496 224640 IF CONT-4 = 1, PERFORM 670-CONT4-BUDGET THRU 670-EXIT.
 3497 224650 IF NO-LEV-2-SALES-SEGS > 0 AND CONT-5 = 1, MOVE 'CONT5' TO
 3498 224655 BUDGET, PERFORM 210-CLEARING THRU 210-EXIT, PERFORM
 3499 224660 640-CONT-BUDGET THRU 641-EXIT.
 3500 224670 IF CONT-6 = 1, MOVE 'CONT6' TO BUDGET, PERFORM 210-CLEARING
 3501 224680 THRU 210-EXIT, PERFORM 640-CONT-BUDGET THRU 641-EXIT.
 3502 224690 IF CONT-7 = 1 PERFORM 700-CONT7-BUDGET THRU 701-EXIT.
 3503 224700 IF CB-1 = 1 PERFORM 730-CB1-BUDGET THRU 732-EXIT.
 3504 224701 PERFORM 780-INDEX THRU 780-EXIT.
 3505 224710 GO TO WIND-UP-PROCEDURE.
 3506
 3507
 3508 225000 530-OVH1-BUDGET.
 3509 225001 ADD 1 TO REPTS. MOVE 'OVH-1' TO SCH-NO (REPTS).
 3510 225002 MOVE 'FACTORY OVERHEAD EXPENSE BUDGET' TO HEAD (REPTS).
 3511 225003 COMPUTE INDEX-PG (REPTS) = PAGE-NO * I.
 3512 225010 PERFORM 210-CLEARING THRU 210-EXIT.
 3513
 3514
 3515 225040 531-OVH1-HEADING.
 3516 225050 PERFORM 212-HEADING THRU 212-EXIT.
 3517 225060 MOVE ' SCHEDULE OVH-1 ' TO SCHEDULE-NO-PRINT.
 3518 225070 MOVE ' FACTORY OVERHEAD EXPENSE BUDGET' TO
 3519 225080 BUDGET-NAME-PRINT.
 3520 225090 PERFORM 214-HEADING THRU 214-EXIT.
 3521 225110 531-EXIT. EXIT.
 3522
 3523
 3524 225130 532-OVH1-BUDGET.
 3525 225140 MOVE 'PRODUCTION DEPARTMENTS:' TO NAME-PRINT.
 3526 225150 MOVE 2 TO L. PERFORM 216-REPORT-LINE.
 3527 225160 MOVE '-----' TO NAME-PRINT.
 3528 225161 MOVE 1 TO L. PERFORM 216-REPORT-LINE.
 3529
 3530
 3531 225170 533-OVH1-BUDGET.

3532 225180 IF LINE-COUNT > 46 PERFORM 531-OVHI-HEADING.
 3533 225185 IF DEPT > NO-PROD-DEPTS GO TO 534-OVHI-BUDGET.
 3534 225190 MOVE PRODUCTION-DEPT-NAME (DEPT) TO NAME-PRINT.
 3535 225200 PERFORM 535-OVHI-BUDGET THRU 538-EXIT VARYING PERIOD FROM N
 3536 225210 BY 1 UNTIL PERIOD = Y OR PERIOD > NO-PERIODS.
 3537 225220 MOVE 2 TO L. PERFORM 216-REPORT-LINE.
 3538 225225 IF LINE-COUNT = 4, MOVE 0 TO L, PERFORM 202-DOLLAR-LINE.
 3539 225230 IF DEPT < NO-PROD-DEPTS, ADD 1 TO DEPT, GO TO
 3540 225240 533-OVHI-BUDGET.
 3541 225250 MOVE ' SUBTOTAL' TO TEMP-HOLD. MOVE 1 TO DOLLAR.
 3542 225260 PERFORM 218-TOTAL-LINE. WRITE PRINT-LINE FROM
 3543 225261 RULING-LINE (SEC) AFTER ADVANCING 1 LINES.
 3544 225270 MOVE SPACES TO PRINT-LINE, WRITE PRINT-LINE AFTER ADVANCING
 3545 225280 2 LINES. ADD 5 TO LINE-COUNT. MOVE 0 TO LC.
 3546 225285 PERFORM 26-WS-CLEAR THRU 26-EXIT.
 3547 225290 IF LINE-COUNT > 41 PERFORM 531-OVHI-HEADING.
 3548 225300 MOVE 'SERVICE DEPARTMENTS:' TO NAME-PRINT.
 3549 225310 MOVE 2 TO L. PERFORM 216-REPORT-LINE. MOVE 1 TO DEPT.
 3550 225315 MOVE '-----' TO NAME-PRINT.
 3551 225316 MOVE 1 TO L. PERFORM 216-REPORT-LINE.
 3552 225320 IF PERIOD > NO-PERIODS MOVE 0 TO GRAND-TOTAL.
 3553
 3554
 3555 225330 534-OVHI-BUDGET.
 3556 225340 IF LINE-COUNT > 46 PERFORM 531-OVHI-HEADING.
 3557 225350 MOVE SERVICE-DEPT-NAME (DEPT) TO NAME-PRINT.
 3558 225360 PERFORM 540-OVHI-BUDGET THRU 542-EXIT VARYING PERIOD FROM
 3559 225370 N BY 1 UNTIL PERIOD = Y OR PERIOD > NO-PERIODS.
 3560 225380 MOVE 2 TO L. PERFORM 216-REPORT-LINE.
 3561 225385 IF LC = 4, MOVE 0 TO L, PERFORM 202-DOLLAR-LINE.
 3562 225390 IF DEPT < NO-SERV-DEPTS, ADD 1 TO DEPT, GO TO
 3563 225400 534-OVHI-BUDGET.
 3564 225410 MOVE ' SUBTOTAL' TO TEMP-HOLD. MOVE 1 TO DOLLAR.
 3565 225420 PERFORM 218-TOTAL-LINE. WRITE PRINT-LINE FROM
 3566 225425 RULING-LINE (SEC) AFTER ADVANCING 1 LINES.
 3567 225430 MOVE SPACES TO PRINT-LINE, WRITE PRINT-LINE AFTER ADVANCING
 3568 225440 2 LINES. ADD 5 TO LINE-COUNT.
 3569 225441 PERFORM 26-WS-CLEAR THRU 26-EXIT.
 3570 225450 IF LINE-COUNT > 41 PERFORM 531-OVHI-HEADING.
 3571 225460 MOVE 'DEDUCT: SERVICE DEPARTMENT' TO NAME-PRINT.
 3572 225470 MOVE 2 TO L. PERFORM 216-REPORT-LINE.
 3573 225480 MOVE 'OVERHEAD TRANSFERRED TO' TO NAME-PRINT.
 3574 225490 MOVE 1 TO L. PERFORM 216-REPORT-LINE.
 3575 225500 MOVE 'PRODUCING DEPARTMENTS' TO NAME-PRINT.
 3576 225510 MOVE 1 TO L. PERFORM 216-REPORT-LINE.
 3577 225520 PERFORM 544-OVHI-BUDGET THRU 544-EXIT VARYING PERIOD FROM N
 3578 225525 BY 1 UNTIL PERIOD = Y, OR PERIOD > NO-PERIODS.
 3579 225527 MOVE 0 TO L. PERFORM 216-REPORT-LINE.
 3580 225530 MOVE ' TOTAL FACTORY OVERHEAD' TO TEMP-HOLD.
 3581 225540 PERFORM 218-TOTAL-LINE THRU 219-EXIT.
 3582 225547 IF PERIOD > NO-PERIODS GO TO 534-EXIT, ELSE PERFORM
 3583 225550 215-SECTION-ROUTINE, MOVE 1 TO DEPT, GO TO
 3584 225560 531-OVHI-HEADING.
 3585 225580 534-EXIT. EXIT.
 3586
 3587
 3588 225600 535-OVHI-BUDGET.

3589 225610 COMPUTE DEPT-VAR-OH ROUNDED = PROD-DEPT-OH-RATE (DEPT) *
 3590 225620 VAR-OH-UNITS-USED (DEPT, PERIOD).
 3591
 3592
 3593 225625 536-OVHI-BUDGET.
 3594 225630 COMPUTE TOTAL-DEPT-OH = DEPT-VAR-OH *
 3595 225640 PROD-DEPT-FC (DEPT, PERIOD).
 3596 225650 536-EXIT. EXIT.
 3597
 3598
 3599 225660 537-OVHI-BUDGET.
 3600 225665 MOVE TOTAL-DEPT-OH TO AMT-PR (COL), SUB.
 3601 225670 ADD SUB TO COL-TOTAL (COL). ADD SUB TO COL-GRAND-TOTAL (COL).
 3602 225720 ADD 1 TO COL.
 3603 225730 537-EXIT. EXIT.
 3604
 3605
 3606 225750 538-OVHI-BUDGET.
 3607 225760 IF PERIOD = NO-PERIODS PERFORM 539-OVHI-BUDGET THRU 539-EXIT
 3608 225770 VARYING PERIOD FROM 1 BY 1 UNTIL PERIOD > NO-PERIODS.
 3609 225780 PERFORM 228-TOTAL-ROUTINE THRU 228-EXIT.
 3610 225790 538-EXIT. EXIT.
 3611
 3612
 3613 225810 539-OVHI-BUDGET.
 3614 225820 PERFORM 535-OVHI-BUDGET THRU 536-EXIT.
 3615 225830 ADD TOTAL-DEPT-OH TO ROW-TOTAL.
 3616 225840 539-EXIT. EXIT.
 3617
 3618
 3619 225860 540-OVHI-BUDGET.
 3620 225870 COMPUTE DEPT-VAR-OH ROUNDED = SERV-DEPT-OH-RATE (DEPT) *
 3621 225880 SERVICE-UNITS-USED (DEPT, PERIOD).
 3622
 3623
 3624 225900 541-OVHI-BUDGET.
 3625 225910 COMPUTE TOTAL-DEPT-OH = DEPT-VAR-OH *
 3626 225920 SERV-DEPT-FC (DEPT, PERIOD).
 3627 225930 541-EXIT. EXIT.
 3628
 3629
 3630 225940 542-OVHI-BUDGET.
 3631 225950 PERFORM 537-OVHI-BUDGET.
 3632 225960 IF PERIOD = NO-PERIODS PERFORM 543-OVHI-BUDGET THRU 543-EXIT
 3633 225970 VARYING PERIOD FROM 1 BY 1 UNTIL PERIOD > NO-PERIODS.
 3634 225980 PERFORM 228-TOTAL-ROUTINE THRU 228-EXIT.
 3635 225990 542-EXIT. EXIT.
 3636
 3637
 3638 226000 543-OVHI-BUDGET.
 3639 226010 PERFORM 540-OVHI-BUDGET THRU 541-EXIT.
 3640 226020 ADD TOTAL-DEPT-OH TO ROW-TOTAL.
 3641 226030 543-EXIT. EXIT.
 3642
 3643
 3644 226070 544-OVHI-BUDGET.
 3645 226075 MOVE 0 TO SUB.

3646 226080 PERFORM 545-OVHI-BUDGET THRU 545-EXIT VARYING DEPT FROM 1
 3647 226081 BY 1 UNTIL DEPT > NO-SERV-DEPTS.
 3648 226100 MOVE COL-GRAND-TOTAL (COL) TO COL-TOTAL (COL).
 3649 226110 MOVE FINAL-GRAND-TOTAL TO GRAND-TOTAL.
 3650 226120 MOVE SUB TO AMT-PR (COL). SUBTRACT SUB FROM COL-TOTAL (COL).
 3651 226140 IF PERIOD = NO-PERIODS PERFORM 546-OVHI-BUDGET THRU 546-EXIT
 3652 226150 VARYING PERIOD FROM 1 BY 1 UNTIL PERIOD > NO-PERIODS,
 3653 226160 PERFORM 229-TOTAL-ROUTINE THRU 229-EXIT.
 3654 226165 ADD 1 TO COL.
 3655 226170 544-EXIT. EXIT.
 3656
 3657
 3658 226180 545-OVHI-BUDGET.
 3659 226181 PERFORM 540-OVHI-BUDGET. ADD DEPT-VAR-OH TO SUB.
 3660 226182 545-EXIT. EXIT.
 3661
 3662
 3663 226190 546-OVHI-BUDGET.
 3664 226200 MOVE 0 TO SUB.
 3665 226205 PERFORM 545-OVHI-BUDGET THRU 545-EXIT VARYING DEPT FROM 1
 3666 226210 BY 1 UNTIL DEPT > NO-SERV-DEPTS. ADD SUB TO ROW-TOTAL.
 3667 226220 546-EXIT. EXIT.
 3668
 3669
 3670 227000 550-CS1-BUDGET.
 3671 227001 ADD 1 TO REPRTS. MOVE 'SC-1' TO SCH-NO (REPRTS).
 3672 227002 MOVE 'CONSTRAINT REPORT' TO HEAD (REPRTS).
 3673 227003 COMPUTE INDEX-PG (REPRTS) = PAGE-NO + 1.
 3674 227010 PERFORM 210-CLEARING THRU 210-EXIT
 3675 227020 MOVE 0 TO STRT.
 3676
 3677
 3678 227040 551-CS1-HEADING.
 3679 227050 PERFORM 212-HEADING THRU 212-EXIT.
 3680 227060 MOVE ' SCHEDULE SC-1 ' TO SCHEDULE-NO-PRINT.
 3681 227070 MOVE ' CONSTRAINT REPORT' TO BUDGET-NAME-PRINT.
 3682 227080 PERFORM 214-HEADING THRU 214-EXIT.
 3683 227090 551-EXIT. EXIT.
 3684
 3685
 3686 227100 552-CS1-BUDGET.
 3687 227110 IF DEPT > NO-PROD-DEPTS MOVE 1 TO DEPT, GO TO 553-CS1-BUDGET.
 3688 227120 IF MAX-OH-UNITS (DEPT) > 0 PERFORM 555-CS1-BUDGET THRU
 3689 227130 555-EXIT.
 3690 227140 IF CONSTRAINTS (DEPT) > 0 PERFORM 565-CS1-BUDGET THRU
 3691 227150 565-EXIT VARYING Z FROM 1 BY 1 UNTIL Z >
 3692 227155 CCNSTRANTS (DEPT).
 3693 227160 IF DEPT < NO-PROD-DEPTS, ADD 1 TO DEPT, MOVE 0 TO STRT, GO
 3694 227170 TO 552-CS1-BUDGET.
 3695 227175 MOVE 1 TO DEPT.
 3696
 3697
 3698 227180 553-CS1-BUDGET.
 3699 227190 IF DEPT > NO-SERV-DEPTS GO TO 555-CS1-BUDGET.
 3700 227200 IF MAX-SERVICE-UNITS (DEPT) = 0, ADD 1 TO DEPT GO TO
 3701 227210 553-CS1-BUDGET.
 3702 227230 PERFORM 575-CS1-BUDGET THRU 575-EXIT.

3703 227240 IF DEPT < NO-SERV-DEPTS, ADD 1 TO DEPT, GO TO 553-CS1-BUDGET.
 3704 227260 IF PERIOD > NO-PERIODS GO TO 553-EXIT, ELSE PERFORM
 3705 227270 215-SECTION-ROUTINE, MOVE 1 TO DEPT, GO TO
 3706 227280 551-CS1-HEADING.
 3707 227290 553-EXIT. EXIT.
 3708
 3709
 3710 227310 555-CS1-BUDGET.
 3711 227320 IF LINE-COUNT > 41, PERFORM 551-CS1-HEADING.
 3712 227330 MOVE 1 TO STRT.
 3713 227340 MOVE PRODUCTION-DEPT-NAME (DEPT) TO NAME-PRINT. MOVE 2 TO L.
 3714 227350 PERFORM 216-REPORT-LINE.
 3715 227360 MOVE VAR-OH-UNIT (DEPT) TO CONSTRAINT-PRINT. MOVE 1 TO L.
 3716 227370 PERFORM 216-REPORT-LINE.
 3717 227380 MOVE ' UNITS USED' TO NAME-PRINT.
 3718 227390 PERFORM 557-CS1-BUDGET THRU 557-EXIT VARYING PERIOD FROM N BY
 3719 227400 1 UNTIL PERIOD = Y OR PERIOD > NO-PERIODS.
 3720 227410 MOVE 1 TO L, PERFORM 216-REPORT-LINE.
 3721 227420 MOVE ' UNUSED UNITS' TO NAME-PRINT.
 3722 227430 PERFORM 559-CS1-BUDGET THRU 560-EXIT VARYING PERIOD FROM N BY
 3723 227440 1 UNTIL PERIOD = Y OR PERIOD > NO-PERIODS.
 3724 227450 MOVE 1 TO L, PERFORM 216-REPORT-LINE.
 3725 227460 MOVE ' CONSTRAINT EXCEEDED' TO NAME-PRINT.
 3726 227470 PERFORM 562-CS1-BUDGET THRU 562-EXIT VARYING PERIOD FROM N BY
 3727 227480 1 UNTIL PERIOD = Y OR PERIOD > NO-PERIODS.
 3728 227490 MOVE 1 TO L, PERFORM 216-REPORT-LINE.
 3729 227500 WRITE PRINT-LINE FROM RULING-LINE (SEC) AFTER ADVANCING
 3730 227501 1 LINES. MOVE SPACES TO PRINT-LINE.
 3731 227505 MOVE '-----' TO NAME-PRINT. MOVE 0 TO L.
 3732 227506 PERFORM 216-REPORT-LINE.
 3733 227510 555-EXIT. EXIT.
 3734
 3735
 3736 227520 557-CS1-BUDGET.
 3737 227530 MOVE VAR-OH-UNITS-USED (DEPT, PERIOD) TO AMT-PR (COL).
 3738 227540 IF PERIOD = NO-PERIODS PERFORM 558-CS1-BUDGET THRU 558-EXIT
 3739 227550 VARYING PERIOD FROM 1 BY 1 UNTIL PERIOD > NO-PERIODS,
 3740 227560 MOVE ROW-TOTAL TO TOTAL-PRINT, MOVE 0 TO ROW-TOTAL.
 3741 227570 ADD 1 TO COL.
 3742 227580 557-EXIT. EXIT.
 3743
 3744
 3745 227610 558-CS1-BUDGET.
 3746 227620 ADD VAR-OH-UNITS-USED (DEPT, PERIOD) TO ROW-TOTAL.
 3747 227630 558-EXIT. EXIT.
 3748
 3749
 3750 227650 559-CS1-BUDGET.
 3751 227660 COMPUTE VOL-DIFF = MAX-OH-UNITS (DEPT) -
 3752 227670 VAR-OH-UNITS-USED (DEPT, PERIOD).
 3753
 3754
 3755 227690 560-CS1-BUDGET.
 3756 227700 IF VOL-DIFF > 0, MOVE VOL-DIFF TO AMT-PR (COL).
 3757 227720 IF PERIOD = NO-PERIODS PERFORM 561-CS1-BUDGET THRU 561-EXIT
 3758 227730 VARYING PERIOD FROM 1 BY 1 UNTIL PERIOD > NO-PERIODS,
 3759 227740 MOVE ROW-TOTAL TO TOTAL-PRINT, MOVE 0 TO ROW-TOTAL.

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3760 227750 ADD 1 TO COL.
 3761 227760 560-EXIT. EXIT.
 3762
 3763
 3764 227770 561-CSI-BUDGET.
 3765 227780 PERFORM 559-CSI-BUDGET.
 3766 227790 IF VOL-DIFF > 0 ADD VOL-DIFF TO ROW-TOTAL.
 3767 227800 561-EXIT. EXIT.
 3768
 3769
 3770 227820 562-CSI-BUDGET.
 3771 227830 PERFORM 559-CSI-BUDGET.
 3772 227840 IF VOL-DIFF NOT > 0 MOVE VOL-DIFF TO AMT-PR (COL).
 3773 227850 IF PERIOD = NO-PERIODS PERFORM 563-CSI-BUDGET THRU 563-EXIT
 3774 227860 VARYING PERIOD FROM 1 BY 1 UNTIL PERIOD > NO-PERIODS,
 3775 227870 MOVE ROW-TOTAL TO TOTAL-PRINT, MOVE 0 TO ROW-TOTAL.
 3776 227880 ADD 1 TO COL.
 3777 227890 562-EXIT. EXIT.
 3778
 3779
 3780 227910 563-CSI-BUDGET.
 3781 227920 PERFORM 559-CSI-BUDGET.
 3782 227930 IF VOL-DIFF NOT > 0 ADD VOL-DIFF TO ROW-TOTAL.
 3783 227940 563-EXIT. EXIT.
 3784
 3785
 3786 228000 565-CSI-BUDGET.
 3787 228010 IF LINE-COUNT > 41 PERFORM 551-CSI-HEADING.
 3788 228020 IF STRT NOT = 1 MOVE PRODUCTION-DEPT-NAME (DEPT) TO
 3789 228030 NAME-PRINT, MOVE 1 TO STRT, MOVE 2 TO L, PERFORM
 3790 228040 216-REPORT-LINE.
 3791 228050 MOVE CONSTRAINT-NAME (DEPT, Z) TO CONSTRAINT-PRINT. MOVE 1
 3792 228060 TO L, PERFORM 216-REPORT-LINE.
 3793 228070 MOVE ' UNITS USED' TO NAME-PRINT.
 3794 228080 PERFORM 567-CSI-BUDGET THRU 567-EXIT VARYING PERIOD FROM M
 3795 228090 BY 1 UNTIL PERIOD = Y OR PERIOD > NO-PERIODS.
 3796 228100 MOVE 1 TO L, PERFORM 216-REPORT-LINE.
 3797 228110 MOVE ' UNUSED UNITS' TO NAME-PRINT.
 3798 228120 PERFORM 569-CSI-BUDGET THRU 570-EXIT VARYING PERIOD FROM M
 3799 228130 BY 1 UNTIL PERIOD = Y OR PERIOD > NO-PERIODS.
 3800 228140 MOVE 1 TO L, PERFORM 216-REPORT-LINE.
 3801 228150 MOVE ' CONSTPAINT EXCEEDED' TO NAME-PRINT.
 3802 228160 PERFORM 572-CSI-BUDGET THRU 572-EXIT VARYING PERIOD FROM M
 3803 228170 BY 1 UNTIL PERIOD = Y OR PERIOD > NO-PERIODS.
 3804 228180 MOVE 1 TO L, PERFORM 216-REPORT-LINE.
 3805 228190 WRITE PRINT-LINE FROM RULING-LINE (SEC) AFTER ADVANCING
 3806 228191 1 LINES, MOVE SPACES TO PRINT-LINE.
 3807 228195 MOVE '-----' TO NAME-PRINT. MOVE 0 TO L.
 3808 228196 PERFORM 216-REPORT-LINE.
 3809 228200 565-EXIT. EXIT.
 3810
 3811
 3812 228290 567-CSI-BUDGET.
 3813 228300 MOVE CONSTRAINT-UNITS-USED (DEPT, Z, PERIOD) TO AMT-PR (COL).
 3814 228310 IF PERIOD = NO-PERIODS, PERFORM 568-CSI-BUDGET THRU 568-EXIT
 3815 228320 VARYING PERIOD FROM 1 BY 1 UNTIL PERIOD > NO-PERIODS,
 3816 228330 MOVE ROW-TOTAL TO TOTAL-PRINT, MOVE 0 TO ROW-TOTAL.

