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A Computer-Based DSS for Funds Management in a Large State University Environment

by

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(ABSTRACT)

The comprehensive computerized decision support system developed in this research employs two techniques, computer modeling and goal programming, to assist top university financial officers in assessing the current status of funds sources and uses. The purpose of the DSS is to aid in reaching decisions concerning proposed projects, and to allocate funds from sources to uses on an aggregate basis according to a rational set of prescribed procedures.

The computer model provides fast and easy access to the database and it permits the administrator to update the database as new information is received. Goal programming is used for modeling the allocation process since it provides a framework for the inclusion of multiple goals that may be conflicting and incommensurable. The goal programming model allocates funds from sources to uses based on a priority structure associated with the goals.

The DSS, which runs interactively, performs a number of tasks that include: selection of model parameters, formulating goals and priority structure, and solving the GP model. It also provides on-line access to the database so that it may be updated as necessary. In addition, the DSS generates reports regarding funds allocation and goal achievements to allow analysis of the model results. The decision support system also provides a framework for experimentation with various goal and priority structures, thus facilitating what-if analyses. The user can also perform a sensitivity analysis by observing the effect of assigning different relative importance to a goal or set of goals.

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1.0 INTRODUCTION

Senior university administrators spend a great amount of time and effort dealing with problems that involve allocation of scarce resources. In general, the funds allocation process is one in which there are a number of projects, or uses, that require certain amounts of funds over time, and correspondingly, there are several sources that provide funds over time which may be used for the uses. Thus, the allocation process includes not only the selection of which projects to fund from limited fund sources, but also the matching up of the schedules of cash outflows to uses with cash inflows from sources. The problem faced by administration is twofold: (1) how to establish an information system that will provide up-to-date information about sources and uses of funds, and (2) how to allocate funds from the sources to the uses.

At present, most university administrations do not have computerized databases that maintain information on sources and uses of funds over time, and on the planned funds allocations. Thus, the administrators don't have a quick and easy way to access all the data which is needed for review when an allocation decision arises. As a result, administrators are in urgent need of a computerized database to store the relevant information.

In addition, the task of allocating funds is becoming increasingly difficult and often results in conflicts as to how the scarce funds should be allocated among the various competing uses. The

scarcity of these funds results not only from reduced sources of funds, but also from increasing requests for funds. The past few years have witnessed a trend of decreasing federal, state, and local funding support to state universities. This has placed an increasing pressure on these universities to generate their own funds. As a result, university administrations are searching for alternative sources, such as research centers, hoping to generate new funds from these sources. The costs incurred in the development of these alternative sources have placed an additional burden on the already diminished cash inflow situation, and have made the allocation problem even more critical.

Another way university administrations are tackling this problem is by placing more importance on judicious use of available funds by recognizing the need to make more efficient and effective funds allocation decisions. In order to achieve this objective, university administrations are turning away from traditional, and often inefficient, methods of making fund allocations and looking toward more scientific, or analytical, ways to make these allocations. They are searching for techniques that can be appropriately used to model the allocation process. The allocation procedure should be able to incorporate all the factors that influence the decision making and recognize the fact that administrations have multiple and competing goals and objectives. These procedures should also be able to provide a sensitivity analysis so that the effect of changes in the values of the various variables that affect the allocations can be measured and evaluated.

University administrations also need tools that will facilitate the allocation process. Very often, techniques are available that may be used to model a certain allocation problem; however, they are either very complicated and cumbersome to use, or the user has to be an expert in computer programming to be able to use them. Thus, for all practical purpose, those analytical tools are rendered useless. What is needed is some supporting computer system that will facilitate the dialog between the user and the model. It should be able to access a database to select the model parameters. It should be flexible enough to let the user build the model based on his/her beliefs about which factors should be included in the model. It should also be able to generate reports that would help in the analysis of the model results.

1.1 STATEMENT OF THE PROBLEM AND NEEDS

The basic idea behind this research evolved from the difficulties the Vice President for Finance at a major state university faces in trying to decide how to fund various projects. The problem is as follows: at present the Vice President does not have readily available complete and timely information about how funds from various sources are being channeled to various uses. Consequently, when a new project turns up, he cannot readily determine which sources could be used to fund this project, or if sufficient funds will be available to support the proposed project. Presently, in such a situation, the Director of Financial Planning and Budgeting provides this information by looking at the projected availability of and requirements for funds over time. Then, keeping in mind the goals and objectives of the university, the budget director intuitively arrives at a proposed allocation structure. The whole process is very tedious and time consuming since the university's goals and constraints are competitive and often conflicting. These goals and requirements include: meeting restrictions placed on use of state funds, using multiple sources to fund projects, and depleting non-interest bearing funds prior to those bearing interest. The task is further complicated by the fact that, at present, the administration is facing a trend of increasing requests for funds and a reduction in the number of sources of funds.

What the Vice President would like is a computerized system that would allow him to access information, via an on-line terminal, concerning the up-to-date status of all funds available to the university. The system should provide a projection over time of all funding requirements or needs, a projection over time of all fund sources, and a projection over time of currently proposed allocations of available funds to specified needs. Thus, the system would also provide up-to-date information concerning available (unallocated) funds by source and by time period available. This would allow the Vice President to match up the schedule of available funds with the projected needs to determine if sufficient funds would be available at the times needed.

Since the system involves numerous possible sources and numerous possible uses, both over a quarterly planning horizon of several periods, the possible allocation of funds from various sources to various uses over several time periods becomes a quite complex set of decisions. Thus, the Vice President would also like for the computerized system to include a model to assist in making the allocations of funds from sources to uses, based on a set of goals, guidelines, and constraints prescribed by the Vice President and other senior university administrators (and by legal restrictions concerning use of various sources of state funds). The model should be able to include all the factors that are involved in the decision-making concerning funds allocations and measure the effects of any changes in these factors. It should be able to incorporate the diversity and multiplicity of the university's goals and objectives and legal restrictions concerning funds use. The model should be flexible enough to let the user decide which goals, and at what priority, are to be included.

Such a system should be able to provide the user access to the database for the purpose of selecting model parameters for the model. It should also be 'user-friendly' so that the user does not have to be an expert in mathematical modeling and computer programming to be able to model the funds allocation process.

Such a system should also provide the administrator with a means to analyze systematically the allocation process and make policies and decisions, and provide a framework for testing and evaluating alternative policies, and performing 'what-if' analyses. In summary, the proposed computerized system would be able to provide on-line information on what funds are available and needed over a certain planning horizon and how these funds are being channeled to the various uses according to predefined goals. As a result of implementing this system, the Vice President would immediately know which sources had unused funds and, thus, might be available to fund