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3817 228340 ADD 1 TO COL.
 3818 228350 567-EXIT. EXIT.
 3819
 3820
 3821 228370 568-CSI-BUDGET.
 3822 228380 ADD CONSTRAINT-UNITS-USED (DEPT, Z, PERIOD) TO ROW-TOTAL.
 3823 228390 568-EXIT. EXIT.
 3824
 3825
 3826 228410 569-CSI-BUDGET.
 3827 228420 COMPUTE VOL-DIFF = MAX-CONSTR-UNITS (DEPT, Z) -
 3828 228430 CONSTRAINT-UNITS-USED (DEPT, Z, PERIOD).
 3829
 3830
 3831 228440 570-CSI-BUDGET.
 3832 228450 IF VOL-DIFF > 0, MOVE VOL-DIFF TO AMT-PR (COL).
 3833 228460 IF PERIOD = NO-PERIODS, PERFORM 571-CSI-BUDGET THRU 571-EXIT
 3834 228470 VARYING PERIOD FROM 1 BY 1 UNTIL PERIOD > NO-PERIODS,
 3835 228480 MOVE ROW-TOTAL TO TOTAL-PRINT, MOVE 0 TO ROW-TOTAL.
 3836 228490 ADD 1 TO COL.
 3837 228500 570-EXIT. EXIT.
 3838
 3839
 3840 228520 571-CSI-BUDGET.
 3841 228530 PERFORM 569-CSI-BUDGET.
 3842 228540 IF VOL-DIFF > 0 ADD VOL-DIFF TO ROW-TOTAL.
 3843 228550 571-EXIT. EXIT.
 3844
 3845
 3846 228570 572-CSI-BUDGET.
 3847 228580 PERFORM 569-CSI-BUDGET.
 3848 228590 IF VOL-DIFF NOT > 0 MOVE VOL-DIFF TO AMT-PR (COL).
 3849 228600 IF PERIOD = NO-PERIODS PERFORM 573-CSI-BUDGET THRU 573-EXIT
 3850 228610 VARYING PERIOD FROM 1 BY 1 UNTIL PERIOD > NO-PERIODS,
 3851 228620 MOVE ROW-TOTAL TO TOTAL-PRINT, MOVE 0 TO ROW-TOTAL.
 3852 228630 ADD 1 TO COL.
 3853 228640 572-EXIT. EXIT.
 3854
 3855
 3856 228660 573-CSI-BUDGET.
 3857 228670 PERFORM 569-CSI-BUDGET.
 3858 228680 IF VOL-DIFF NOT > 0 ADD VOL-DIFF TO ROW-TOTAL.
 3859 228690 573-EXIT. EXIT.
 3860
 3861
 3862 228750 575-CSI-BUDGET.
 3863 228760 IF LINE-COUNT > 41, PERFORM 551-CSI-HEADING.
 3864 228770 MOVE SERVICE-DEPT-NAME (DEPT) TO NAME-PRINT.
 3865 228780 MOVE 2 TO L, PERFORM 216-REPORT-LINE.
 3866 228800 MOVE SERVICE-UNIT (DEPT) TO CONSTRAINT-PRINT. MOVE 1 TO L,
 3867 228810 PERFORM 216-REPORT-LINE.
 3868 228820 MOVE ' UNITS USED' TO NAME-PRINT.
 3869 228830 PERFORM 577-CSI-BUDGET THRU 577-EXIT VARYING PERIOD FROM M
 3870 228840 BY 1 UNTIL PERIOD = Y OR PERIOD > NO-PERIODS.
 3871 228850 MOVE 1 TO L, PERFORM 216-REPORT-LINE.
 3872 228860 MOVE ' UNUSED UNITS' TO NAME-PRINT.
 3873 228870 PERFORM 579-CSI-BUDGET THRU 580-EXIT VARYING PERIOD FROM M

3874 228880 BY 1 UNTIL PERIOD = Y OR PERIOD > NO-PERIODS.
 3875 228890 MOVE 1 TO L. PERFORM 216-REPORT-LINE.
 3876 228900 MOVE ' CONSTRAINT EXCEEDED' TO NAME-PRINT.
 3877 228910 PERFORM 582-CS1-BUDGET THRU 582-EXIT VARYING PERIOD FROM N
 3878 228920 BY 1 UNTIL PERIOD = Y OR PERIOD > NO-PERIODS.
 3879 228930 MOVE 1 TO L. PERFORM 216-REPORT-LINE.
 3880 228940 WRITE PRINT-LINE FROM RULING-LINE (SEC) AFTER ADVANCING
 3881 228941 1 LINES. MOVE SPACES TO PRINT-LINE.
 3882 228945 MOVE '-----' TO NAME-PRINT. MOVE 0 TO L.
 3883 228946 PERFORM 216-REPORT-LINE.
 3884 228950 575-EXIT. EXIT.
 3885
 3886
 3887 229030 577-CS1-BUDGET.
 3888 229040 MOVE SERVICE-UNITS-USED (DEPT, PERIOD) TO AMT-PR (COL).
 3889 229050 IF PERIOD = NO-PERIODS PERFORM 578-CS1-BUDGET THRU 578-EXIT
 3890 229060 VARYING PERIOD FROM 1 BY 1 UNTIL PERIOD > NO-PERIODS.
 3891 229070 MOVE ROW-TOTAL TO TOTAL-PRINT, MOVE 0 TO ROW-TOTAL.
 3892 229080 ADD 1 TO COL.
 3893 229090 577-EXIT. EXIT.
 3894
 3895
 3896 229110 578-CS1-BUDGET.
 3897 229120 ADD SERVICE-UNITS-USED (DEPT, PERIOD) TO ROW-TOTAL.
 3898 229130 578-EXIT. EXIT.
 3899
 3900
 3901 229150 579-CS1-BUDGET.
 3902 229160 COMPUTE VOL-DIFF = MAX-SERVICE-UNITS (DEPT) -
 3903 229170 SERVICE-UNITS-USED (DEPT, PERIOD).
 3904
 3905
 3906 229180 580-CS1-BUDGET.
 3907 229190 IF VOL-DIFF > 0, MOVE VOL-DIFF TO AMT-PR (COL).
 3908 229200 IF PERIOD = NO-PERIODS, PERFORM 581-CS1-BUDGET THRU 581-EXIT
 3909 229210 VARYING PERIOD FROM 1 BY 1 UNTIL PERIOD > NO-PERIODS.
 3910 229220 MOVE ROW-TOTAL TO TOTAL-PRINT, MOVE 0 TO ROW-TOTAL.
 3911 229230 ADD 1 TO COL.
 3912 229240 580-EXIT. EXIT.
 3913
 3914
 3915 229250 581-CS1-BUDGET.
 3916 229260 PERFORM 579-CS1-BUDGET.
 3917 229270 IF VOL-DIFF > 0, ADD VOL-DIFF TO ROW-TOTAL.
 3918 229280 581-EXIT. EXIT.
 3919
 3920
 3921 229300 582-CS1-BUDGET.
 3922 229310 PERFORM 579-CS1-BUDGET.
 3923 229320 IF VOL-DIFF NOT > 0 MOVE VOL-DIFF TO AMT-PR (COL).
 3924 229330 IF PERIOD = NO-PERIODS PERFORM 583-CS1-BUDGET THRU 583-EXIT
 3925 229340 VARYING PERIOD FROM 1 BY 1 UNTIL PERIOD > NO-PERIODS.
 3926 229350 MOVE ROW-TOTAL TO TOTAL-PRINT, MOVE 0 TO ROW-TOTAL.
 3927 229360 ADD 1 TO COL.
 3928 229370 582-EXIT. EXIT.
 3929
 3930

3931 229390 583-CS1-BUDGET.
 3932 229400 PERFORM 579-CS1-BUDGET.
 3933 229410 IF VOL-DIFF NOT > 0 ADD VOL-DIFF TO ROW-TOTAL.
 3934 229420 583-EXIT. EXIT.
 3935
 3936
 3937 229440 585-CONT-BUDGET.
 3938 229450 OPEN INPUT CONTRIBUTION-DATA-FILE.
 3939
 3940
 3941 229500 586-CONT-BUDGET.
 3942 229510 READ CONTRIBUTION-DATA-FILE INTO DK-WS AT END GO TO 586-EXIT.
 3943 229520 IF RECORD-CODE = 'SS' GO TO 586-EXIT.
 3944 229530 IF RECORD-CODE NOT = 'P3' GO TO 586-CONT-BUDGET.
 3945 229540 PERFORM 588-CONT-BUDGET THRU 589-EXIT VARYING PERIOD
 3946 229550 FROM 1 BY 1 UNTIL PERIOD > NO-PERIODS.
 3947 229560 GO TO 586-CONT-BUDGET.
 3948 229570 586-EXIT. EXIT.
 3949
 3950
 3951 229575 587-CONT-BUDGET.
 3952 229577 CLOSE CONTRIBUTION-DATA-FILE.
 3953 229579 587-EXIT. EXIT.
 3954
 3955
 3956 229588 588-CONT-BUDGET.
 3957 229620 COMPUTE SUB ROUNDED = DK-PROJECTED-SALES (PERIOD) *
 3958 229630 PRODUCT-STD-COST (DK-PRODUCT-NO).
 3959
 3960
 3961 229635 589-CONT-BUDGET.
 3962 229640 IF DK-L2-SEG-NO > 0, ADD SUB TO
 3963 229650 L2-PROD-MFG-VC (DK-L2-SEG-NO, DK-PRODUCT-NO, PERIOD).
 3964 229660 ADD SUB TO L2-MFG-VC (DK-L2-SEG-NO, PERIOD).
 3965 229680 ADD SUB TO L3-MFG-VC (DK-L3-SEG-NO, PERIOD).
 3966 229690 ADD SUB TO MFG-VC (PERIOD).
 3967 229700 589-EXIT. EXIT.
 3968
 3969
 3970 230500 590-CONT1-BUDGET.
 3971 230501 ADD 1 TO REPRTS. MOVE 'CONT-1' TO SCH-NO (REPRTS).
 3972 230502 MOVE 'PROJECTED INCOME STATEMENT' TO HEAD (REPRTS).
 3973 230503 COMPUTE INDEX-PG (REPRTS) = PAGE-NO * 1.
 3974 230510 PERFORM 210-CLEARING THRU 210-EXIT.
 3975
 3976
 3977 230530 591-CONT1-BUDGET.
 3978
 3979
 3980 230540 PERFORM 212-HEADING THRU 212-EXIT.
 3981 230550 MOVE 'SCHEDULE CONT-1' TO SCHEDULE-NO-PRINT.
 3982 230560 MOVE ' PROJECTED INCOME STATEMENT' TO
 3983 230561 BUDGET-NAME-PRINT.
 3984 230570 PERFORM 214-HEADING THRU 214-EXIT.
 3985 230610 MOVE 'SALES' TO NAME-PRINT.
 3986 230620 PERFORM 595-CONT1-BUDGET THRU 595-EXIT VARYING PERIOD FROM
 3987 230630 N BY 1 UNTIL PERIOD = Y OR PERIOD > NO-PERIODS.

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3988 230640 MOVE 2 TO L. PERFORM 216-REPORT-LINE.
3989 230650 MOVE 0 TO L. PERFORM 202-DOLLAR-LINE.
3990 230651 WRITE PRINT-LINE FROM RULING-LINE (SEC) AFTER ADVANCING
3991 230652 1 LINES. MOVE SPACES TO PRINT-LINE.
3992 230660 MOVE 'VARIABLE COSTS' TO NAME-PRINT, MOVE 1 TO L, PERFORM
3993 230670 216-REPORT-LINE.
3994 230680 MOVE ' PRODUCTION' TO NAME-PRINT.
3995 230690 PERFORM 597-CONTI-BUDGET THRU 597-EXIT VARYING PERIOD FROM
3996 230700 N BY 1 UNTIL PERIOD = Y OR PERIOD > NO-PERIODS.
3997 230710 MOVE 2 TO L. PERFORM 216-REPORT-LINE.
3998 230720 MOVE 0 TO L. PERFORM 202-DOLLAR-LINE. MOVE 0 TO LC.
3999 230730 MOVE ' MARKETING' TO NAME-PRINT.
4000 230735 MOVE 1 TO L, PERFORM 216-REPORT-LINE.
4001 230740 PERFORM 601-CONTI-BUDGET THRU 601-EXIT VARYING Z FROM 1 BY 1
4002 230750 UNTIL Z > 3.
4003 230760 MOVE ' TOTAL VARIABLE COSTS' TO TEMP-HOLD.
4004 230770 MOVE 1 TO DOLLAR. PERFORM 218-TOTAL-LINE.
4005 230780 MOVE 'VARIABLE MARGIN' TO TEMP-HOLD.
4006 230790 PERFORM 222-GRAND-TOTAL-LINE.
4007 230791 WRITE PRINT-LINE FROM RULING-LINE (SEC) AFTER ADVANCING
4008 230792 1 LINES. MOVE SPACES TO PRINT-LINE.
4009 230800 PERFORM 26-MS-CLEAR THRU 26-EXIT.
4010 230820 MOVE 'FIXED COSTS' TO NAME-PRINT.
4011 230830 MOVE 2 TO L. PERFORM 216-REPORT-LINE. MOVE 0 TO LC.
4012 230840 MOVE ' PRODUCTION' TO NAME-PRINT.
4013 230850 PERFORM 607-CONTI-BUDGET THRU 607-EXIT VARYING PERIOD FROM
4014 230860 N BY 1 UNTIL PERIOD = Y OR PERIOD > NO-PERIODS.
4015 230870 MOVE 2 TO L. PERFORM 216-REPORT-LINE.
4016 230880 MOVE 0 TO L. PERFORM 202-DOLLAR-LINE.
4017 230890 MOVE ' MARKETING' TO NAME-PRINT.
4018 230910 MOVE 2 TO L. PERFORM 216-REPORT-LINE.
4019 230920 PERFORM 611-CONTI-BUDGET THRU 611-EXIT VARYING Z FROM 1 BY 1
4020 230910 UNTIL Z > NO-MRK-FC-CLASSES.
4021 230920 MOVE ' ADMINISTRATION' TO NAME-PRINT.
4022 230930 PERFORM 617-CONTI-BUDGET THRU 617-EXIT VARYING PERIOD FROM
4023 230940 N BY 1 UNTIL PERIOD = Y OR PERIOD > NO-PERIODS.
4024 230950 MOVE 2 TO L. PERFORM 216-REPORT-LINE.
4025 230960 IF LC > 1. MOVE ' TOTAL FIXED COSTS' TO TEMP-HOLD.
4026 230970 MOVE 1 TO DOLLAR. PERFORM 218-TOTAL-LINE.
4027 230980 MOVE 'INCOME BEFORE OTHER' TO TEMP-HOLD.
4028 230990 PERFORM 222-GRAND-TOTAL-LINE.
4029 230995 MOVE FINAL-GRAND-TOTAL TO GRAND-TOTAL.
4030 230996 WRITE PRINT-LINE FROM RULING-LINE (SEC) AFTER ADVANCING
4031 230997 1 LINES. MOVE SPACES TO PRINT-LINE.
4032 231000 IF NO-OTHER-INC > 0 PERFORM 621-CONTI-BUDGET THRU 621-EXIT.
4033 231010 IF NO-OTHER-EXP > 0 PERFORM 629-CONTI-BUDGET THRU 629-EXIT.
4034 231020 IF NO-OTHER-INC > 0 OR NO-OTHER-EXP > 0, MOVE
4035 231030 'TAXABLE NET INCOME' TO TEMP-HOLD, MOVE 1 TO DOLLAR,
4036 231040 PERFORM 218-TOTAL-LINE THRU 219-EXIT.
4037 231041 IF NO-OTHER-INC = 0 AND NO-OTHER-EXP = 0 PERFORM 219-RULING.
4038 231050 IF PERIOD > NO-PERIODS GO TO 591-EXIT, ELSE PERFORM
4039 231060 215-SECTION-ROUTINE, GO TO 591-CONTI-BUDGET.
4040 231070 591-EXIT. EXIT.
4041
4042
4043 231110 595-CONTI-BUDGET.
4044 231120 MOVE REVENUES (PERIOD) TO AMT-PR (COL), SUB.

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4045 231130 ADD SUB TO COL-GRAND-TOTAL (COL).
4046 231150 IF PERIOD = NO-PERIODS PERFORM 596-CONTI-BUDGET THRU 596-EXIT
4047 231160 VARYING PERIOD FROM 1 BY 1 UNTIL PERIOD > NO-PERIODS,
4048 231170 PERFORM 227-TOTAL-ROUTINE.
4049 231180 ADD 1 TO COL.
4050 231190 595-EXIT. EXIT.
4051
4052
4053 231210 596-CONTI-BUDGET.
4054 231220 ADD REVENUES (PERIOD) TO ROW-TOTAL.
4055 231230 596-EXIT. EXIT.
4056
4057
4058 231250 597-CONTI-BUDGET.
4059 231280 MOVE MFG-VC (PERIOD) TO AMT-PR (COL), SUB.
4060 231290 ADD SUB TO COL-TOTAL (COL). SUBTRACT SUB FROM
4061 231300 COL-GRAND-TOTAL (COL).
4062 231340 IF PERIOD = NO-PERIODS PERFORM 599-CONTI-BUDGET THRU 599-EXIT
4063 231350 VARYING PERIOD FROM 1 BY 1 UNTIL PERIOD > NO-PERIODS,
4064 231360 PERFORM 226-TOTAL-ROUTINE.
4065 231370 ADD 1 TO COL.
4066 231380 597-EXIT. EXIT.
4067
4068
4069 231470 599-CONTI-BUDGET.
4070 231480 ADD MFG-VC (PERIOD) TO ROW-TOTAL.
4071 231490 599-EXIT. EXIT.
4072
4073
4074 231500 601-CONTI-BUDGET.
4075 231510 IF MRK-VC-DATA (Z) = ZEROES, GO TO 601-EXIT.
4076 231520 MOVE MRK-VC-NAME (Z) TO SUB-NAME.
4077 231530 PERFORM 603-CONTI-BUDGET THRU 603-EXIT VARYING PERIOD FROM
4078 231540 N BY 1 UNTIL PERIOD = Y OR PERIOD > NO-PERIODS.
4079 231550 MOVE 1 TO L, PERFORM 216-REPORT-LINE.
4080 231560 601-EXIT. EXIT.
4081
4082
4083 231610 603-CONTI-BUDGET.
4084 231620 MOVE MRK-VC (Z, PERIOD) TO AMT-PR (COL), SUB.
4085 231630 ADD SUB TO COL-TOTAL (COL). SUBTRACT SUB FROM
4086 231640 COL-GRAND-TOTAL (COL).
4087 231670 IF PERIOD = NO-PERIODS PERFORM 605-CONTI-BUDGET THRU 605-EXIT
4088 231680 VARYING PERIOD FROM 1 BY 1 UNTIL PERIOD > NO-PERIODS,
4089 231690 PERFORM 226-TOTAL-ROUTINE.
4090 231700 ADD 1 TO COL.
4091 231710 603-EXIT. EXIT.
4092
4093
4094 231720 605-CONTI-BUDGET.
4095 231730 ADD MRK-VC (Z, PERIOD) TO ROW-TOTAL.
4096 231740 605-EXIT. EXIT.
4097
4098
4099 231750 607-CONTI-BUDGET.
4100 231760 MOVE MFG-FC (PERIOD) TO AMT-PR (COL), SUB.
4101 231770 ADD SUB TO COL-TOTAL (COL). SUBTRACT SUB FROM

4102 231780 COL-GRAND-TOTAL (COL).
 4103 231810 IF PERIOD = NO-PERIODS PERFORM 609-CONT1-BUDGET THRU 609-EXIT
 4104 231820 VARYING PERIOD FROM 1 BY 1 UNTIL PERIOD > NO-PERIODS,
 4105 231830 PERFORM 226-TOTAL-ROUTINE.
 4106 231840 ADD 1 TO COL.
 4107 231850 607-EXIT. EXIT.
 4109
 4109
 4110 231870 609-CONT1-BUDGET.
 4111 231880 ADD MFG-FC (PERIOD) TO ROW-TOTAL.
 4112 231890 609-EXIT. EXIT.
 4113
 4114
 4115 231910 611-CONT1-BUDGET.
 4116 231920 IF MRK-FC-DATA (Z) = ZEROES, GO TO 611-EXIT.
 4117 231930 MOVE MRK-FC-NAME (Z) TO SUB-NAME.
 4118 231940 PERFORM 613-CONT1-BUDGET THRU 613-EXIT VARYING PERIOD FROM
 4119 231950 N BY 1 UNTIL PERIOD = Y OR PERIOD > NO-PERIODS.
 4120 231960 MOVE 1 TO L. PERFORM 216-REPORT-LINE.
 4121 231970 611-EXIT. EXIT.
 4122
 4123
 4124 232000 613-CONT1-BUDGET.
 4125 232010 MOVE MRK-FC (Z, PERIOD) TO AMT-PR (COL), SUB.
 4126 232020 ADD SUB TO COL-TOTAL (COL). SUBTRACT SUB FROM
 4127 232030 COL-GRAND-TOTAL (COL).
 4128 232060 IF PERIOD = NO-PERIODS PERFORM 615-CONT1-BUDGET THRU 615-EXIT
 4129 232070 VARYING PERIOD FROM 1 BY 1 UNTIL PERIOD > NO-PERIODS,
 4130 232080 PERFORM 226-TOTAL-ROUTINE.
 4131 232090 ADD 1 TO COL.
 4132 232100 613-EXIT. EXIT.
 4133
 4134
 4135 232120 615-CONT1-BUDGET.
 4136 232130 ADD MRK-FC (Z, PERIOD) TO ROW-TOTAL.
 4137 232140 615-EXIT. EXIT.
 4138
 4139
 4140 232160 617-CONT1-BUDGET.
 4141 232170 MOVE ADMIN-FC (PERIOD) TO AMT-PR (COL), SUB.
 4142 232180 ADD SUB TO COL-TOTAL (COL). SUBTRACT SUB FROM
 4143 232190 COL-GRAND-TOTAL (COL).
 4144 232220 IF PERIOD = NO-PERIODS PERFORM 619-CONT1-BUDGET THRU 619-EXIT
 4145 232230 VARYING PERIOD FROM 1 BY 1 UNTIL PERIOD > NO-PERIODS,
 4146 232240 PERFORM 226-TOTAL-ROUTINE.
 4147 232250 ADD 1 TO COL.
 4148 232260 617-EXIT. EXIT.
 4149
 4150
 4151 232290 619-CONT1-BUDGET.
 4152 232300 ADD ADMIN-FC (PERIOD) TO ROW-TOTAL.
 4153 232310 619-EXIT. EXIT.
 4154
 4155
 4156 232320 621-CONT1-BUDGET.
 4157 232330 MOVE ' ADD: OTHER INCOME' TO NAME-PRINT.
 4158 232340 PERFORM 623-CONT1-BUDGET THRU 624-EXIT VARYING PERIOD FROM

4159 232350 N BY 1 UNTIL PERIOD = Y OR PERIOD > NO-PERIODS.
 4160 232360 MOVE 2 TO L. PERFORM 216-REPORT-LINE.
 4161 232370 621-EXIT. EXIT.
 4162
 4163
 4164 232390 623-CONT1-BUDGET.
 4165 232400 MOVE 0 TO SUB.
 4166 232410 PERFORM 625-CONT1-BUDGET THRU 625-EXIT VARYING Z FROM 1 BY 1
 4167 232420 UNTIL Z > NO-OTHER-INC.
 4168
 4169
 4170 232430 624-CONT1-BUDGET.
 4171 232440 MOVE SUB TO AMT-PR (COL).
 4172 232450 ADD SUB TO COL-TOTAL (COL). ADD SUB TO COL-GRAND-TOTAL (COL).
 4173 232460 IF PERIOD = NO-PERIODS PERFORM 627-CONT1-BUDGET THRU 627-EXIT
 4174 232470 VARYING PERIOD FROM 1 BY 1 UNTIL PERIOD > NO-PERIODS,
 4175 232480 PERFORM 228-TOTAL-ROUTINE THRU 228-EXIT.
 4176 232490 ADD 1 TO COL.
 4177 232500 624-EXIT. EXIT.
 4178
 4179
 4180 232550 625-CONT1-BUDGET.
 4181 232560 ADD OTHER-INC-AMT (Z, PERIOD) TO SUB.
 4182 232570 625-EXIT.
 4183
 4184
 4185 232600 627-CONT1-BUDGET.
 4186 232610 PERFORM 623-CONT1-BUDGET. ADD SUB TO ROW-TOTAL.
 4187 232620 627-EXIT. EXIT.
 4188
 4189
 4190 232660 629-CONT1-BUDGET.
 4191 232670 MOVE ' DEDUCT: OTHER EXPENSES' TO NAME-PRINT.
 4192 232680 PERFORM 631-CONT1-BUDGET THRU 632-EXIT VARYING PERIOD FROM
 4193 232690 N BY 1 UNTIL PERIOD = Y OR PERIOD > NO-PERIODS.
 4194 232700 MOVE 1 TO L. PERFORM 216-REPORT-LINE.
 4195 232710 629-EXIT. EXIT.
 4196
 4197
 4198 232750 631-CONT1-BUDGET.
 4199 232760 MOVE 0 TO SUB.
 4200 232770 PERFORM 633-CONT1-BUDGET THRU 633-EXIT VARYING Z FROM 1 BY 1
 4201 232780 UNTIL Z > NO-OTHER-EXP.
 4202
 4203
 4204 232800 632-CONT1-BUDGET.
 4205 232810 MOVE SUB TO AMT-PR (COL).
 4206 232820 ADD SUB TO COL-TOTAL (COL). ADD SUB TO COL-GRAND-TOTAL (COL).
 4207 232830 IF PERIOD = NO-PERIODS PERFORM 634-CONT1-BUDGET THRU 634-EXIT
 4208 232840 VARYING PERIOD FROM 1 BY 1 UNTIL PERIOD > NO-PERIODS,
 4209 232850 PERFORM 228-TOTAL-ROUTINE THRU 228-EXIT.
 4210 232860 ADD 1 TO COL.
 4211 232870 632-EXIT. EXIT.
 4212
 4213
 4214 232890 633-CONT1-BUDGET.
 4215 232900 SUBTRACT OTHER-EXP-AMT (Z, PERIOD) FROM SUB.

4216 232910 633-EXIT. EXIT.
4217
4218
4219 232930 634-CONT1-BUDGET.
4220 232940 PERFORM 631-CONT1-BUDGET. ADD SUR TO ROW-TOTAL.
4221 232950 634-EXIT. EXIT.
4222
4223
4224 233000 640-CCNT-BUDGET.
4225 233001 ADD 1 TO REPRTS. MOVE 1 TO SH (REPRTS).
4226 233002 MOVE 'BUDGETED CONTRIBUTION STATEMENT -' TO HEAD (REPRTS).
4227 233003 IF BUDGET = 'CONT2' MOVE 'CONT-2' TO SCH-NO (REPRTS). MOVE
4228 233004 'LEVEL 2 SALES SEGMENT' TO SUB-HEAD (REPRTS).
4229 233005 IF BUDGET = 'CONT3' MOVE 'CONT-3' TO SCH-NO (REPRTS). MOVE
4230 233006 'LEVEL 3 SALES SEGMENT' TO SUB-HEAD (REPRTS).
4231 233007 IF BUDGET = 'CONT5' MOVE 'CONT-5' TO SCH-NO (REPRTS). MOVE
4232 233008 'PRODUCT AT LEVEL 2 SALES SEGMENT' TO SUB-HEAD (REPRTS).
4233 233009 IF BUDGET = 'CONT6' MOVE 'CONT-6' TO SCH-NO (REPRTS). MOVE
4234 233010 'PRODUCT AT LEVEL 3 SALES SEGMENT' TO SUB-HEAD (REPRTS).
4235 233011 COMPUTE INDEX-PG (REPRTS) = PAGE-NO + 1.
4236 233020 OPEN INPUT CONTRIBUTION-DATA-FILE.
4237
4238
4239 233050 641-CONT-BUDGET.
4240 233060 READ CONTRIBUTION-DATA-FILE INTO DK-WS AT END GO TO 641-EXIT.
4241 233070 IF BUDGET = 'CONT2' AND RECORD-CODE = 'L2' AND
4242 233080 DK-CONTRIBUTION-DATA NOT = 0 GO TO 643-CONT-BUDGET.
4243 233100 IF BUDGET = 'CONT3' AND RECORD-CODE = 'L3' AND
4244 233110 DK-CONTRIBUTION-DATA NOT = 0 GO TO 643-CONT-BUDGET.
4245 233130 IF BUDGET = 'CONT5' AND RECORD-CODE = 'P2' AND
4246 233140 DK-CONTRIBUTION-DATA NOT = 0 GO TO 643-CONT-BUDGET.
4247 233160 IF BUDGET = 'CONT6' AND RECORD-CODE = 'P3' AND
4248 233170 DK-CONTRIBUTION-DATA NOT = 0 GO TO 643-CONT-BUDGET.
4249 233190 IF RECORD-CODE = 'SS' CLOSE CONTRIBUTION-DATA-FILE,
4250 233195 GJ TO 641-EXIT.
4251 233200 GO TO 641-CONT-BUDGET.
4252 233220 641-EXIT. EXIT.
4253
4254
4255 233290 643-CONT-BUDGET.
4256 233310 PERFORM 212-HEADING THRU 212-EXIT.
4257 233315 MOVE 1 TO L2, MOVE DK-L2-NAME TO LEV2-SEG-NAME-PR.
4258 233316 IF DK-L3-SEG-NO > 0, MOVE 1 TO L3, MOVE DK-L3-NAME TO
4259 233317 LEV3-SEG-NAME-PR.
4260 233320 IF BUDGET = 'CONT2' MOVE 'SCHEDULE CONT-2' TO
4261 233330 SCHEDULE-NO-PRINT, MOVE ' LEVEL 2 SALES SEGMENT'
4262 233340 TO SUB-HEADING-PRINT.
4263 233350 IF BUDGET = 'CONT3' MOVE 'SCHEDULE CONT-3' TO
4264 233360 SCHEDULE-NO-PRINT, MOVE ' LEVEL 3 SALES SEGMENT'
4265 233370 TO SUB-HEADING-PRINT.
4266 233380 IF BUDGET = 'CONT5' MOVE 1 TO U, MOVE 'SCHEDULE CONT-5' TO
4267 233390 SCHEDULE-NO-PRINT, MOVE PRODUCT-NAME (DK-PRODUCT-NO) TO
4268 233400 PROD-NAME-PR, MOVE ' PRODUCT AT LEVEL 2 SALES SEGMENT'
4269 233410 TO SUB-HEADING-PRINT.
4270 233420 IF BUDGET = 'CONT6' MOVE 1 TO U, MOVE 'SCHEDULE CONT-6' TO
4271 233430 SCHEDULE-NO-PRINT, MOVE PRODUCT-NAME (DK-PRODUCT-NO) TO
4272 233440 PROD-NAME-PR, MOVE ' PRODUCT AT LEVEL 3 SALES SEGMENT'

4273 233450 TO SUB-HEADING-PRINT.
4274 233460 MOVE ' BUDGETED CONTRIBUTION STATEMENT' TO
4275 233470 BUDGET-NAME-PRINT. MOVE DK-L2-NAME TO LEV2-SEG-NAME-PR.
4276 233480 PERFORM 214-HEADING THRU 214-EXIT.
4277 233520 MOVE 'SALES' TO NAME-PRINT.
4278 233530 PERFORM 645-CONT-BUDGET THRU 645-EXIT VARYING PERIOD FROM
4279 233540 N BY 1 UNTIL PERIOD = Y OR PERIOD > NO-PERIODS.
4280 233550 MOVE 2 TO L. PERFORM 216-REPCRT-LINE.
4281 233560 MOVE 0 TO L. PERFORM 202-DOLLAR-LINE.
4282 233561 WRITE PRINT-LINE FROM RULING-LINE (SEC) AFTER ADVANCING
4283 233562 1 LINES, MOVE SPACES TO PRINT-LINE.
4284 233570 MOVE 'VARIABLE COSTS' TO NAME-PRINT, MOVE 1 TO L, PERFORM
4285 233580 216-REPORT-LINE. MOVE 0 TO LC.
4286 233590 MOVE ' PRODUCTION' TO NAME-PRINT.
4287 233600 PERFORM 647-CONT-BUDGET THRU 648-EXIT VARYING PERIOD FROM
4288 233610 N BY 1 UNTIL PERIOD = Y OR PERIOD > NO-PERIODS.
4289 233620 MOVE 2 TO L. PERFORM 216-REPORT-LINE.
4290 233630 MOVE 0 TO L. PERFORM 202-DOLLAR-LINE.
4291 233640 MOVE ' MARKETING' TO NAME-PRINT.
4292 233645 MOVE 2 TO L. PERFORM 216-REPORT-LINE.
4293 233650 PERFORM 651-CONT-BUDGET THRU 651-EXIT VARYING Z FROM 1 BY 1
4294 233660 UNTIL Z > 3.
4295 233670 MOVE ' TOTAL VARIABLE COSTS' TO TEMP-HOLD.
4296 233680 MOVE 1 TO DOLLAR, PERFORM 218-TOTAL-LINE.
4297 233690 MOVE 'VARIABLE MARGIN' TO TEMP-HOLD.
4298 233700 PERFORM 222-GRAND-TOTAL-LINE.
4299 233701 WRITE PRINT-LINE FROM RULING-LINE (SEC) AFTER ADVANCING
4300 233702 1 LINES. MOVE SPACES TO PRINT-LINE.
4301 233710 PERFORM 26-WS-CLEAR THRU 26-EXIT.
4302 233730 MOVE 'FIXED COSTS' TO NAME-PRINT.
4303 233740 MOVE 2 TO L. PERFORM 216-REPORT-LINE.
4304 233800 MOVE ' MARKETING' TO NAME-PRINT.
4305 233805 MOVE 2 TO L. PERFORM 216-REPORT-LINE. MOVE 0 TO LC.
4306 233810 PERFORM 657-CONT-BUDGET THRU 657-EXIT VARYING Z FROM 1 BY 1
4307 233820 UNTIL Z > NO-MRK-FC-CLASSES.
4308 233830 IF LC > 1, MOVE ' TOTAL FIXED COSTS' TO TEMP-HOLD.
4309 233840 MOVE 1 TO DOLLAR, PERFORM 218-TOTAL-LINE.
4310 233850 IF BUDGET = 'CONT2' OR BUDGET = 'CONT3' MOVE
4311 233860 'SEGMENT CONTRIBUTION' TO TEMP-HOLD ELSE MOVE
4312 233870 'PRODUCT CONTRIBUTION' TO TEMP-HOLD.
4313 233880 PERFORM 222-GRAND-TOTAL-LINE. PERFORM 219-RULING.
4314 233910 MOVE 0 TO U, L2, L3.
4315 233920 IF PERIOD > NO-PERIODS PERFORM 210-CLEARING THRU 210-EXIT,
4316 233930 GO TO 641-CONT-BUDGET, ELSE PERFORM 215-SECTION-ROUTINE,
4317 233940 GO TO 643-CONT-BUDGET.
4318
4319
4320 234000 645-CONT-BUDGET.
4321 234010 MOVE DK-PROJ-REVENUES (PERIOD) TO AMT-PR (COL), SUB.
4322 234020 ADD SUB TO COL-GRAND-TOTAL (COL).
4323 234040 IF PERIOD = NO-PERIODS PERFORM 646-CONT-BUDGET THRU 648-EXIT
4324 234050 VARYING PERIOD FROM 1 BY 1 UNTIL PERIOD > NO-PERIODS,
4325 234060 PERFORM 227-TOTAL-ROUTINE.
4326 234070 ADD 1 TO COL.
4327 234080 645-EXIT. EXIT.
4328
4329

4330 234100 646-CONT-BUDGET.
 4331 234110 ADD DK-PROJ-REVENUES (PERIOD) TO ROW-TOTAL.
 4332 234120 646-EXIT. EXIT.
 4333
 4334
 4335 234140 647-CONT-BUDGET.
 4336 234150 IF BUDGET = 'CONT2' MOVE L2-MFG-VC (DK-L2-SEG-NO, PERIOD)
 4337 234160 TO SUB.
 4338 234170 IF BUDGET = 'CONT3' MOVE L3-MFG-VC (DK-L3-SEG-NO, PERIOD)
 4339 234180 TO SUB.
 4340 234190 IF BUDGET = 'CONT5' MOVE
 4341 234200 L2-PROD-MFG-VC (DK-L2-SEG-NO, DK-PRODUCT-NO, PERIOD)
 4342 234210 TO SUB.
 4343 234220 IF BUDGET = 'CONT6' PERFORM 588-CONT-BUDGET.
 4344
 4345
 4346 234230 648-CONT-BUDGET.
 4347 234240 MOVE SUB TO AMT-PR (COL).
 4348 234250 ADD SUB TO COL-TOTAL (COL). SUBTRACT SUB FROM
 4349 234260 COL-GRAND-TOTAL (COL).
 4350 234280 IF PERIOD = NO-PERIODS PERFORM 649-CONT-BUDGET THRU 649-EXIT
 4351 234290 VARYING PERIOD FROM 1 BY 1 UNTIL PERIOD > NO-PERIODS.
 4352 234300 PERFORM 226-TOTAL-ROUTINE.
 4353 234310 ADD 1 TO COL.
 4354 234320 648-EXIT. EXIT.
 4355
 4356
 4357 234340 649-CONT-BUDGET.
 4358 234350 PERFORM 647-CONT-BUDGET.
 4359 234360 ADD SUB TO ROW-TOTAL.
 4360 234370 649-EXIT. EXIT.
 4361
 4362
 4363 234390 651-CONT-BUDGET.
 4364 234400 IF DK-MRK-VC-DATA (Z) = ZEROES GO TO 651-EXIT.
 4365 234410 MOVE MRK-VC-NAME (Z) TO SUB-NAME.
 4366 234420 PERFORM 653-CONT-BUDGET THRU 653-EXIT VARYING PERIOD FROM
 4367 234430 N BY 1 UNTIL PERIOD = Y OR PERIOD > NO-PERIODS.
 4368 234440 MOVE 1 TO L. PERFORM 216-REPORT-LINE.
 4369 234450 651-EXIT. EXIT.
 4370
 4371
 4372 234500 653-CONT-BUDGET.
 4373 234510 MOVE DK-MRK-VC (Z, PERIOD) TO AMT-PR (COL), SUB.
 4374 234520 ADD SUB TO COL-TOTAL (COL). SUBTRACT SUB FROM
 4375 234530 COL-GRAND-TOTAL (COL).
 4376 234560 IF PERIOD = NO-PERIODS PERFORM 655-CONT-BUDGET THRU 655-EXIT
 4377 234570 VARYING PERIOD FROM 1 BY 1 UNTIL PERIOD > NO-PERIODS,
 4378 234580 PERFORM 226-TOTAL-ROUTINE.
 4379 234590 ADD 1 TO COL.
 4380 234600 653-EXIT. EXIT.
 4381
 4382
 4383 234620 655-CONT-BUDGET.
 4384 234630 ADD DK-MRK-VC (Z, PERIOD) TO ROW-TOTAL.
 4385 234640 655-EXIT. EXIT.
 4386

4387
 4388 234660 657-CCNT-BUDGET.
 4389 234670 IF DK-MRK-FC-DETAIL (Z) = ZEROES GO TO 657-EXIT.
 4390 234680 MOVE MRK-FC-NAME (Z) TO SUB-NAME.
 4391 234690 PERFORM 659-CONT-BUDGET THRU 659-EXIT VARYING PERIOD FROM
 4392 234700 N BY 1 UNTIL PERIOD = Y OR PERIOD > NO-PERIODS.
 4393 234710 MOVE 1 TO L. PERFORM 216-REPORT-LINE.
 4394 234711 IF LC = 1 MOVE 0 TO L. PERFORM 202-DOLLAR-LINE.
 4395 234720 657-EXIT. EXIT.
 4396
 4397
 4398 234750 659-CONT-BUDGET.
 4399 234760 MOVE DK-MRK-FC (Z, PERIOD) TO AMT-PR (COL), SUB.
 4400 234770 ADD SUB TO COL-TOTAL (COL). SUBTRACT SUB FROM
 4401 234780 COL-GRAND-TOTAL (COL).
 4402 234810 IF PERIOD = NO-PERIODS PERFORM 661-CONT-BUDGET THRU 661-EXIT
 4403 234820 VARYING PERIOD FROM 1 BY 1 UNTIL PERIOD > NO-PERIODS,
 4404 234830 PERFORM 226-TOTAL-ROUTINE.
 4405 234840 ADD 1 TO COL.
 4406 234850 659-EXIT. EXIT.
 4407
 4408
 4409 234870 661-CONT-BUDGET.
 4410 234880 ADD DK-MRK-FC (Z, PERIOD) TO ROW-TOTAL.
 4411 234890 661-EXIT. EXIT.
 4412
 4413
 4414 235000 670-CONT4-BUDGET.
 4415 235001 ADD 1 TO REPTS. MOVE 'CONT-4' TO SCH-NJ (REPTS).
 4416 235002 MOVE 'BUDGETED CONTRIBUTION STATEMENT -' TO HEAD (REPTS).
 4417 235003 MOVE 'PRODUCT AT TOTAL ORGANIZATION LEVEL' TO
 4418 235004 SUB-HEAD (REPTS). MOVE 1 TO SH (REPTS).
 4419 235005 COMPUTE INDEX-PG (REPTS) = PAGE-NO + 1.
 4420 235010 PERFORM 210-CLEARING THRU 210-EXIT. MOVE 1 TO U.
 4421 235020 PERFORM 672-CONT4-BUDGET THRU 673-EXIT VARYING PROD-NO
 4422 235030 FROM 1 BY 1 UNTIL PROD-NO > NO-PROD.
 4423 235040 MOVE 0 TO U.
 4424 235050 670-EXIT. EXIT.
 4425
 4426
 4427 235070 672-CONT4-BUDGET.
 4428 235080 PERFORM 212-HEADING THRU 212-EXIT.
 4429 235090 MOVE 'SCHEDULE CONT-4' TO SCHEDULE-NO-PRINT.
 4430 235100 MOVE PRODUCT-NAME (PROD-NO) TO PROD-NAME-PR.
 4431 235110 MOVE 'PRODUCT AT TOTAL ORGANIZATION LEVEL' TO
 4432 235120 SUB-HEADING-PRINT.
 4433 235130 MOVE ' BUDGETED CONTRIBUTION STATEMENT' TO
 4434 235140 BUDGET-NAME-PRINT.
 4435 235150 PERFORM 214-HEADING THRU 214-EXIT.
 4436 235160 MOVE 'SALES' TO NAME-PRINT.
 4437 235170 PERFORM 675-CONT4-BUDGET THRU 675-EXIT VARYING PERIOD FROM
 4438 235180 N BY 1 UNTIL PERIOD = Y OR PERIOD > NO-PERIODS.
 4439 235185 MOVE 2 TO L. PERFORM 216-REPORT-LINE.
 4440 235190 MOVE 0 TO L. PERFORM 202-DOLLAR-LINE.
 4441 235191 WRITE PRINT-LINE FROM RULING-LINE (SEC) AFTER ADVANCING
 4442 235192 1 LINES. MOVE SPACES TO PRINT-LINE.
 4443 235200 MOVE 'VARIABLE COSTS' TO NAME-PRINT. MOVE 1 TO L. PERFORM

4444 235210 216-REPORT-LINE.
 4445 235220 MOVE ' PRODUCTION' TO NAME-PRINT.
 4446 235230 PERFORM 677-CONT4-BUDGET THRU 678-EXIT VARYING PERIOD FROM
 4447 235240 N BY 1 UNTIL PERIOD = Y OR PERIOD > NO-PERIODS.
 4448 235250 MOVE 2 TO L. PERFORM 216-REPORT-LINE.
 4449 235260 MOVE 0 TO L. PERFORM 202-DOLLAR-LINE.
 4450 235270 MOVE ' MARKETING' TO NAME-PRINT.
 4451 235275 MOVE 2 TO L. PERFORM 216-REPORT-LINE.
 4452 235280 PERFORM 681-CONT4-BUDGET THRU 681-EXIT VARYING Z FROM 1 BY 1
 4453 235290 UNTIL Z > 3.
 4454 235300 MOVE ' TOTAL VARIABLE COSTS' TO TEMP-HOLD.
 4455 235310 MOVE 1 TO DOLLAR. PERFORM 218-TOTAL-LINE.
 4456 235320 MOVE 'VARIABLE MARGIN' TO TEMP-HOLD.
 4457 235330 PERFORM 222-GRAND-TOTAL-LINE.
 4458 235331 WRITE PRINT-LINE FROM RULING-LINE (SEC) AFTER ADVANCING
 4459 235332 1 LINES. MOVE SPACES TO PRINT-LINE.
 4460 235340 PERFORM 26-MS-CLEAR THRU 26-EXIT.
 4461 235350 IF PRD-MFG-FC-DATA (PRD-NO) = ZEROS AND
 4462 235355 PRD-MRK-FC-DATA (PRD-NO) = ZEROS, GO TO 672-EXIT.
 4463 235360 MOVE 'FIXED COSTS' TO NAME-PRINT, MOVE 2 TO L.
 4464 235365 PERFORM 216-REPORT-LINE. MOVE 0 TO LC.
 4465 235370 IF PRD-MFG-FC-DATA (PRD-NO) NOT = ZEROS MOVE
 4466 235380 ' PRODUCTION' TO NAME-PRINT, PERFORM 687-CONT4-BUDGET
 4467 235390 VARYING PERIOD FROM N BY 1 UNTIL PERIOD = Y OR PERIOD >
 4468 235400 NO-PERIODS, MOVE 2 TO L, PERFORM 216-REPORT-LINE.
 4469 235410 MOVE 0 TO L, PERFORM 202-DOLLAR-LINE.
 4470 235420 IF PRD-MRK-FC-DATA (PRD-NO) NOT = ZEROS MOVE
 4471 235425 ' MARKETING' TO NAME-PRINT, MOVE 2 TO L, PERFORM
 4472 235430 216-REPORT-LINE. PERFORM 691-CONT4-BUDGET THRU 691-EXIT
 4473 235440 VARYING Z FROM 1 BY 1 UNTIL Z > NO-MRK-FC-CLASSES.
 4474 235450 IF LC > 3, MOVE ' TOTAL FIXED COSTS' TO TEMP-HOLD.
 4475 235451 MOVE 1 TO DOLLAR, PERFORM 218-TOTAL-LINE.
 4476 235470 672-EXIT. EXIT.
 4477
 4478
 4479 235480 673-CONT4-BUDGET.
 4480 235490 MOVE 'PRODUCT CONTRIBUTION' TO TEMP-HOLD.
 4481 235500 PERFORM 222-GRAND-TOTAL-LINE. PERFORM 219-RULING.
 4482 235510 IF PERIOD > NO-PERIODS PERFORM 211-CLEARING THRU 211-EXIT
 4483 235515 GO TO 673-EXIT ELSE PERFORM 215-SECTION-ROUTINE, GO TO
 4484 235520 672-CONT4-BUDGET.
 4485 235550 673-EXIT. EXIT.
 4486
 4487
 4488 235580 675-CONT4-BUDGET.
 4489 235590 MOVE PRODUCT-REVENUE (PROD-NO, PERIOD) TO AMT-PR (COL), SUB.
 4490 235600 ADD SUB TO COL-GRAND-TOTAL (COL).
 4491 235630 IF PERIOD = NO-PERIODS PERFORM 676-CONT4-BUDGET THRU 676-EXIT
 4492 235640 VARYING PERIOD FROM 1 BY 1 UNTIL PERIOD > NO-PERIODS,
 4493 235650 PERFORM 227-TOTAL-ROUTINE.
 4494 235660 ADD 1 TO COL.
 4495 235670 675-EXIT. EXIT.
 4496
 4497
 4498 235690 676-CONT4-BUDGET.
 4499 235700 ADD PRODUCT-REVENUE (PROD-NO, PERIOD) TO ROW-TOTAL.
 4500 235710 676-EXIT. EXIT.

4501
 4502
 4503 235750 677-CONT4-BUDGET.
 4504 235760 COMPUTE SUB ROUNDED = UNIT-SALES (PRD-NO, PERIOD) *
 4505 235770 PRODUCT-STD-COST (PROD-NO).
 4506
 4507
 4508 235790 678-CONT4-BUDGET.
 4509 235800 MOVE SUB TO AMT-PR (COL).
 4510 235810 ADD SUB TO COL-TOTAL (COL). SUBTRACT SUB FROM
 4511 235820 COL-GRAND-TOTAL (COL).
 4512 235850 IF PERIOD = NO-PERIODS PERFORM 679-CONT4-BUDGET THRU 679-EXIT
 4513 235860 VARYING PERIOD FROM 1 BY 1 UNTIL PERIOD > NO-PERIODS,
 4514 235870 PERFORM 226-TOTAL-ROUTINE.
 4515 235880 ADD 1 TO COL.
 4516 235890 678-EXIT. EXIT.
 4517
 4518
 4519 235910 679-CONT4-BUDGET.
 4520 235920 PERFORM 677-CONT4-BUDGET.
 4521 235930 ADD SUB TO ROW-TOTAL.
 4522 235940 679-EXIT. EXIT.
 4523
 4524
 4525 236000 681-CONT4-BUDGET.
 4526 236010 IF PRODUCT-MRK-VC-DATA (PROD-NO, Z) = ZEROS GO TO 681-EXIT.
 4527 236020 MOVE MRK-VC-NAME (Z) TO SUB-NAME.
 4528 236030 PERFORM 683-CONT4-BUDGET THRU 683-EXIT VARYING PERIOD FROM
 4529 236040 N BY 1 UNTIL PERIOD = Y OR PERIOD > NO-PERIODS.
 4530 236050 MOVE 1 TO L, PERFORM 216-REPORT-LINE.
 4531 236060 681-EXIT. EXIT.
 4532
 4533
 4534 236090 683-CONT4-BUDGET.
 4535 236100 MOVE PRODUCT-MRK-VC (PROD-NO, Z, PERIOD) TO AMT-PR (COL),
 4536 236105 SUB.
 4537 236110 ADD SUB TO COL-TOTAL (COL). SUBTRACT SUB FROM
 4538 236120 COL-GRAND-TOTAL (COL).
 4539 236170 IF PERIOD = NO-PERIODS PERFORM 685-CONT4-BUDGET THRU 685-EXIT
 4540 236180 VARYING PERIOD FROM 1 BY 1 UNTIL PERIOD > NO-PERIODS,
 4541 236190 PERFORM 226-TOTAL-ROUTINE.
 4542 236200 ADD 1 TO COL.
 4543 236210 683-EXIT. EXIT.
 4544
 4545
 4546 236220 685-CONT4-BUDGET.
 4547 236230 ADD PRODUCT-MRK-VC (PROD-NO, Z, PERIOD) TO ROW-TOTAL.
 4548 236240 685-EXIT. EXIT.
 4549
 4550
 4551 236250 687-CONT4-BUDGET.
 4552 236260 MOVE PRD-MFG-FC (PROD-NO, PERIOD) TO AMT-PR (COL), SUB.
 4553 236270 ADD SUB TO COL-TOTAL (COL). SUBTRACT SUB FROM
 4554 236280 COL-GRAND-TOTAL (COL).
 4555 236330 IF PERIOD = NO-PERIODS PERFORM 689-CONT4-BUDGET THRU 689-EXIT
 4556 236340 VARYING PERIOD FROM 1 BY 1 UNTIL PERIOD > NO-PERIODS,
 4557 236350 PERFORM 226-TOTAL-ROUTINE.

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4558 236360 ADD 1 TO COL.
4559 236370 687-EXIT. EXIT.
4560
4561
4562 236390 689-CONT4-BUDGET.
4563 236400 ADD PROD-MFG-FC (PROD-NO, PERIOD) TO ROW-TOTAL.
4564 236410 689-EXIT. EXIT.
4565
4566
4567 236430 691-CONT4-BUDGET.
4568 236440 IF PROD-MPK-FC-DATA (PROD-NO, Z) = ZEROES, GO TO 691-EXIT.
4569 236450 MOVE MRK-FC-NAME (Z) TO SUB-NAME.
4570 236460 PERFORM 693-CONT4-BUDGET THRU 693-EXIT VARYING PERIOD FROM
4571 N BY 1 UNTIL PERIOD = Y OR PERIOD > NO-PERIODS.
4572 236480 MOVE 1 TO L, PERFORM 216-REPORT-LINE.
4573 236481 IF LC = 3, MOVE 0 TO L, PERFORM 202-DOLLAR-LINE.
4574 236490 691-EXIT. EXIT.
4575
4576
4577 236500 693-CONT4-BUDGET.
4578 236510 MOVE PRODUCT-MRK-FC (PROD-NO, Z, PERIOD) TO AMT-PR (COL),
4579 SUB. ADD SUB TO COL-TOTAL (COL). SUBTRACT SUB FROM
4580 236530 COL-GRAND-TOTAL (COL).
4581 236580 IF PERIOD = NO-PERIODS PERFORM 695-CONT4-BUDGET THRU 695-EXIT
4582 236590 VARYING PERIOD FROM 1 BY 1 UNTIL PERIOD > NO-PERIODS,
4583 236600 PERFORM 226-TOTAL-ROUTINE.
4584 236610 ADD 1 TO COL.
4585 236620 693-EXIT. EXIT.
4586
4587
4588 236640 695-CONT4-BUDGET.
4589 236650 ADD PRODUCT-MRK-FC (PROD-NO, Z, PERIOD) TO ROW-TOTAL.
4590 236660 695-EXIT. EXIT.
4591
4592
4593 236750 700-CONT7-BUDGET.
4594 236755 IF NO-OTHER-INC = 0 AND NO-OTHER-EXP = 0 GO TO 701-EXIT.
4595 236756 ADD 1 TO REPRTS. MOVE 'CONT-7' TO SCH-NO (REPRTS).
4596 236757 MOVE 'BUDGET OF OTHER INCOME AND OTHER EXPENSES' TO
4597 236758 HEAD (REPRTS).
4598 236759 COMPUTE INDEX-PG (REPRTS) = PAGE-NO + 1.
4599 236760 PERFORM 210-CLEARING THRU 210-EXIT.
4600
4601
4602 236790 701-CONT7-BUDGET.
4603 236800 PERFORM 212-HEADING THRU 212-EXIT.
4604 236810 MOVE 'SCHEDULE CONT-7' TO SCHEDULE-NO-PRINT.
4605 236820 MOVE 'BUDGET OF OTHER INCOME AND OTHER EXPENSES' TO
4606 236830 BUDGET-NAME-PRINT.
4607 236840 PERFORM 214-HEADING THRU 214-EXIT.
4608 236850 IF NO-OTHER-INC > 0 PERFORM 705-CONT7-BUDGET THRU 705-EXIT.
4609 236860 IF NO-OTHER-EXP > 0 PERFORM 715-CONT7-BUDGET THRU 715-EXIT.
4610 236870 IF NO-OTHER-INC > 0 AND NO-OTHER-EXP > 0, MOVE 'NET AMOUNT'
4611 236875 TO TEMP-HOLD, PERFORM 222-GRAND-TOTAL-LINE, PERFORM
4612 236876 219-RULING.
4613 236890 IF PERIOD > NO-PERIODS GO TO 701-EXIT ELSE PERFORM
4614 236900 215-SECTION-ROUTINE GO TO 701-CONT7-BUDGET.

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4615 236940 701-EXIT. EXIT.
4616
4617
4618 237080 705-CONT7-BUDGET.
4619 237090 MOVE 'OTHER INCOME' TO NAME-PRINT. MOVE 2 TO L, PERFORM
4620 237100 216-REPORT-LINE. MOVE '-----' TO NAME-PRINT.
4621 237102 MOVE 1 TO L, PERFORM 216-REPORT-LINE, MOVE 0 TO LC
4622 237110 PERFORM 707-CONT7-BUDGET THRU 707-EXIT VARYING Z FROM 1 BY 1
4623 237120 UNTIL Z > NO-OTHER-INC.
4624 237130 IF LC > 2, MOVE ' TOTAL OTHER INCOME' TO TEMP-HOLD,
4625 237140 MOVE 1 TO DOLLAR, PERFORM 218-TOTAL-LINE.
4626 237145 IF NO-OTHER-EXP > 0, WRITE PRINT-LINE FROM RULING-LINE (SECT
4627 237146 AFTER ADVANCING 1 LINES, MOVE SPACES TO PRINT-LINE.
4628 237147 IF NO-OTHER-EXP = 0, PERFORM 219-RULING.
4629 237155 PERFORM 26-WS-CLEAR THRU 26-EXIT.
4630 237160 705-EXIT. EXIT.
4631
4632
4633 237250 707-CONT7-BUDGET.
4634 237260 MOVE OTHER-INC-NAME (Z) TO NAME-PRINT.
4635 237270 PERFORM 709-CONT7-BUDGET THRU 709-EXIT VARYING PERIOD FROM
4636 237280 N BY 1 UNTIL PERIOD = Y OR PERIOD > NO-PERIODS.
4637 237290 MOVE 1 TO L, PERFORM 216-REPORT-LINE THRU 217-EXIT.
4638 237291 IF LC = 1, MOVE 0 TO L, PERFORM 202-DOLLAR-LINE.
4639 237300 707-EXIT. EXIT.
4640
4641
4642 237360 709-CONT7-BUDGET.
4643 237370 MOVE OTHER-INC-AMT (Z, PERIOD) TO AMT-PR (COL), SUB.
4644 237380 ADD SUB TO COL-TOTAL (COL). ADD SUB TO COL-GRAND-TOTAL (COL).
4645 237420 IF PERIOD = NO-PERIODS PERFORM 711-CONT7-BUDGET THRU 711-EXIT
4646 237430 VARYING PERIOD FROM 1 BY 1 UNTIL PERIOD > NO-PERIODS,
4647 237440 PERFORM 228-TOTAL-ROUTINE THRU 228-EXIT.
4648 237450 ADD 1 TO COL.
4649 237460 709-EXIT. EXIT.
4650
4651
4652 237470 711-CONT7-BUDGET.
4653 237480 ADD OTHER-INC-AMT (Z, PERIOD) TO ROW-TOTAL.
4654 237490 711-EXIT. EXIT.
4655
4656
4657 237500 715-CONT7-BUDGET.
4658 237510 MOVE 'OTHER EXPENSES' TO NAME-PRINT. MOVE 3 TO L, PERFORM
4659 237520 216-REPORT-LINE. MOVE '-----' TO NAME-PRINT,
4660 237522 MOVE 1 TO L, PERFORM 216-REPORT-LINE, MOVE 0 TO LC
4661 237530 PERFORM 717-CONT7-BUDGET THRU 717-EXIT VARYING Z FROM 1 BY 1
4662 237540 UNTIL Z > NO-OTHER-EXP.
4663 237550 IF LC > 2, MOVE ' TOTAL OTHER EXPENSES' TO TEMP-HOLD,
4664 237560 MOVE 1 TO DOLLAR, PERFORM 218-TOTAL-LINE.
4665 237561 IF NO-OTHER-INC = 0, PERFORM 219-RULING.
4666 237570 PERFORM 26-WS-CLEAR THRU 26-EXIT.
4667 237580 715-EXIT. EXIT.
4668
4669
4670 237590 717-CONT7-BUDGET.
4671 237600 MOVE OTHER-EXP-NAME (Z) TO NAME-PRINT.

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4672 237610 PERFORM 719-CONT7-BUDGET THRU 719-EXIT VARYING PERIOD FROM
 4673 237620 N BY 1 UNTIL PERIOD = Y OR PERIOD > NO-PERIODS.
 4674 237625 MOVE 1 TO L. PERFORM 216-REPORT-LINE.
 4675 237630 IF LC = 1, MOVE 0 TO L, PERFORM 202-DOLLAR-LINE.
 4676 237640 717-EXIT. EXIT.
 4677
 4678
 4679 237660 719-CONT7-BUDGET.
 4680 237670 MOVE OTHER-EXP-AMT (Z, PERIOD) TO AMT-PR (COL), SUB.
 4681 237680 ADD SUB TO COL-TOTAL (COL). SUBTRACT SUB FROM
 4682 237690 COL-GRAND-TOTAL (COL).
 4683 237730 IF PERIOD = NO-PERIODS PERFORM 721-CONT7-BUDGET THRU 721-EXIT
 4684 237740 VARYING PERIOD FROM 1 BY 1 UNTIL PERIOD > NO-PERIODS.
 4685 237750 PERFORM 226-TOTAL-ROUTINE.
 4686 237760 ADD 1 TO COL.
 4687 237770 719-EXIT. EXIT.
 4688
 4689
 4690 237780 721-CONT7-BUDGET.
 4691 237790 ADD OTHER-EXP-AMT (Z, PERIOD) TO ROW-TOTAL.
 4692 237800 721-EXIT. EXIT.
 4693
 4694
 4695 237820 730-CB1-BUDGET.
 4696 237821 ADD 1 TO REPTS. MOVE 'CB-1' TO SCH-NO (REPTS).
 4697 237822 MOVE 'CASH BUDGET' TO HEAD (REPTS).
 4698 237823 COMPUTE INDEX-PG (REPTS) = PAGE-NO + 1.
 4699 237830 PERFORM 210-CLEARING THRU 210-EXIT.
 4700
 4701
 4702 237850 731-CB1-HEADING.
 4703 237860 PERFORM 212-HEADING THRU 212-EXIT.
 4704 237870 MOVE ' SCHEDULE CB-1 ' TO SCHEDULE-NO-PRINT.
 4705 237880 MOVE ' CASH BUDGET' TO BUDGET-NAME-PRINT.
 4706 237890 PERFORM 214-HEADING THRU 214-EXIT.
 4707
 4708
 4709 237910 732-CB1-BUDGET.
 4710 237920 MOVE 'BUDGETED CASH RECEIPTS' TO NAME-PRINT.
 4711 237930 MOVE 2 TO L, PERFORM 216-REPORT-LINE.
 4712 237931 MOVE '-----' TO NAME-PRINT. MOVE 1 TO L.
 4713 237932 PERFORM 216-REPORT-LINE.
 4714 237940 MOVE 'CASH SALES' TO NAME-PRINT.
 4715 237950 PERFORM 735-CB1-BUDGET THRU 735-EXIT VARYING PERIOD FROM N
 4716 237960 BY 1 UNTIL PERIOD = Y OR PERIOD > NO-PERIODS.
 4717 237970 MOVE 1 TO L, PERFORM 216-REPORT-LINE.
 4718 237980 MOVE 0 TO L, PERFORM 202-DOLLAR-LINE.
 4719 237990 MOVE 'ACTS REC. COLLECTIONS' TO NAME-PRINT.
 4720 238000 PERFORM 739-CB1-BUDGET THRU 739-EXIT VARYING PERIOD FROM N
 4721 238010 BY 1 UNTIL PERIOD = Y OR PERIOD > NO-PERIODS.
 4722 238020 MOVE 1 TO L, PERFORM 216-REPORT-LINE.
 4723 238030 IF NO-OTHER-CR > 0 PERFORM 743-CB1-BUDGET THRU 743-EXIT
 4724 238040 VARYING Z FROM 1 BY 1 UNTIL Z > NO-OTHER-CR.
 4725 238045 MOVE ' TOTAL CASH RECEIPTS' TO TEMP-HOLD.
 4726 238050 MOVE 1 TO DOLLAR, PERFORM 218-TOTAL-LINE.
 4727 238051 WRITE PRINT-LINE FROM RULING-LINE (SEC) AFTER ADVANCING
 4728 238052 1 LINES. MOVE SPACES TO PRINT-LINE.

4729 238053 MOVE 0 TO GRAND-TOTAL.
 4730 238060 PERFORM 26-WS-CLEAR THRU 26-EXIT.
 4731 238070 IF LINE-COUNT > 41 PERFORM 731-CB1-HEADING.
 4732 238080 MOVE 'BUDGETED CASH PAYMENTS' TO NAME-PRINT.
 4733 238090 MOVE 2 TO L, PERFORM 216-REPORT-LINE.
 4734 238091 MOVE '-----' TO NAME-PRINT. MOVE 1 TO L.
 4735 238092 PERFORM 216-REPORT-LINE.
 4736 238100 MOVE 'CASH PURCHASES' TO NAME-PRINT.
 4737 238110 PERFORM 749-CB1-BUDGET THRU 749-EXIT VARYING PERIOD FROM N
 4738 238120 BY 1 UNTIL PERIOD = Y OR PERIOD > NO-PERIODS.
 4739 238130 MOVE 1 TO L, PERFORM 216-REPORT-LINE.
 4740 238140 MOVE 0 TO L, PERFORM 202-DOLLAR-LINE.
 4741 238150 MOVE 'DIRECT LABOR COSTS' TO NAME-PRINT.
 4742 238160 PERFORM 753-CB1-BUDGET THRU 753-EXIT VARYING PERIOD FROM N
 4743 238170 BY 1 UNTIL PERIOD = Y OR PERIOD > NO-PERIODS.
 4744 238180 MOVE 1 TO L, PERFORM 216-REPORT-LINE.
 4745 238190 MOVE 'ACTS. PAYABLE PAYMENTS' TO NAME-PRINT.
 4746 238200 PERFORM 757-CB1-BUDGET THRU 757-EXIT VARYING PERIOD FROM N
 4747 238210 BY 1 UNTIL PERIOD = Y OR PERIOD > NO-PERIODS.
 4748 238220 MOVE 1 TO L, PERFORM 216-REPORT-LINE.
 4749 238230 IF NO-OTHER-CD > 0 PERFORM 761-CB1-BUDGET THRU 761-EXIT
 4750 238240 VARYING Z FROM 1 BY 1 UNTIL Z > NO-OTHER-CD.
 4751 238250 IF LINE-COUNT > 46 PERFORM 731-CB1-HEADING.
 4752 238260 MOVE ' TOTAL CASH PAYMENTS' TO TEMP-HOLD.
 4753 238270 MOVE 1 TO DOLLAR, PERFORM 218-TOTAL-LINE.
 4754 238280 IF LINE-COUNT > 41 PERFORM 732-CB1-BUDGET.
 4755 238290 MOVE 'NET CASH FLOW' TO TEMP-HOLD.
 4756 238300 PERFORM 222-GRAND-TOTAL-LINE.
 4757 238301 MOVE '-----' TO NAME-PRINT. MOVE 1 TO L.
 4758 238302 PERFORM 216-REPORT-LINE.
 4759 238303 WRITE PRINT-LINE FROM RULING-LINE (SEC) AFTER ADVANCING
 4760 238304 0 LINES. MOVE SPACES TO PRINT-LINE.
 4761 238310 IF N = 1, MOVE 2 TO END-PERIOD, ELSE MOVE 8 TO END-PERIOD.
 4762 238330 PERFORM 767-CB1-BUDGET THRU 767-EXIT VARYING PERIOD FROM N
 4763 238340 BY 1 UNTIL PERIOD = Y OR PERIOD > NO-PERIODS.
 4764 238360 MOVE 'ADD: BEGINNING BALANCE' TO NAME-PRINT.
 4765 238365 MOVE 1 TO COL.
 4766 238370 PERFORM 769-CB1-BUDGET THRU 769-EXIT VARYING PERIOD FROM N
 4767 238380 BY 1 UNTIL PERIOD = Y OR PERIOD > NO-PERIODS;
 4768 238390 MOVE 2 TO L, PERFORM 216-REPORT-LINE.
 4769 238400 MOVE 'DEDUCT: ENDING BALANCE' TO NAME-PRINT.
 4770 238410 COMPUTE Z = N + 1. COMPUTE X = Y + 1.
 4771 238415 COMPUTE END-PERIOD = NO-PERIODS + 1.
 4772 238420 PERFORM 771-CB1-BUDGET THRU 771-EXIT VARYING PERIOD FROM
 4773 238430 Z BY 1 UNTIL PERIOD = X OR PERIOD > END-PERIOD.
 4774 238440 MOVE 1 TO L, PERFORM 216-REPORT-LINE.
 4775 238450 WRITE PRINT-LINE FROM RULING-LINE (SEC) AFTER ADVANCING
 4776 238451 1 LINES. MOVE SPACES TO PRINT-LINE.
 4777 238460 MOVE 'REQUIRED FINANCING' TO NAME-PRINT.
 4778 238470 PERFORM 773-CB1-BUDGET THRU 774-EXIT VARYING PERIOD FROM N
 4779 238480 BY 1 UNTIL PERIOD = Y OR PERIOD > NO-PERIODS.
 4780 238490 MOVE 2 TO L, PERFORM 216-REPORT-LINE.
 4781 238495 WRITE PRINT-LINE FROM RULING-LINE (SEC) AFTER ADVANCING
 4782 238496 0 LINES. MOVE SPACES TO PRINT-LINE. PERFORM 219-RULING.
 4783 238520 IF PERIOD > NO-PERIODS GO TO 732-EXIT ELSE PERFORM
 4784 238530 215-SECTION-ROUTINE, GO TO 731-CB1-HEADING.
 4785 238540 732-EXIT. EXIT.

4786
4787
4788 239250 735-CB1-BUDGET.
4789 239260 MOVE CASH-SALES (PERIOD) TO AMT-PR (COL), SUB.
4790 239270 ADD SUB TO COL-TOTAL (COL). ADD SUB TO COL-GRAND-TOTAL (COL).
4791 239280 IF PERIOD = NO-PERIODS PERFORM 737-CB1-BUDGET THRU 737-EXIT
4792 239290 VARYING PERIOD FROM 1 BY 1 UNTIL PERIOD > NO-PERIODS,
4793 239300 PERFORM 228-TOTAL-ROUTINE THRU 228-EXIT.
4794 239310 ADD 1 TO COL.
4795 239320 735-EXIT. EXIT.
4796
4797
4798 239340 737-CB1-BUDGET.
4799 239350 ADD CASH-SALES (PERIOD) TO ROW-TOTAL.
4800 239360 737-EXIT. EXIT.
4801
4802
4803 239380 739-CB1-BUDGET.
4804 239390 MOVE AC-REC-COLLECTIONS (PERIOD) TO AMT-PR (COL), SUB.
4805 239400 ADD SUB TO COL-TOTAL (COL). ADD SUB TO COL-GRAND-TOTAL (COL).
4806 239410 IF PERIOD = NO-PERIODS PERFORM 741-CB1-BUDGET THRU 741-EXIT
4807 239420 VARYING PERIOD FROM 1 BY 1 UNTIL PERIOD > NO-PERIODS,
4808 239430 PERFORM 228-TOTAL-ROUTINE THRU 228-EXIT.
4809 239440 ADD 1 TO COL.
4810 239450 739-EXIT. EXIT.
4811
4812
4813 239470 741-CB1-BUDGET.
4814 239480 ADD AC-REC-COLLECTIONS (PERIOD) TO ROW-TOTAL.
4815 239490 741-EXIT. EXIT.
4816
4817
4818 239500 743-CB1-BUDGET.
4819 239510 MOVE OTHER-CP-NAME (2) TO NAME-PRINT.
4820 239520 PERFORM 745-CB1-BUDGET THRU 745-EXIT VARYING PERIOD FROM N
4821 239530 BY 1 UNTIL PERIOD = Y OR PERIOD > NO-PERIODS.
4822 239540 MOVE 1 TO L, PERFORM 216-REPORT-LINE.
4823 239550 IF LINE-COUNT > 46 PERFORM 731-CB1-HEADING.
4824 239560 743-EXIT. EXIT.
4825
4826
4827 239570 745-CB1-BUDGET.
4828 239580 MOVE OTHER-CR-AMT (2, PERIOD) TO AMT-PR (COL), SUB.
4829 239590 ADD SUB TO COL-TOTAL (COL). ADD SUB TO COL-GRAND-TOTAL (COL).
4830 239600 IF PERIOD = NO-PERIODS PERFORM 747-CB1-BUDGET THRU 747-EXIT
4831 239610 VARYING PERIOD FROM 1 BY 1 UNTIL PERIOD > NO-PERIODS,
4832 239620 PERFORM 228-TOTAL-ROUTINE THRU 228-EXIT.
4833 239630 ADD 1 TO COL.
4834 239640 745-EXIT. EXIT.
4835
4836
4837 239660 747-CB1-BUDGET.
4838 239670 ADD OTHER-CR-AMT (2, PERIOD) TO ROW-TOTAL.
4839 239680 747-EXIT. EXIT.
4840
4841
4842 239700 749-CB1-BUDGET.

4843 239710 MOVE CASH-PURCHASES (PERIOD) TO AMT-PR (COL), SUB.
4844 239720 ADD SUB TO COL-TOTAL (COL). SUBTRACT SUB FROM
4845 239725 COL-GRAND-TOTAL (COL).
4846 235730 IF PERIOD = NO-PERIODS PERFORM 751-CB1-BUDGET THRU 751-EXIT
4847 239740 VARYING PERIOD FROM 1 BY 1 UNTIL PERIOD > NO-PERIODS,
4848 239750 PERFORM 226-TOTAL-ROUTINE.
4849 239760 ADD 1 TO COL.
4850 239770 749-EXIT. EXIT.
4851
4852
4853 239790 751-CB1-BUDGET.
4854 239800 ADD CASH-PURCHASES (PERIOD) TO ROW-TOTAL.
4855 239810 751-EXIT. EXIT.
4856
4857
4858 239830 753-CB1-BUDGET.
4859 239840 MOVE DIRECT-LABOR-COSTS (PERIOD) TO AMT-PR (COL), SUB.
4860 239850 ADD SUB TO COL-TOTAL (COL). SUBTRACT SUB FROM
4861 239855 COL-GRAND-TOTAL (COL).
4862 239860 IF PERIOD = NO-PERIODS PERFORM 755-CB1-BUDGET THRU 755-EXIT
4863 239870 VARYING PERIOD FROM 1 BY 1 UNTIL PERIOD > NO-PERIODS,
4864 239880 PERFORM 226-TOTAL-ROUTINE.
4865 239890 ADD 1 TO COL.
4866 239900 753-EXIT. EXIT.
4867
4868
4869 239920 755-CB1-BUDGET.
4870 239930 ADD DIRECT-LABOR-COSTS (PERIOD) TO ROW-TOTAL.
4871 239940 755-EXIT. EXIT.
4872
4873
4874 239960 757-CB1-BUDGET.
4875 239970 MOVE AC-PAY-PYMTS (PERIOD) TO AMT-PR (COL), SUB.
4876 239980 ADD SUB TO COL-TOTAL (COL). SUBTRACT SUB FROM
4877 239985 COL-GRAND-TOTAL (COL).
4878 239990 IF PERIOD = NO-PERIODS PERFORM 759-CB1-BUDGET THRU 759-EXIT
4879 240000 VARYING PERIOD FROM 1 BY 1 UNTIL PERIOD > NO-PERIODS,
4880 240010 PERFORM 226-TOTAL-ROUTINE.
4881 240020 ADD 1 TO COL.
4882 240030 757-EXIT. EXIT.
4883
4884
4885 240050 759-CB1-BUDGET.
4886 240060 ADD AC-PAY-PYMTS (PERIOD) TO ROW-TOTAL.
4887 240070 759-EXIT. EXIT.
4888
4889
4890 240090 761-CB1-BUDGET.
4891 240100 IF LINE-COUNT > 46 PERFORM 731-CB1-HEADING.
4892 240110 MOVE OTHER-CD-NAME (2) TO NAME-PRINT.
4893 240120 PERFORM 763-CB1-BUDGET THRU 763-EXIT VARYING PERIOD FROM N
4894 240130 BY 1 UNTIL PERIOD = Y OR PERIOD > NO-PERIODS.
4895 240140 MOVE 1 TO L, PERFORM 216-REPORT-LINE.
4896 240150 761-EXIT. EXIT.
4897
4898
4899 240170 763-CB1-BUDGET.

4900 240180 MOVE OTHER-CD-AMT (2, PERIOD) TO AMT-PR (COL), SUB.
 4901 240190 ADD SUB TO COL-TOTAL (COL). SUBTRACT SUB FROM
 4902 240155 CCL-GRAND-TOTAL (COL).
 4903 240200 IF PERIOD = NO-PERIODS PERFORM 765-CB1-BUDGET THRU 765-EXIT
 4904 240210 VARYING PERIOD FROM 1 BY 1 UNTIL PERIOD > NO-PERIODS.
 4905 240220 PERFORM 226-TOTAL-ROUTINE.
 4906 240230 ADD 1 TO COL.
 4907 240240 763-EXIT. EXIT.
 4908
 4909
 4910 240250 765-CB1-BUDGET.
 4911 240260 ADD OTHER-CD-AMT (2, PERIOD) TO ROW-TOTAL.
 4912 240270 765-EXIT. EXIT.
 4913
 4914
 4915 240290 767-CB1-BUDGET.
 4916 240300 COMPUTE CASH-DIFF = COL-TOTAL (COL) + CASH-BALANCE (PERIOD)
 4917 240310 - CASH-BALANCE (END-PERIOD).
 4918 240320 IF CASH-DIFF < 0, MOVE CASH-DIFF TO FINANCING (PERIOD).
 4919 240330 IF CASH-DIFF NOT < 0, ADD CASH-DIFF TO
 4920 240340 CASH-BALANCE (END-PERIOD).
 4921 240350 ADD 1 TO COL. ADD 1 TO END-PERIOD.
 4922 240360 767-EXIT. EXIT.
 4923
 4924
 4925 240380 769-CB1-BUDGET.
 4926 240390 MOVE CASH-BALANCE (PERIOD) TO AMT-PR (COL).
 4927 240400 IF PERIOD = NO-PERIODS MOVE CASH-BALANCE (1) TO TOTAL-PRINT.
 4928 240410 ADD 1 TO COL.
 4929 240420 769-EXIT. EXIT.
 4930
 4931
 4932 240440 771-CB1-BUDGET.
 4933 240450 MOVE CASH-BALANCE (PERIOD) TO AMT-PR (COL).
 4934 240460 IF PERIOD = NO-PERIODS MOVE CASH-BALANCE (END-PERIOD) TO
 4935 240470 TOTAL-PRINT.
 4936 240480 ADD 1 TO COL.
 4937 240490 771-EXIT. EXIT.
 4938
 4939
 4940 240500 773-CB1-BUDGET.
 4941 240510 IF FINANCING (PERIOD) = 0, MOVE ' NIL ' TO
 4942 240511 RULING (SEC, COL), ADD 1 TO COL, GO TO 773-EXIT.
 4943 240520 MOVE FINANCING (PERIOD) TO AMT-PR (COL).
 4944 240521 MOVE ' \$ ' TO RULING (SEC, COL).
 4945 240523 ADD 1 TO COL.
 4946 240525 773-EXIT. EXIT.
 4947
 4948
 4949 240527 774-CB1-BUDGET.
 4950 240530 IF PERIOD = NO-PERIODS PERFORM 775-CB1-BUDGET THRU 775-EXIT
 4951 240540 VARYING PERIOD FROM 1 BY 1 UNTIL PERIOD > NO-PERIODS,
 4952 240550 MOVE ROW-TOTAL TO TOTAL-PRINT.
 4953 240602 IF PERIOD > NO-PERIODS AND ROW-TOTAL > 0, MOVE
 4954 240603 ' \$ ' TO TOTAL-RULE-PR (SEC).
 4955 240604 IF PERIOD > NO-PERIODS AND ROW-TOTAL = 0, MOVE
 4956 240605 ' ' NIL ' TO TOTAL-RULE-PR (SEC).

4957 240606 774-EXIT. EXIT.
 4958
 4959
 4960 240607 775-CB1-BUDGET.
 4961 240608 ADD FINANCING (PERIOD) TO ROW-TOTAL.
 4962 240610 775-EXIT. EXIT.
 4963
 4964
 4965 240620 780-INDEX.
 4966 240630 PERFORM 782-INDEX-HEAD THRU 782-EXIT.
 4967 240640 PERFORM 785-INDEX THRU 786-EXIT VARYING N FROM 1 BY 1 UNTIL
 4968 240650 N > REPRTS.
 4969 240660 780-EXIT. EXIT.
 4970
 4971
 4972 240670 782-INDEX-HEAD.
 4973 240680 MOVE SPACES TO BUDGET-NAME-PRINT.
 4974 240690 MOVE ' REPORT INDEX' TO BUDGET-NAME-PRINT.
 4975 240700 WRITE PRINT-LINE FROM HEADING-LINE-2 AFTER ADVANCING
 4976 240710 TO-TOP-OF-PAGE. MOVE SPACES TO PRINT-LINE, SCH-LINE.
 4977 240720 MOVE '1ST REPORT OF SET' TO SCH-PG.
 4978 240730 WRITE PRINT-LINE FROM SCH-LINE AFTER ADVANCING 5 LINES.
 4979 240750 MOVE SPACES TO PRINT-LINE, SCH-LINE.
 4980 240760 MOVE ' SCHEDULE' TO SCHNO.
 4981 240765 MOVE ' APPEARS ON' TO SCH-PG.
 4982 240770 WRITE PRINT-LINE FROM SCH-LINE AFTER ADVANCING 1 LINES.
 4983 240780 MOVE SPACES TO PRINT-LINE, SCH-LINE.
 4984 240790 MOVE ' NUMBER' TO SCHNO,
 4985 240795 MOVE ' REPORT SET' TO
 4986 240800 SCH-TITLE-PR, MOVE ' PAGE #' TO SCH-PG.
 4987 240900 WRITE PRINT-LINE FROM SCH-LINE AFTER ADVANCING 1 LINES.
 4988 241000 MOVE SPACES TO PRINT-LINE, SCH-LINE.
 4989 241010 MOVE ' -----' TO SCHNO,
 4990 241015 MOVE ' -----' TO
 4991 241020 SCH-PG, MOVE '-----'
 4992 241030 TO SCH-TITLE-PR.
 4993 241040 WRITE PRINT-LINE FROM SCH-LINE AFTER ADVANCING 1 LINES.
 4994 241050 MOVE SPACES TO PRINT-LINE, SCH-LINE.
 4995 241060 MOVE 0 TO LINE-COUNT.
 4996 241070 782-EXIT. EXIT.
 4997
 4998
 4999 241080 785-INDEX.
 5000 241090 MOVE SCH-NO (N) TO SCH-NO-PR. MOVE HEAD (N) TO SCH-TITLE-PR.
 5001 241100 IF SH (N) = 0, MOVE 2 TO L, GO TO 786-INDEX.
 5002 241110 WRITE PRINT-LINE FROM SCH-LINE AFTER ADVANCING 2 LINES.
 5003 241120 MOVE SPACES TO PRINT-LINE, SCH-LINE. ADD 2 TO LINE-COUNT.
 5004 241130 MOVE SUB-HEAD (N) TO SCH-TITLE-PR. MOVE 1 TO L.
 5005
 5006
 5007 241160 786-INDEX.
 5008 241170 MOVE INDEX-PG (N) TO SCH-PG-NO.
 5009 241180 WRITE PRINT-LINE FROM SCH-LINE AFTER ADVANCING L LINES.
 5010 241190 MOVE SPACES TO PRINT-LINE, SCH-LINE. ADD L TO LINE-COUNT.
 5011 241195 IF N = REPRTS GO TO 786-EXIT.
 5012 241200 IF LINE-COUNT > 48 PERFORM 782-INDEX-HEAD THRU 782-EXIT.
 5013 241210 786-EXIT. EXIT.

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15014
15015
15016 800010 800-ERROR-ROUTINE.
15017 800020 MOVE 'CHECK FOR NON-NUMERIC DATA III' TO F.
15018 800030 MOVE SALES-DETAIL-CARD TO CARD-PRINT.
15019 800040 WRITE PRINT-LINE FROM ERROR-MESSAGE AFTER ADVANCING
15020 800050 TO-TOP-OF-PAGE. GO TO WIND-UP-PROCEDURE.
15021
15022
15023 800060 810-ERROR-ROUTINE.
15024 800080 MOVE 'REQUIRE LEVEL 2 SALES SEGMENTS III' TO F.
15025 800090 MOVE FIXED-COST-DETAIL-CARD TO CARD-PRINT.
15026 800100 WRITE PRINT-LINE FROM ERROR-MESSAGE AFTER ADVANCING
15027 800105 TO-TOP-OF-PAGE. GO TO WIND-UP-PROCEDURE.
15028
15029
15030 900010 900-ERROR-ROUTINE.
15031 900020 MOVE SALES-DETAIL-CARD TO CARD-PRINT.
15032 900030 WRITE PRINT-LINE FROM ERROR-MESSAGE AFTER ADVANCING
15033 900035 TO-TOP-OF-PAGE. GO TO WIND-UP-PROCEDURE.
15034
15035
15036 900040 910-ERROR-ROUTINE.
15037 900050 MOVE ' ON SIZE ERROR III' TO F.
15038 900060 MOVE REQUIRED-RM-CARD TO CARD-PRINT.
15039 900070 WRITE PRINT-LINE FROM ERROR-MESSAGE AFTER ADVANCING
15040 900080 TO-TOP-OF-PAGE. GO TO WIND-UP-PROCEDURE.
15041
15042
15043 900090 920-ERROR-ROUTINE.
15044 900100 MOVE PRODUCTION-DEPT-NAME (PROD-DEPT-NO) TO
15045 900110 DEPT-NAME-PR.
15046 900120 MOVE SEMI-FC-NO TO STEP-COST-NO-PR.
15047 900130 WRITE PRINT-LINE FROM STEP-COST-ERROR AFTER ADVANCING
15048 900135 2 LINES.
15049 900140 GO TO WIND-UP-PROCEDURE.
15050
15051
15052 900150 930-ERROR-ROUTINE.
15053 900160 MOVE SERVICE-DEPT-NAME (DEPT-NO) TO DEPT-NAME-PR.
15054 900170 MOVE 0 TO STEP-COST-NO-PR.
15055 900180 WRITE PRINT-LINE FROM STEP-COST-ERROR AFTER ADVANCING
15056 900190 2 LINES.
15057 900200 GO TO WIND-UP-PROCEDURE.
15058
15059
15060 900400 WIND-UP-PROCEDURE.
15061 900410 CLOSE BUDGET-DATA-FILE.
15062 900420 BUDGET-PRINTOUT-FILE.
15063 900430 CONTRIBUTION-DATA-FILE.
15064 900440 STOP RUN.

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APPENDIX C

EXAMPLE BUDGET SCHEDULES

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SCHEDULE SC-1
HYPOTHETICAL CORPORATION
STANDARD COST SHEET

DATE PREPARED: 3/06/77

REPORT PAGE 1

PRODUCT: RED

	<u>QUANTITY</u>	<u>UNIT COST</u>	<u>MATERIALS</u>	<u>LABOR</u>	<u>OVERHEAD</u>	<u>TOTAL</u>
MACHINERY DEPARTMENT						
WOOD	4.000	\$ 2.000	\$ 8.0000			
LABOR	2.000	5.000		\$ 10.0000		
OVERHEAD	8.000	.500			\$ 4.0000	
DEPARTMENT TOTAL			<u>\$ 8.0000</u>	<u>\$ 10.0000</u>	<u>\$ 4.0000</u>	<u>\$ 22.0000</u>
GRINDING DEPARTMENT						
KIT	1.000	\$ 1.500	\$ 1.5000			
LABOR	3.000	4.000		\$ 12.0000		
OVERHEAD	3.000	1.000			\$ 3.0000	
DEPARTMENT TOTAL			<u>\$ 1.5000</u>	<u>\$ 12.0000</u>	<u>\$ 3.0000</u>	<u>\$ 16.5000</u>
ASSEMBLY DEPARTMENT						
CARTON	1.000	\$ 3.000	\$ 3.0000			
CIL PAPER	5.000	1.000	5.0000			
STYROFOAM	4.000	1.000	4.0000			
LABOR	5.000	3.000		\$ 15.0000		
OVERHEAD	5.000	1.700			\$ 8.5000	
DEPARTMENT TOTAL			<u>\$ 12.0000</u>	<u>\$ 15.0000</u>	<u>\$ 8.5000</u>	<u>\$ 35.5000</u>
TOTAL PRODUCT COST			<u>\$ 21.5000</u>	<u>\$ 37.0000</u>	<u>\$ 15.5000</u>	<u>\$ 74.0000</u>

SCHEDULE SB-1
 HYPOTHETICAL CORPORATION
 SALES BUDGET

DATE PREPARED: 3/06/77

UNITS OF PRODUCT

REPORT PAGE 1

PRODUCT	JAN. 1977	FEB. 1977	MARCH 1977	APRIL 1977	MAY 1977	JUNE 1977
RED	3,200	3,300	3,000	2,950	3,300	3,400
BLUE	900	1,000	950	750	800	900
GREEN	5,325	5,200	5,100	5,400	5,350	5,005

SCHEDULE SB-1
 HYPOTHETICAL CORPORATION
 SALES BUDGET

DATE PREPARED: 3/06/77

UNITS OF PRODUCT

REPORT PAGE 2

PRODUCT	JULY 1977	AUG. 1977	SEPT. 1977	OCT. 1977	NOV. 1977	DEC. 1977	TOTAL
RED	4,300	4,700	3,400	3,280	4,885	5,200	44,915
BLUE	1,200	1,400	1,300	900	1,000	1,200	12,300
GREEN	6,600	6,200	5,300	6,900	6,400	4,930	67,710

SCHEDULE SB-2
 HYPOTHETICAL CORPORATION
 SALES BUDGET

DATE PREPARED: 3/06/77

SALES REVENUE DOLLARS

REPORT PAGE 1

PRODUCT	JAN. 1977	FEB. 1977	MARCH 1977	APRIL 1977	MAY 1977	JUNE 1977
RED	\$ 384,000	\$ 396,000	\$ 360,000	\$ 354,000	\$ 396,000	\$ 408,000
BLUE	81,000	90,000	85,500	67,500	72,000	81,000
GREEN	532,500	520,000	510,000	540,000	535,000	500,500
TOTAL	\$ 997,500	\$1,006,000	\$ 955,500	\$ 961,500	\$1,003,000	\$ 989,500

SCHEDULE SB-2
 HYPOTHETICAL CORPORATION
 SALES BUDGET

DATE PREPARED: 3/06/77

SALES REVENUE DOLLARS

REPORT PAGE 2

PRODUCT	JULY 1977	AUG. 1977	SEPT. 1977	OCT. 1977	NOV. 1977	DEC. 1977	TOTAL
RED	\$ 516,000	\$ 564,000	\$ 408,000	\$ 393,600	\$ 586,200	\$ 624,000	\$ 5,389,800
BLUE	108,000	126,000	117,000	81,000	90,000	108,000	1,107,000
GREEN	660,000	620,000	530,000	690,000	640,000	493,000	6,771,000
TOTAL	\$1,284,000	\$1,310,000	\$1,055,000	\$1,164,600	\$1,316,200	\$1,225,000	\$ 13,267,800

SCHEDULE SB-3
HYPOTHETICAL CORPORATION
SALES BUDGET

DATE PREPARED: 3/06/77

SALES REVENUE DOLLARS

REPORT PAGE 1

LEVEL 2 SALES SEGMENT	JAN. 1977	FEB. 1977	MARCH 1977	APRIL 1977	MAY 1977	JUNE 1977
EASTERN TERRITORY	\$ 383,000	\$ 387,000	\$ 338,750	\$ 353,750	\$ 393,000	\$ 375,000
WESTERN TERRITORY	198,000	198,000	198,000	198,000	198,000	198,000
SOUTHERN TERRITORY	416,500	421,000	418,750	409,750	412,000	416,500
TOTAL SALES	\$ 997,500	\$1,006,000	\$ 955,500	\$ 961,500	\$1,003,000	\$ 989,500

SCHEDULE SB-3
HYPOTHETICAL CORPORATION
SALES BUDGET

DATE PREPARED: 3/06/77

SALES REVENUE DOLLARS

REPORT PAGE 2

LEVEL 2 SALES SEGMENT	JULY 1977	AUG. 1977	SEPT. 1977	OCT. 1977	NOV. 1977	DEC. 1977	TOTAL
EASTERN TERRITORY	\$ 686,000	\$ 705,000	\$ 505,000	\$ 546,400	\$ 724,200	\$ 625,400	\$ 6,022,500
WESTERN TERRITORY	280,000	247,500	263,500	351,650	232,250	201,850	2,764,750
SOUTHERN TERRITORY	318,000	357,500	286,500	266,550	359,750	397,750	4,480,550
TOTAL SALES	\$1,284,000	\$1,310,000	\$1,055,000	\$1,164,600	\$1,316,200	\$1,225,000	\$ 13,267,800

SCHEDULE SB-4
HYPOTHETICAL CORPORATION
SALES BUDGET

DATE PREPARED: 3/06/77

SALES REVENUE DOLLARS

REPORT PAGE 1

<u>LEVEL 3 SALES SEGMENT</u>	<u>JAN. 1977</u>	<u>FEB. 1977</u>	<u>MARCH 1977</u>	<u>APRIL 1977</u>	<u>MAY 1977</u>	<u>JUNE 1977</u>
SAM SNEAD	\$ 272,000	\$ 280,000	\$ 183,500	\$ 213,500	\$ 292,000	\$ 254,000
LAWRENCE WELK	111,000	107,000	155,250	140,250	101,000	121,000
LEVEL 2 TOTAL	<u>\$ 383,000</u>	<u>\$ 387,000</u>	<u>\$ 338,750</u>	<u>\$ 353,750</u>	<u>\$ 393,000</u>	<u>\$ 375,000</u>
WILLY MAYS	99,000	70,500	103,250	121,400	86,250	123,850
GARY GUMBO	99,000	127,500	94,750	76,600	111,750	74,150
LEVEL 2 TOTAL	<u>\$ 198,000</u>	<u>\$ 198,000</u>	<u>\$ 198,000</u>	<u>\$ 198,000</u>	<u>\$ 198,000</u>	<u>\$ 198,000</u>
JIM JONES	142,000	145,000	138,000	119,400	140,200	117,400
PAUL HARVEY	108,000	98,000	160,000	110,400	115,800	131,000
O. J. SIMPSON	166,500	178,000	120,750	179,950	156,000	168,100
LEVEL 2 TOTAL	<u>\$ 416,500</u>	<u>\$ 421,000</u>	<u>\$ 418,750</u>	<u>\$ 409,750</u>	<u>\$ 412,000</u>	<u>\$ 416,500</u>
TOTAL SALES	<u>\$ 997,500</u>	<u>\$1,006,000</u>	<u>\$ 955,500</u>	<u>\$ 961,500</u>	<u>\$1,003,000</u>	<u>\$ 989,500</u>

SCHEDULE SB-4
HYPOTHETICAL CORPORATION
SALES BUDGET

DATE PREPARED: 3/06/77

SALES REVENUE DOLLARS

REPORT PAGE 2

<u>LEVEL 3 SALES SEGMENT</u>	<u>JULY 1977</u>	<u>AUG. 1977</u>	<u>SEPT. 1977</u>	<u>OCT. 1977</u>	<u>NOV. 1977</u>	<u>DEC. 1977</u>	<u>TOTAL</u>
SAM SNEAD	\$ 544,000	\$ 560,000	\$ 367,000	\$ 427,000	\$ 584,000	\$ 508,000	\$ 4,485,000
LAWRENCE WELK	142,000	145,000	138,000	119,400	140,200	117,400	1,537,500
LEVEL 2 TOTAL	<u>\$ 686,000</u>	<u>\$ 705,000</u>	<u>\$ 505,000</u>	<u>\$ 546,400</u>	<u>\$ 724,200</u>	<u>\$ 625,400</u>	<u>\$ 6,022,500</u>
WILLY MAYS	136,000	107,000	135,250	180,250	131,000	78,000	1,371,750
GARY GUMBO	144,000	140,500	128,250	171,400	101,250	123,850	1,393,000
LEVEL 2 TOTAL	<u>\$ 280,000</u>	<u>\$ 247,500</u>	<u>\$ 263,500</u>	<u>\$ 351,650</u>	<u>\$ 232,250</u>	<u>\$ 201,850</u>	<u>\$ 2,764,750</u>
JIM JONES	121,500	108,000	95,750	129,950	141,000	168,100	1,566,300
PAUL HARVEY	97,500	122,000	96,000	60,000	107,000	155,500	1,361,200
O. J. SIMPSON	99,000	127,500	94,750	75,600	111,750	74,150	1,553,050
LEVEL 2 TOTAL	<u>\$ 318,000</u>	<u>\$ 357,500</u>	<u>\$ 286,500</u>	<u>\$ 266,550</u>	<u>\$ 359,750</u>	<u>\$ 397,750</u>	<u>\$ 4,480,550</u>
TOTAL SALES	<u>\$1,284,000</u>	<u>\$1,310,000</u>	<u>\$1,055,000</u>	<u>\$1,164,600</u>	<u>\$1,316,200</u>	<u>\$1,225,000</u>	<u>\$ 13,267,800</u>

SCHEDULE PRB-1
 HYPOTHETICAL CORPORATION
 PRODUCTION BUDGET

DATE PREPARED: 3/06/77

SUMMARY

REPORT PAGE 1

PRODUCT	JAN. 1977	FEB. 1977	MARCH 1977	APRIL 1977	MAY 1977	JUNE 1977
RED	3,400	3,500	3,200	3,150	3,500	3,600
BLUE	1,100	1,200	1,150	950	1,000	1,100
GREEN	5,825	5,400	5,300	5,600	5,550	5,205

SCHEDULE PRB-1
 HYPOTHETICAL CORPORATION
 PRODUCTION BUDGET

DATE PREPARED: 3/06/77

SUMMARY

REPORT PAGE 2

PRODUCT	JULY 1977	AUG. 1977	SEPT. 1977	OCT. 1977	NOV. 1977	DEC. 1977	TOTAL
RED	4,500	4,900	3,600	3,480	5,085	5,400	47,315
BLUE	1,400	1,600	1,500	1,100	1,200	1,400	14,700
GREEN	6,800	6,400	5,500	7,100	6,600	5,130	70,410

SCHEDULE PRB-2
HYPOTHETICAL CORPORATION
PRODUCTION BUDGET

DATE PREPARED: 3/06/77

DETAILED CALCULATIONS

REPORT PAGE 1

PRODUCT: RED

	JAN. 1977	FEB. 1977	MARCH 1977	APRIL 1977	MAY 1977	JUNE 1977
PROJECTED-SALES	3,200	3,300	3,000	2,950	3,300	3,400
ADD ENDING INVENTORY	1,200	1,400	1,600	1,800	2,000	2,200
TOTAL UNITS REQUIRED	4,400	4,700	4,600	4,750	5,300	5,600
LESS BEG. INVENTORY	1,000	1,200	1,400	1,600	1,800	2,000
PLANNED PRODUCTION	3,400	3,500	3,200	3,150	3,500	3,600

PRODUCT: RED

	JULY 1977	AUG. 1977	SEPT. 1977	OCT. 1977	NOV. 1977	DEC. 1977	TOTAL
PROJECTED-SALES	4,300	4,700	3,400	3,280	4,885	5,200	44,915
ADD ENDING INVENTORY	2,400	2,600	2,800	3,000	3,200	3,400	3,400
TOTAL UNITS REQUIRED	6,700	7,300	6,200	6,280	8,085	8,600	48,315
LESS BEG. INVENTORY	2,200	2,400	2,600	2,800	3,000	3,200	1,000
PLANNED PRODUCTION	4,500	4,900	3,600	3,480	5,085	5,400	47,315

SCHEDULE MAT-1
HYPOTHETICAL CORPORATION
MATERIALS BUDGET

DATE PREPARED: 3/06/77

UNIT REQUIREMENTS

REPORT PAGE 1

RAW MATERIAL	JAN. 1977	FEB. 1977	MARCH 1977	APRIL 1977	MAY 1977	JUNE 1977
WOOD COSTING UNIT: FOOT	15,800	16,400	15,100	14,500	16,000	16,600
KIT COSTING UNIT: KIT	3,400	3,500	3,200	3,150	3,500	3,600
CARTON COSTING UNIT: PIECE	3,400	3,500	3,200	3,150	3,500	3,600
OIL PAPER COSTING UNIT: FOOT	19,750	20,500	18,875	18,125	20,000	20,750
STYROFOAM COSTING UNIT: SQ.FT.	13,600	14,000	12,800	12,600	14,000	14,400
BAMBOO COSTING UNIT: FOOT	6,600	7,200	6,900	5,700	6,000	6,600
DELUXE KIT COSTING UNIT: PIECE	1,100	1,200	1,150	950	1,000	1,100
STEEL COSTING UNIT: LB.	29,125	27,000	26,500	28,000	27,750	26,025

SCHEDULE MAT-1
HYPOTHETICAL CORPORATION
MATERIALS BUDGET

DATE PREPARED: 3/06/77

UNIT REQUIREMENTS

REPORT PAGE 2

RAW MATERIAL	JULY 1977	AUG. 1977	SEPT. 1977	OCT. 1977	NOV. 1977	DEC. 1977	TOTAL
WOOD COSTING UNIT: FOOT	20,800	22,800	17,400	16,120	22,740	24,400	218,660
KIT COSTING UNIT: KIT	4,500	4,900	3,600	3,480	5,085	5,400	47,315
CARTON COSTING UNIT: PIECE	4,500	4,900	3,600	3,480	5,085	5,400	47,315
OIL PAPER COSTING UNIT: FOOT	26,000	28,500	21,750	20,150	28,425	30,500	273,325
STYROFOAM COSTING UNIT: SQ.FT.	18,000	19,600	14,400	13,920	20,340	21,600	189,260
BAMBOO COSTING UNIT: FOOT	8,400	9,600	9,000	6,600	7,200	8,400	88,200
DELUXE KIT COSTING UNIT: PIECE	1,400	1,600	1,500	1,100	1,200	1,400	14,700
STEEL COSTING UNIT: LB.	34,000	32,000	27,500	35,500	33,000	25,650	352,050

SCHEDULE MAT-2
HYPOTHETICAL CORPORATION
MATERIALS BUDGET

DATE PREPARED: 3/06/77	COST OF MATERIALS USED IN PRODUCTION						REPORT PAGE 1
<u>RAW MATERIAL</u>	<u>JAN. 1977</u>	<u>FEB. 1977</u>	<u>MARCH 1977</u>	<u>APRIL 1977</u>	<u>MAY 1977</u>	<u>JUNE 1977</u>	
WOOD \$2.000 PER FOCT	\$ 31,600	\$ 32,800	\$ 30,200	\$ 29,000	\$ 32,000	\$ 33,200	
KIT \$1.500 PER KIT	5,100	5,250	4,800	4,725	5,250	5,400	
CARTON \$3.000 PER PIECE	10,200	10,500	9,600	9,450	10,500	10,800	
OIL PAPER \$1.000 PER FOOT	19,750	20,500	18,875	18,125	20,000	20,750	
STYROFCAM \$1.000 PER SQ.FT.	13,600	14,000	12,800	12,600	14,000	14,400	
BAMBOO \$.175 PER FCCT	1,155	1,260	1,208	998	1,050	1,155	
DELUXE KIT \$6.550 PER PIECE	7,205	7,860	7,533	6,223	6,550	7,205	
STEEL \$6.000 PER LB.	174,750	162,000	159,000	168,000	166,500	156,150	
TOTAL	\$ 263,360	\$ 254,170	\$ 244,016	\$ 249,121	\$ 255,850	\$ 249,060	

SCHEDULE MAT-2
 HYPOTHETICAL CORPORATION
 MATERIALS BUDGET

DATE PREPARED: 3/06/77

COST OF MATERIALS USED IN PRODUCTION

REPORT PAGE 2

RAW MATERIAL	JULY 1977	AUG. 1977	SEPT. 1977	OCT. 1977	NOV. 1977	DEC. 1977	TOTAL
WOOD \$2.000 PER FOOT	\$ 41,600	\$ 45,600	\$ 34,800	\$ 32,240	\$ 45,480	\$ 48,800	\$ 437,320
KIT \$1.500 PER KIT	6,750	7,350	5,400	5,220	7,628	8,100	70,973
CARTON \$3.000 PER PIECE	13,500	14,700	10,800	10,440	15,255	16,200	141,945
OIL PAPER \$1.000 PER FOOT	26,000	28,500	21,750	20,150	28,425	30,500	273,325
STYROFOAM \$1.000 PER SQ.FT.	18,000	19,600	14,400	13,920	20,340	21,600	189,260
BAMBOO \$.175 PER FOOT	1,470	1,680	1,575	1,155	1,260	1,470	15,436
DELUXE KIT \$6.550 PER PIECE	9,170	10,480	9,825	7,205	7,860	9,170	96,286
STEEL \$6.000 PER LB.	204,000	192,000	165,000	213,000	198,000	153,900	2,112,300
TOTAL	\$ 320,490	\$ 319,910	\$ 263,550	\$ 303,330	\$ 324,248	\$ 289,740	\$ 3,336,845

SCHEDULE MAT-3
 HYPOTHETICAL CORPORATION
 RAW MATERIALS PURCHASE BUDGET

DATE PREPARED: 3/06/77

UNIT REQUIREMENTS

REPORT PAGE 1

RAW MATERIAL	JAN. 1977	FEB. 1977	MARCH 1977	APRIL 1977	MAY 1977	JUNE 1977
WOOD PURCHASING UNIT: YARD	5,267	5,467	5,033	4,833	5,333	5,533
KIT PURCHASING UNIT: KIT	3,400	3,500	3,200	3,150	3,500	3,600
CARTON PURCHASING UNIT: DOZ.	283	292	267	263	292	300
CIL PAPER PURCHASING UNIT: YARD	6,583	6,833	6,292	6,042	6,667	6,917
STYROFOAM PURCHASING UNIT: SQ.YD.	1,511	1,556	1,422	1,400	1,556	1,600
BAMBOO PURCHASING UNIT: YARD	2,200	2,400	2,300	1,900	2,000	2,200
DELLXE KIT PURCHASING UNIT: PIECE	1,100	1,200	1,150	950	1,000	1,100
STEEL PURCHASING UNIT: LB.	29,225	27,500	27,000	28,500	28,250	26,525

SCHEDULE MAT-3
HYPOTHETICAL CORPORATION
RAW MATERIALS PURCHASE BUDGET

DATE PREPARED: 3/06/77

UNIT REQUIREMENTS

REPORT PAGE 2

RAW MATERIAL	JULY 1977	AUG. 1977	SEPT. 1977	OCT. 1977	NOV. 1977	DEC. 1977	TOTAL
WOOD PURCHASING UNIT: YARD	6,933	7,600	5,800	5,373	7,580	8,133	72,885
KIT PURCHASING UNIT: KIT	4,500	4,900	3,600	3,480	5,085	5,400	47,315
CARTON PURCHASING UNIT: DOZ.	375	408	300	290	424	450	3,944
OIL PAPER PURCHASING UNIT: YARD	8,667	9,500	7,250	6,717	9,475	10,167	91,110
STYROFCAM PURCHASING UNIT: SQ.YD.	2,000	2,178	1,600	1,547	2,260	2,400	21,030
BAMBOO PURCHASING UNIT: YARD	2,800	3,200	3,000	2,200	2,400	2,800	29,400
DELUXE KIT PURCHASING UNIT: PIECE	1,400	1,600	1,500	1,100	1,200	1,400	14,700
STEEL PURCHASING UNIT: LB.	34,500	32,500	28,000	36,000	33,500	26,150	357,650

SCHEDULE MAT-4
 HYPOTHETICAL CORPORATION
 RAW MATERIALS PURCHASE BUDGET

DATE PREPARED: 3/06/77

COST OF MATERIALS PURCHASED

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RAW MATERIAL	JAN. 1977	FEB. 1977	MARCH 1977	APRIL 1977	MAY 1977	JUNE 1977
WOOD \$6.000 PER YARD	31,602	32,802	30,198	28,998	31,998	33,198
KIT \$1.500 PER KIT	5,100	5,250	4,800	4,725	5,250	5,400
CARTON \$36.000 PER DOZ.	10,188	10,512	9,612	9,468	10,512	10,800
OIL PAPER \$3.000 PER YARD	19,749	20,499	18,876	18,126	20,001	20,751
STYROFOAM \$9.000 PER SQ.YD.	13,599	14,004	12,798	12,600	14,004	14,400
BAMBOO \$.520 PER YARD	1,144	1,248	1,196	988	1,040	1,144
DELUXE KIT \$6.550 PER PIECE	7,205	7,860	7,533	6,223	6,550	7,205
STEEL \$6.000 PER LB.	175,350	165,000	162,000	171,000	169,500	159,150
TOTAL	<u>\$ 263,937</u>	<u>\$ 257,175</u>	<u>\$ 247,013</u>	<u>\$ 252,128</u>	<u>\$ 258,855</u>	<u>\$ 252,048</u>

SCHEDULE MAT-4
 HYPOTHETICAL CORPORATION
 RAW MATERIALS PURCHASE BUDGET

DATE PREPARED: 3/06/77

COST OF MATERIALS PURCHASED

REPORT PAGE 2

RAW MATERIAL	JULY 1977	AUG. 1977	SEPT. 1977	OCT. 1977	NOV. 1977	DEC. 1977	TOTAL
WOOD \$6.000 PER YARD	41,598	45,600	34,800	32,238	45,480	48,798	437,310
KIT \$1.500 PER KIT	6,750	7,350	5,400	5,220	7,628	8,100	70,972
CARTON \$36.000 PER DOZ.	13,500	14,688	10,800	10,440	15,264	16,200	141,984
CIL PAPER \$3.000 PER YARD	26,001	28,500	21,750	20,151	28,425	30,501	273,330
STYROFOAM \$9.000 PER SQ.YD.	18,000	19,602	14,400	13,923	20,340	21,600	189,270
BAMBOO \$.520 PER YARD	1,456	1,664	1,560	1,144	1,248	1,456	15,288
DELUXE KIT \$6.550 PER PIECE	9,170	10,480	9,825	7,205	7,860	9,170	96,284
STEEL \$6.000 PER LB.	207,000	195,000	168,000	216,000	201,000	156,900	2,145,900
TOTAL	\$ 323,475	\$ 322,884	\$ 266,535	\$ 306,321	\$ 327,245	\$ 292,725	\$ 3,370,341

SCHEDULE LAB-1
HYPOTHETICAL CORPORATION
DIRECT LABOR BUDGET

DATE PREPARED: 3/06/77

LABOR HOURS REQUIRED

REPORT PAGE 1

DEPARTMENT	JAN. 1977	FEB. 1977	MARCH 1977	APRIL 1977	MAY 1977	JUNE 1977
MACHINERY DEPARTMENT	27,850	27,100	26,038	26,188	26,900	26,390
GRINDING DEPARTMENT	13,775	14,400	13,338	12,538	13,750	14,375
ASSEMBLY DEPARTMENT	19,200	19,900	18,300	17,650	19,500	20,200
TOTAL	60,825	61,400	57,676	56,376	60,150	60,965

SCHEDULE LAB-1
HYPOTHETICAL CORPORATION
DIRECT LABOR BUDGET

DATE PREPARED: 3/06/77

LABOR HOURS REQUIRED

REPORT PAGE 2

DEPARTMENT	JULY 1977	AUG. 1977	SEPT. 1977	OCT. 1977	NOV. 1977	DEC. 1977	TOTAL
MACHINERY DEPARTMENT	33,950	34,200	28,575	31,835	33,870	30,740	353,636
GRINDING DEPARTMENT	18,050	19,900	15,675	14,015	19,155	20,750	189,721
ASSEMBLY DEPARTMENT	25,300	27,700	21,000	19,600	27,825	29,800	265,975
TOTAL	77,300	81,800	65,250	65,450	80,850	81,290	809,332

SCHEDULE LAB-2
HYPOTHETICAL CORPORATION
DIRECT LABOR COST BUDGET

DATE PREPARED: 3/06/77

REPORT PAGE 1

DEPARTMENT	JAN. 1977	FEB. 1977	MARCH 1977	APRIL 1977	MAY 1977	JUNE 1977
MACHINERY DEPARTMENT	\$ 139,250	\$ 135,500	\$ 130,190	\$ 130,940	\$ 134,500	\$ 131,950
GRINDING DEPARTMENT	55,100	57,600	53,352	50,152	55,000	57,500
ASSEMBLY DEPARTMENT	57,600	59,700	54,900	52,950	58,500	60,600
TOTAL	\$ 251,950	\$ 252,800	\$ 238,442	\$ 234,042	\$ 248,000	\$ 250,050

SCHEDULE LAB-2
HYPOTHETICAL CORPORATION
DIRECT LABOR COST BUDGET

DATE PREPARED: 3/06/77

REPORT PAGE 2

DEPARTMENT	JULY 1977	AUG. 1977	SEPT. 1977	OCT. 1977	NOV. 1977	DEC. 1977	TOTAL
MACHINERY DEPARTMENT	\$ 169,750	\$ 171,000	\$ 142,875	\$ 159,175	\$ 169,350	\$ 153,700	\$ 1,768,180
GRINDING DEPARTMENT	72,200	79,600	62,700	56,060	76,620	83,000	758,884
ASSEMBLY DEPARTMENT	75,900	83,100	63,000	58,800	83,475	89,400	797,925
TOTAL	\$ 317,850	\$ 333,700	\$ 268,575	\$ 274,035	\$ 329,445	\$ 326,100	\$ 3,324,989

SCHEDULE OVH-1
 HYPOTHETICAL CORPORATION
 FACTORY OVERHEAD EXPENSE BUDGET

DATE PREPARED: 3/06/77

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	JAN. 1977	FEB. 1977	MARCH 1977	APRIL 1977	MAY 1977	JUNE 1977
PRODUCTION DEPARTMENTS:						
MACHINERY DEPARTMENT	48,625	47,300	45,400	45,900	47,250	46,325
GRINDING DEPARTMENT	16,975	17,600	16,538	15,738	16,950	17,575
ASSEMBLY DEPARTMENT	33,965	35,155	32,435	31,330	34,475	35,665
SUBTOTAL	\$ 99,565	\$ 100,055	\$ 94,373	\$ 92,968	\$ 98,675	\$ 99,565
SERVICE DEPARTMENTS:						
VP OF PRODUCTION	2,000	2,000	2,000	2,000	2,000	2,000
PLANT MANAGER	1,000	1,000	1,000	1,000	1,000	1,000
PURCHASING DEPT.	2,500	2,500	2,500	2,500	2,500	2,500
POWER AND HEAT	18,713	18,580	18,390	18,440	18,575	18,483
MAINTENANCE DEPT.	33,559	33,671	31,739	31,347	33,286	33,538
SUBTOTAL	\$ 57,772	\$ 57,751	\$ 55,629	\$ 55,287	\$ 57,361	\$ 57,521
DEDUCT: SERVICE DEPARTMENT OVERHEAD TRANSFERRED TO PRODUCING DEPARTMENTS	39,172	39,151	37,029	36,687	38,761	38,921
TOTAL FACTORY OVERHEAD	\$ 118,165	\$ 118,655	\$ 112,973	\$ 111,568	\$ 117,275	\$ 118,165

SCHEDULE OVH-1
HYPOTHETICAL CORPORATION
FACTORY OVERHEAD EXPENSE BUDGET

DATE PREPARED: 3/06/77

REPORT PAGE 2

	<u>JULY 1977</u>	<u>AUG. 1977</u>	<u>SEPT. 1977</u>	<u>OCT. 1977</u>	<u>NOV. 1977</u>	<u>DEC. 1977</u>	<u>TOTAL</u>
<u>PRODUCTION DEPARTMENTS:</u>							
MACHINERY DEPARTMENT	59,100	59,500	49,400	55,320	59,640	54,350	618,110
GRINDING DEPARTMENT	22,250	24,100	19,875	17,215	23,355	24,950	233,121
ASSEMBLY DEPARTMENT	44,335	48,415	37,025	34,645	48,628	51,985	468,058
SUBTOTAL	<u>\$ 125,685</u>	<u>\$ 132,015</u>	<u>\$ 106,300</u>	<u>\$ 107,180</u>	<u>\$ 131,623</u>	<u>\$ 131,285</u>	<u>\$ 1,319,289</u>
<u>SERVICE DEPARTMENTS:</u>							
VP OF PRODUCTION	2,000	2,000	2,000	2,000	2,000	2,000	24,000
PLANT MANAGER	1,000	1,000	1,000	1,000	1,000	1,000	12,000
PURCHASING DEPT.	2,500	2,500	2,500	2,500	2,500	2,500	30,000
POWER AND HEAT	19,760	19,800	18,790	19,382	19,814	19,285	228,012
MAINTENANCE DEPT.	42,092	44,171	35,358	36,212	44,206	43,961	443,140
SUBTOTAL	<u>\$ 67,352</u>	<u>\$ 69,471</u>	<u>\$ 59,648</u>	<u>\$ 61,094</u>	<u>\$ 69,520</u>	<u>\$ 68,746</u>	<u>\$ 737,152</u>
DEDUCT: SERVICE DEPARTMENT OVERHEAD TRANSFERRED TO PRODUCING DEPARTMENTS	48,752	50,871	41,048	42,494	50,920	50,146	513,952
TOTAL FACTORY OVERHEAD	<u>\$ 144,285</u>	<u>\$ 150,615</u>	<u>\$ 124,900</u>	<u>\$ 125,780</u>	<u>\$ 150,223</u>	<u>\$ 149,885</u>	<u>\$ 1,542,489</u>

SCHEDULE SC-1
HYPOTHETICAL CORPORATION
CONSTRAINT REPORT

DATE PREPARED: 3/06/77

REPORT PAGE 1

	JAN. 1977	FEB. 1977	MARCH 1977	APRIL 1977	MAY 1977	JUNE 1977
MACHINERY DEPARTMENT						
MACH-HRS						
UNITS USED	94,250	91,600	87,800	88,800	91,500	89,650
UNUSED UNITS						
CONSTRAINT EXCEEDED	19,250-	16,600-	12,800-	13,800-	16,500-	14,650-
DLH						
UNITS USED	27,850	27,100	26,038	26,188	26,900	26,390
UNUSED UNITS						
CONSTRAINT EXCEEDED	7,850-	7,100-	6,038-	6,188-	6,900-	6,390-
GRINDING DEPARTMENT						
DLH						
UNITS USED	13,775	14,400	13,338	12,538	13,750	14,375
UNUSED UNITS						
CONSTRAINT EXCEEDED	3,775-	4,400-	3,338-	2,538-	3,750-	4,375-
ASSEMBLY DEPARTMENT						
DLH						
UNITS USED	19,200	19,900	18,300	17,650	19,500	20,200
UNUSED UNITS	10,800	10,100	11,700	12,350	10,500	9,800
CONSTRAINT EXCEEDED						
POWER AND HEAT						
KW.HR.						
UNITS USED	13,425	13,160	12,780	12,880	13,150	12,965
UNUSED UNITS	36,575	36,840	37,220	37,120	36,850	37,035
CONSTRAINT EXCEEDED						
MAINTENANCE DEPT.						
MAIN.HR.						
UNITS USED	4,637	4,653	4,377	4,321	4,598	4,634
UNUSED UNITS	35,363	35,347	35,623	35,679	35,402	35,366
CONSTRAINT EXCEEDED						

SCHEDULE SC-1
HYPOTHETICAL CORPORATION
CONSTRAINT REPORT

DATE PREPARED: 3/06/77

REPORT PAGE 2

	JULY 1977	AUG. 1977	SEPT. 1977	OCT. 1977	NOV. 1977	DEC. 1977	TOTAL
MACHINERY DEPARTMENT							
MACH-HRS							
UNITS USED	115,200	116,000	95,800	107,640	116,280	105,700	1,200,220
UNUSED UNITS							
CONSTRAINT EXCEEDED	40,200-	41,000-	20,800-	32,640-	41,280-	30,700-	300,220-
DLH							
UNITS USED	33,950	34,200	28,575	31,835	33,870	30,740	353,636
UNUSED UNITS							
CONSTRAINT EXCEEDED	13,950-	14,200-	8,575-	11,835-	13,870-	10,740-	113,636-
GRINDING DEPARTMENT							
DLH							
UNITS USED	18,050	19,900	15,675	14,015	19,155	20,750	189,721
UNUSED UNITS							
CONSTRAINT EXCEEDED	8,050-	9,900-	5,675-	4,015-	9,155-	10,750-	69,721-
ASSEMBLY DEPARTMENT							
DLH							
UNITS USED	25,300	27,700	21,000	19,600	27,825	29,800	265,975
UNUSED UNITS	4,700	2,300	9,000	10,400	2,175	200	94,025
CONSTRAINT EXCEEDED							
POWER AND HEAT							
KW-HR.							
UNITS USED	15,520	15,600	13,580	14,764	15,628	14,570	168,022
UNUSED UNITS	34,480	34,400	36,420	35,236	34,372	35,430	431,978
CONSTRAINT EXCEEDED							
MAINTENANCE DEPT.							
MAIN-HR.							
UNITS USED	5,856	6,153	4,894	5,016	6,158	6,123	61,420
UNUSED UNITS	34,144	33,847	35,106	34,984	33,842	33,877	418,580
CONSTRAINT EXCEEDED							

SCHEDULE CONT-1
HYPOTHETICAL CORPORATION
PROJECTED INCOME STATEMENT

DATE PREPARED: 3/06/77

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	JAN. 1977	FEB. 1977	MARCH 1977	APRIL 1977	MAY 1977	JUNE 1977
SALES	\$ 997,500	\$1,006,000	\$ 955,500	\$ 961,500	\$1,003,000	\$ 989,500
VARIABLE COSTS						
PRODUCTION	\$ 557,050	\$ 564,200	\$ 534,000	\$ 533,300	\$ 559,700	\$ 555,850
MARKETING						
TRANSPORTATION	19,950	20,120	19,110	19,230	20,060	19,790
COMMISSIONS	49,875	50,300	47,777	48,076	50,151	49,476
TOTAL VARIABLE COSTS	\$ 626,875	\$ 634,620	\$ 600,887	\$ 600,606	\$ 629,911	\$ 625,116
VARIABLE MARGIN	\$ 370,625	\$ 371,380	\$ 354,613	\$ 360,894	\$ 373,089	\$ 364,384
FIXED COSTS						
PRODUCTION	\$ 24,625	\$ 24,625	\$ 24,625	\$ 24,625	\$ 24,625	\$ 24,625
MARKETING						
ADMINISTRATION	16,900	16,900	16,900	16,900	16,900	16,900
PRMCTION	25,400	25,600	25,800	26,000	26,200	26,400
RENT	8,300	8,300	8,300	8,300	8,300	8,300
ADMINISTRATION	7,100	7,100	7,100	7,100	7,100	7,100
TOTAL FIXED COSTS	\$ 82,325	\$ 82,525	\$ 82,725	\$ 82,925	\$ 83,125	\$ 83,325
INCOME BEFORE OTHER	\$ 288,300	\$ 288,855	\$ 271,888	\$ 277,969	\$ 289,964	\$ 281,059
ADD: OTHER INCOME	100	100	100	100	100	100
DEDUCT: OTHER EXPENSES	50-	50-	50-	50-	50-	50-
TAXABLE NET INCOME	\$ 288,350	\$ 288,905	\$ 271,938	\$ 278,019	\$ 290,014	\$ 281,109

SCHEDULE CONT-1
 HYPOTHETICAL CORPORATION
 PROJECTED INCOME STATEMENT

DATE PREPARED: 3/06/77

REPORT PAGE 2

	JULY 1977	AUG. 1977	SEPT. 1977	OCT. 1977	NOV. 1977	DEC. 1977	TOTAL
SALES	\$1,284,000	\$1,310,000	\$1,055,000	\$1,164,600	\$1,316,200	\$1,225,000	\$ 13,267,800
VARIABLE COSTS							
PRODUCTION	\$ 720,200	\$ 741,800	\$ 594,600	\$ 641,720	\$ 741,490	\$ 703,300	\$ 7,447,210
MARKETING							
TRANSPORTATION	25,680	26,200	21,100	23,292	26,324	24,500	265,356
COMMISSIONS	64,200	65,500	52,752	58,231	65,811	61,251	663,400
TOTAL VARIABLE COSTS	\$ 810,080	\$ 833,500	\$ 668,452	\$ 723,243	\$ 833,625	\$ 789,051	\$ 8,375,966
VARIABLE MARGIN	\$ 473,920	\$ 476,500	\$ 386,548	\$ 441,357	\$ 482,575	\$ 435,949	\$ 4,891,834
FIXED COSTS							
PRODUCTION	\$ 25,625	\$ 25,625	\$ 25,625	\$ 24,625	\$ 25,625	\$ 25,625	\$ 300,500
MARKETING							
ADMINISTRATION	16,900	16,900	16,900	16,900	16,900	16,900	202,800
PROMOTION	26,600	26,800	27,000	27,200	27,400	27,600	318,000
RENT	8,300	8,300	8,300	8,300	8,300	8,300	99,600
ADMINISTRATION	7,100	7,100	7,100	7,100	7,100	7,100	85,200
TOTAL FIXED COSTS	\$ 84,525	\$ 84,725	\$ 84,925	\$ 84,125	\$ 85,325	\$ 85,525	\$ 5,897,934
INCOME BEFORE OTHER	\$ 389,395	\$ 391,775	\$ 301,623	\$ 357,232	\$ 397,250	\$ 350,424	\$ 3,885,734
ADD: OTHER INCOME	100	100	100	100	100	100	1,200
DEDUCT: OTHER EXPENSES	50	50	50	50	50	50	600
TAXABLE NET INCOME	\$ 389,445	\$ 391,825	\$ 301,673	\$ 357,282	\$ 397,300	\$ 350,474	\$ 3,886,334

SCHEDULE CONT-2
HYPOTHETICAL CORPORATION
BUDGETED CONTRIBUTION STATEMENT

DATE PREPARED: 3/06/77

LEVEL 2 SALES SEGMENT

REPORT PAGE 1

LEVEL 2 SALES SEGMENT: EASTERN TERRITORY

	JAN. 1977	FEB. 1977	MARCH 1977	APRIL 1977	MAY 1977	JUNE 1977
SALES	\$ 383,000	\$ 387,000	\$ 338,750	\$ 353,750	\$ 393,000	\$ 375,000
VARIABLE COSTS						
PRCDUTION	\$ 219,250	\$ 223,400	\$ 194,700	\$ 200,000	\$ 224,900	\$ 218,050
MARKETING						
TRANSPORTATION	7,660	7,740	6,775	7,075	7,860	7,500
COMMISSIONS	19,150	19,350	16,938	17,688	19,650	18,750
TOTAL VARIABLE COSTS	\$ 246,060	\$ 250,490	\$ 218,413	\$ 224,763	\$ 252,410	\$ 244,300
VARIABLE MARGIN	\$ 136,940	\$ 136,510	\$ 120,337	\$ 128,987	\$ 140,590	\$ 130,700
FIXED COSTS						
MARKETING						
ADMINISTRATION	\$ 1,500	\$ 1,500	\$ 1,500	\$ 1,500	\$ 1,500	\$ 1,500
PRCMOTION	4,600	4,800	5,000	5,200	5,400	5,600
RENT	2,000	2,000	2,000	2,000	2,000	2,000
TOTAL FIXED COSTS	\$ 8,100	\$ 8,300	\$ 8,500	\$ 8,700	\$ 8,900	\$ 9,100
SEGMENT CONTRIBUTION	\$ 128,840	\$ 128,210	\$ 111,837	\$ 120,287	\$ 131,690	\$ 121,600

SCHEDULE CONT-2
HYPOTHETICAL CORPORATION
BUDGETED CONTRIBUTION STATEMENT

DATE PREPARED: 3/06/77

LEVEL 2 SALES SEGMENT

REPORT PAGE 2

LEVEL 2 SALES SEGMENT: EASTERN TERRITORY

	JULY 1977	AUG. 1977	SEPT. 1977	OCT. 1977	NOV. 1977	DEC. 1977	TOTAL
SALES	\$ 686,000	\$ 705,000	\$ 505,000	\$ 546,400	\$ 724,200	\$ 625,400	\$ 6,022,500
VARIABLE COSTS							
PRODUCTION	\$ 387,100	\$ 403,800	\$ 287,600	\$ 299,080	\$ 410,340	\$ 365,130	\$ 3,433,350
MARKETING							
TRANSPORTATION	13,720	14,100	10,100	10,928	14,484	12,508	120,450
COMMISSIONS	34,300	35,250	25,250	27,320	36,210	31,270	301,126
TOTAL VARIABLE COSTS	\$ 435,120	\$ 453,150	\$ 322,950	\$ 337,328	\$ 461,034	\$ 408,908	\$ 3,854,926
VARIABLE MARGIN	\$ 250,880	\$ 251,850	\$ 182,050	\$ 209,072	\$ 263,166	\$ 216,492	\$ 2,167,574
FIXED COSTS							
MARKETING							
ADMINISTRATIVE	\$ 1,500	\$ 1,500	\$ 1,500	\$ 1,500	\$ 1,500	\$ 1,500	\$ 18,000
PRCMCTION	5,800	6,000	6,200	6,400	6,600	6,800	68,400
RENT	2,000	2,000	2,000	2,000	2,000	2,000	24,000
TOTAL FIXED COSTS	\$ 9,300	\$ 9,500	\$ 9,700	\$ 9,900	\$ 10,100	\$ 10,300	\$ 2,277,974
SEGMENT CONTRIBUTION	\$ 241,580	\$ 242,350	\$ 172,350	\$ 199,172	\$ 253,066	\$ 206,192	\$ 2,057,174

SCHEDULE CONT-3
 HYPOTHETICAL CORPORATION
 BUDGETED CONTRIBUTION STATEMENT

DATE PREPARED: 3/06/77

LEVEL 3 SALES SEGMENT

REPORT PAGE 1

LEVEL 2 SALES SEGMENT: EASTERN TERRITORY

LEVEL 3 SALES SEGMENT: SAM SNEAD

	<u>JAN. 1977</u>	<u>FEB. 1977</u>	<u>MARCH 1977</u>	<u>APRIL 1977</u>	<u>MAY 1977</u>	<u>JUNE 1977</u>
SALES	\$ 272,000	\$ 280,000	\$ 183,500	\$ 213,500	\$ 292,000	\$ 254,000
VARIABLE COSTS						
PRODUCTION	\$ 154,500	\$ 162,800	\$ 105,400	\$ 116,000	\$ 165,800	\$ 151,100
MARKETING						
TRANSPORTATION	5,440	5,600	3,670	4,270	5,840	5,080
COMMISSIONS	13,600	14,000	9,175	10,675	14,600	12,700
TOTAL VARIABLE COSTS	\$ 173,540	\$ 182,400	\$ 118,245	\$ 130,945	\$ 186,240	\$ 168,880
VARIABLE MARGIN	\$ 98,460	\$ 97,600	\$ 65,255	\$ 82,555	\$ 105,760	\$ 85,120
FIXED COSTS						
MARKETING PROMOTION	\$ 1,600	\$ 1,800	\$ 2,000	\$ 2,200	\$ 2,400	\$ 2,600
SEGMENT CONTRIBUTION	\$ 96,860	\$ 95,800	\$ 63,255	\$ 80,355	\$ 103,360	\$ 82,520

SCHEDULE CONT-3
 HYPOTHETICAL CORPORATION
 BUDGETED CONTRIBUTION STATEMENT

DATE PREPARED: 3/06/77

LEVEL 3 SALES SEGMENT

REPORT PAGE 2

LEVEL 2 SALES SEGMENT: EASTERN TERRITORY

LEVEL 3 SALES SEGMENT: SAM SNEAD

	JULY 1977	AUG. 1977	SEPT. 1977	OCT. 1977	NOV. 1977	DEC. 1977	TOTAL
SALES	\$ 544,000	\$ 560,000	\$ 367,000	\$ 427,000	\$ 584,000	\$ 508,000	\$ 4,485,000
VARIABLE COSTS							
PRODUCTION	\$ 309,000	\$ 325,600	\$ 210,800	\$ 232,000	\$ 331,600	\$ 302,200	\$ 2,566,800
MARKETING							
TRANSPORTATION	10,880	11,200	7,340	8,540	11,680	10,160	89,700
COMMISSIONS	27,200	28,000	18,350	21,350	29,200	25,400	224,250
TOTAL VARIABLE COSTS	\$ 347,080	\$ 364,800	\$ 236,490	\$ 261,890	\$ 372,480	\$ 337,760	\$ 2,880,750
VARIABLE MARGIN	\$ 196,920	\$ 195,200	\$ 130,510	\$ 165,110	\$ 211,520	\$ 170,240	\$ 1,604,250
FIXED COSTS							
MARKETING PROMOTION	\$ 2,800	\$ 3,000	\$ 3,200	\$ 3,400	\$ 3,600	\$ 3,800	\$ 32,400
SEGMENT CONTRIBUTION	\$ 194,120	\$ 192,200	\$ 127,310	\$ 161,710	\$ 207,920	\$ 166,440	\$ 1,571,850

SCHEDULE CONT-4

HYPOTHETICAL CORPORATION

BUDGETED CONTRIBUTION STATEMENT

DATE PREPARED: 3/06/77

PRODUCT AT TOTAL ORGANIZATION LEVEL

REPORT PAGE 1

PRODUCT: RED

	JAN. 1977	FEB. 1977	MARCH 1977	APRIL 1977	MAY 1977	JUNE 1977
SALES	\$ 384,000	\$ 396,000	\$ 360,000	\$ 354,000	\$ 396,000	\$ 408,000
VARIABLE COSTS						
PRDUCTION	\$ 236,800	\$ 244,200	\$ 222,000	\$ 218,300	\$ 244,200	\$ 251,600
MARKETING						
TRANSPORTATICN	7,680	7,920	7,200	7,080	7,920	8,160
COMMISSIONS	19,200	19,800	18,000	17,700	19,800	20,400
TOTAL VARIABLE COSTS	\$ 263,680	\$ 271,920	\$ 247,200	\$ 243,080	\$ 271,920	\$ 280,160
VARIABLE MARGIN	\$ 120,320	\$ 124,080	\$ 112,800	\$ 110,920	\$ 124,080	\$ 127,840
FIXED COSTS						
MARKETING						
PRCMOTION	\$ 3,200	\$ 3,400	\$ 3,600	\$ 3,800	\$ 4,000	\$ 4,200
PRODUCT CONTRIBUTION	\$ 117,120	\$ 120,680	\$ 109,200	\$ 107,120	\$ 120,080	\$ 123,640

SCHEDULE CONT-4
 HYPOTHETICAL CORPORATION
 BUDGETED CONTRIBUTION STATEMENT
 PRODUCT AT TOTAL ORGANIZATION LEVEL

DATE PREPARED: 3/06/77

REPORT PAGE 2

PRODUCT: RED

	JULY 1977	AUG. 1977	SEPT. 1977	OCT. 1977	NOV. 1977	DEC. 1977	TOTAL
SALES	\$ 516,000	\$ 564,000	\$ 408,000	\$ 393,600	\$ 586,200	\$ 624,000	\$ 5,389,800
VARIABLE COSTS							
PRODUCTION	\$ 318,200	\$ 347,800	\$ 251,600	\$ 242,720	\$ 361,490	\$ 384,800	\$ 3,323,710
MARKETING							
TRANSPORTATION	10,320	11,280	8,160	7,872	11,724	12,480	107,796
COMMISSIONS	25,800	28,200	20,400	19,680	29,310	31,200	269,490
TOTAL VARIABLE COSTS	\$ 354,320	\$ 387,280	\$ 280,160	\$ 270,272	\$ 402,524	\$ 428,480	\$ 3,700,996
VARIABLE MARGIN	\$ 161,680	\$ 176,720	\$ 127,840	\$ 123,328	\$ 183,676	\$ 195,520	\$ 1,688,804
FIXED COSTS							
MARKETING PROMOTION	\$ 4,400	\$ 4,600	\$ 4,800	\$ 5,000	\$ 5,200	\$ 5,400	\$ 51,600
PRODUCT CONTRIBUTION	\$ 157,280	\$ 172,120	\$ 123,040	\$ 118,328	\$ 178,476	\$ 190,120	\$ 1,637,204

SCHEDULE CONT-5

HYPOTHETICAL CORPORATION

BUDGETED CONTRIBUTION STATEMENT

DATE PREPARED: 3/06/77

PRODUCT AT LEVEL 2 SALES SEGMENT

REPORT PAGE 1

LEVEL 2 SALES SEGMENT: EASTERN TERRITORY

PRODUCT: RED

	<u>JAN. 1977</u>	<u>FEB. 1977</u>	<u>MARCH 1977</u>	<u>APRIL 1977</u>	<u>MAY 1977</u>	<u>JUNE 1977</u>
SALES	\$ 180,000	\$ 192,000	\$ 156,000	\$ 150,000	\$ 192,000	\$ 204,000
VARIABLE COSTS						
PRODUCTION	\$ 111,000	\$ 118,400	\$ 96,200	\$ 92,500	\$ 118,400	\$ 125,800
MARKETING						
TRANSPORTATION	3,600	3,840	3,120	3,000	3,840	4,080
COMMISSIONS	9,000	9,600	7,800	7,500	9,600	10,200
TOTAL VARIABLE COSTS	\$ 123,600	\$ 131,840	\$ 107,120	\$ 103,000	\$ 131,840	\$ 140,080
VARIABLE MARGIN	\$ 56,400	\$ 60,160	\$ 48,880	\$ 47,000	\$ 60,160	\$ 63,920
FIXED COSTS						
MARKETING						
PROMOTION	\$ 600	\$ 800	\$ 1,000	\$ 1,200	\$ 1,400	\$ 1,600
PRODUCT CONTRIBUTION	\$ 55,800	\$ 59,360	\$ 47,880	\$ 45,800	\$ 58,760	\$ 62,320

SCHEDULE CONT-5
HYPOTHETICAL CORPORATION

BUDGETED CONTRIBUTION STATEMENT

DATE PREPARED: 3/06/77

PRODUCT AT LEVEL 2 SALES SEGMENT

REPORT PAGE 2

LEVEL 2 SALES SEGMENT: EASTERN TERRITORY

PRODUCT: RED

	<u>JULY 1977</u>	<u>AUG. 1977</u>	<u>SEPT. 1977</u>	<u>OCT. 1977</u>	<u>NOV. 1977</u>	<u>DEC. 1977</u>	<u>TOTAL</u>
SALES	\$ 288,000	\$ 324,000	\$ 198,000	\$ 170,400	\$ 349,200	\$ 359,400	\$ 2,763,000
VARIABLE COSTS							
PRODUCTION	\$ 177,600	\$ 199,800	\$ 122,100	\$ 105,080	\$ 215,340	\$ 221,630	\$ 1,703,850
MARKETING							
TRANSPORTATION	5,760	6,480	3,960	3,408	6,984	7,188	55,260
COMMISSIONS	14,400	16,200	9,900	8,520	17,460	17,970	138,150
TOTAL VARIABLE COSTS	\$ 197,760	\$ 222,480	\$ 135,960	\$ 117,008	\$ 239,784	\$ 246,788	\$ 1,897,260
VARIABLE MARGIN	\$ 90,240	\$ 101,520	\$ 62,040	\$ 53,392	\$ 109,416	\$ 112,612	\$ 865,740
FIXED COSTS							
MARKETING PRGMCTION	\$ 1,800	\$ 2,000	\$ 2,200	\$ 2,400	\$ 2,600	\$ 2,800	\$ 20,400
PRODUCT CONTRIBUTION	\$ 88,440	\$ 99,520	\$ 59,840	\$ 50,992	\$ 106,816	\$ 109,812	\$ 845,340

SCHEDULE CONT-6
 HYPOTHETICAL CORPORATION
 BUDGETED CONTRIBUTION STATEMENT

DATE PREPARED: 3/06/77

PRODUCT AT LEVEL 3 SALES SEGMENT

REPORT PAGE 1

LEVEL 2 SALES SEGMENT: EASTERN TERRITORY

LEVEL 3 SALES SEGMENT: SAM SNEAD

PRODUCT: RED

	<u>JAN. 1977</u>	<u>FEB. 1977</u>	<u>MARCH 1977</u>	<u>APRIL 1977</u>	<u>MAY 1977</u>	<u>JUNE 1977</u>
<u>SALES</u>	<u>\$ 120,000</u>	<u>\$ 144,000</u>	<u>\$ 72,000</u>	<u>\$ 60,000</u>	<u>\$ 144,000</u>	<u>\$ 168,000</u>
VARIABLE COSTS						
PRODUCTION	\$ 74,000	\$ 88,800	\$ 44,400	\$ 37,000	\$ 88,800	\$ 103,600
MARKETING						
TRANSPORTATION	2,400	2,880	1,440	1,200	2,880	3,360
COMMISSIONS	6,000	7,200	3,600	3,000	7,200	8,400
TOTAL VARIABLE COSTS	<u>\$ 82,400</u>	<u>\$ 98,880</u>	<u>\$ 49,440</u>	<u>\$ 41,200</u>	<u>\$ 98,880</u>	<u>\$ 115,360</u>
VARIABLE MARGIN	<u>\$ 37,600</u>	<u>\$ 45,120</u>	<u>\$ 22,560</u>	<u>\$ 18,800</u>	<u>\$ 45,120</u>	<u>\$ 52,640</u>
FIXED COSTS						
MARKETING						
PRCPCTION	\$ 200	\$ 400	\$ 600	\$ 800	\$ 1,000	\$ 1,200
PRODUCT CONTRIBUTION	<u>\$ 37,400</u>	<u>\$ 44,720</u>	<u>\$ 21,960</u>	<u>\$ 18,000</u>	<u>\$ 44,120</u>	<u>\$ 51,440</u>

SCHEDULE CONT-6

HYPOTHETICAL CORPORATION

BUDGETED CONTRIBUTION STATEMENT

PRODUCT AT LEVEL 3 SALES SEGMENT

REPORT PAGE 2

DATE PREPARED: 3/06/77

LEVEL 2 SALES SEGMENT: EASTERN TERRITORY

LEVEL 3 SALES SEGMENT: SAM SNEAD

PRODUCT: RED

	JULY 1977	AUG. 1977	SEPT. 1977	OCT. 1977	NOV. 1977	DEC. 1977	TOTAL
SALES	\$ 240,000	\$ 288,000	\$ 144,000	\$ 120,000	\$ 288,000	\$ 336,000	\$ 2,124,000
VARIABLE COSTS							
PRODUCTION	\$ 148,000	\$ 177,600	\$ 88,800	\$ 74,000	\$ 177,600	\$ 207,200	\$ 1,309,800
MARKETING							
TRANSPORTATION	4,800	5,760	2,880	2,400	5,760	6,720	42,480
COMMISSIONS	12,000	14,400	7,200	5,000	14,400	16,800	106,200
TOTAL VARIABLE COSTS	\$ 164,800	\$ 197,760	\$ 98,880	\$ 82,400	\$ 197,760	\$ 230,720	\$ 1,458,480
VARIABLE MARGIN	\$ 75,200	\$ 90,240	\$ 45,120	\$ 37,600	\$ 90,240	\$ 105,280	\$ 665,520
FIXED COSTS							
MARKETING PROMOTION	\$ 1,400	\$ 1,600	\$ 1,800	\$ 2,000	\$ 2,200	\$ 2,400	\$ 15,600
PRODUCT CONTRIBUTION	\$ 73,800	\$ 88,640	\$ 43,320	\$ 35,600	\$ 88,040	\$ 102,880	\$ 649,920

SCHEDULE CONT-7
 HYPOTHETICAL CORPORATION
 BUDGET OF OTHER INCOME AND OTHER EXPENSES

DATE PREPARED: 3/06/77

REPORT PAGE 1

	JAN. 1977	FEB. 1977	MARCH 1977	APRIL 1977	MAY 1977	JUNE 1977
<u>OTHER INCOME</u>						
DIVIDEND INCOME	\$ 100	\$ 100	\$ 100	\$ 100	\$ 100	\$ 100
<u>OTHER EXPENSES</u>						
INTEREST EXPENSE	\$ 50	\$ 50	\$ 50	\$ 50	\$ 50	\$ 50
NET AMOUNT	\$ 50	\$ 50	\$ 50	\$ 50	\$ 50	\$ 50

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SCHEDULE CONT-7
 HYPOTHETICAL CORPORATION
 BUDGET OF OTHER INCOME AND OTHER EXPENSES

DATE PREPARED: 3/06/77

REPORT PAGE 2

	JULY 1977	AUG. 1977	SEPT. 1977	OCT. 1977	NOV. 1977	DEC. 1977	TOTAL
<u>OTHER INCOME</u>							
DIVIDEND INCOME	\$ 100	\$ 100	\$ 100	\$ 100	\$ 100	\$ 100	\$ 1,200
<u>OTHER EXPENSES</u>							
INTEREST EXPENSE	\$ 50	\$ 50	\$ 50	\$ 50	\$ 50	\$ 50	\$ 600
NET AMOUNT	\$ 50	\$ 50	\$ 50	\$ 50	\$ 50	\$ 50	\$ 600

SCHEDULE C8-1
HYPOTHETICAL CORPORATION
CASH BUDGET

DATE PREPARED: 3/06/77

REPORT PAGE 1

	JAN. 1977	FEB. 1977	MARCH 1977	APRIL 1977	MAY 1977	JUNE 1977
BUDGETED CASH RECEIPTS						
CASH SALES	\$ 199,500	\$ 201,200	\$ 191,100	\$ 192,300	\$ 200,600	\$ 197,900
ACTS REC. COLLECTIONS	399,500	642,000	743,440	758,580	770,764	774,832
DIVIDEND INCOME	100	100	100	100	100	100
BANK LOAN		500				
TOTAL CASH RECEIPTS	\$ 599,100	\$ 843,800	\$ 934,640	\$ 950,980	\$ 971,464	\$ 972,832
BUDGETED CASH PAYMENTS						
CASH PURCHASES	\$ 50,263	\$ 49,715	\$ 47,797	\$ 48,230	\$ 49,784	\$ 49,118
DIRECT LABOR COSTS	251,950	252,800	238,442	234,042	248,000	250,050
ACTS. PAYABLE PAYMENTS	362,791	448,821	433,628	433,293	445,260	443,260
INTEREST EXPENSE	50	50	50	50	50	50
MORTGAGE PAYMENT	200,000					
TOTAL CASH PAYMENTS	\$ 865,054	\$ 751,386	\$ 719,917	\$ 715,615	\$ 743,094	\$ 742,478
NET CASH FLOW	\$ 265,954-	\$ 92,414	\$ 214,723	\$ 235,365	\$ 228,370	\$ 230,354
ADD: BEGINNING BALANCE	5,000	7,000	99,414	314,137	549,502	777,872
DEDUCT: ENDING BALANCE	7,000	99,414	314,137	549,502	777,872	1,008,226
REQUIRED FINANCING	\$ 267,954	NIL	NIL	NIL	NIL	NIL

SCHEDULE CB-1
HYPOTHETICAL CORPORATION
CASH BUDGET

DATE PREPARED: 3/06/77

REPORT PAGE 2

	JULY 1977	AUG. 1977	SEPT. 1977	OCT. 1977	NOV. 1977	DEC. 1977	TOTAL
BUDGETED CASH RECEIPTS							
CASH SALES	\$ 256,800	\$ 262,000	\$ 211,000	\$ 232,920	\$ 263,240	\$ 245,000	\$ 2,653,560
ACTS REC. COLLECTIONS	894,516	974,972	914,228	907,056	964,024	970,960	9,714,872
DIVIDEND INCOME	100	100	100	100	100	100	1,200
BANK LCAN							500
TOTAL CASH RECEIPTS	\$1,151,416	\$1,237,072	\$1,125,328	\$1,140,076	\$1,227,364	\$1,216,060	\$ 12,370,132
BUDGETED CASH PAYMENTS							
CASH PURCHASES	\$ 60,954	\$ 61,730	\$ 51,759	\$ 56,612	\$ 62,230	\$ 58,126	\$ 646,318
DIRECT LABOR COSTS	317,850	333,700	268,575	274,035	329,445	326,100	3,324,989
ACTS. PAYABLE PAYMENTS	527,281	554,172	483,776	500,776	549,960	530,523	5,713,541
INTEREST EXPENSE	50	50	50	50	50	50	600
MORTGAGE PAYMENT							200,000
TOTAL CASH PAYMENTS	\$ 906,135	\$ 949,652	\$ 804,160	\$ 831,473	\$ 941,685	\$ 914,799	\$ 9,885,448
NET CASH FLOW	\$ 245,281	\$ 287,420	\$ 321,168	\$ 308,603	\$ 285,679	\$ 301,261	\$ 2,484,684
ADD: BEGINNING BALANCE	1,008,226	1,253,507	1,540,927	1,862,095	2,170,698	2,456,377	5,000
DEDUCT: ENDING BALANCE	1,253,507	1,540,927	1,862,095	2,170,698	2,456,377	2,757,638	2,757,638
REQUIRED FINANCING	NIL	NIL	NIL	NIL	NIL	NIL	\$ 267,954

VITA

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Candidate for the Degree of

Doctor of Philosophy

Thesis: A BUDGET MODEL FOR SMALL MANUFACTURING COMPANIES

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Education: Received the Bachelor of Science degree in Accounting and Management from California State Polytechnic University in 1970; received the Master of Science in Business Administration degree from California State University, Long Beach, in 1973; completed the requirements for the Doctor of Philosophy degree at Oklahoma State University in July, 1978.

Professional Experience: Bookkeeper, Bourne Motor Sales, Tavistock, Ontario, 1955-57; in training for a chartered accountant, A. J. Shankland and Company, B. C., Canada, 1958-60; Head Accountant, Atlantic Acceptance, Oakville, Ontario, 1960-62; Office Manager, Scarlett Corporation, London, Ontario, 1962-63; Office Manager, Ford Motor Company, Jan Jose, California, 1964-66; Associate of Teaching, University of California, 1970-72; Assistant Professor, California State Polytechnic University, 1973-74; Teaching Associate, Oklahoma State University, 1974-77; Instructor, Business Extension, Oklahoma State University, 1975-77; Assistant Professor, St. Mary's University, 1977-78.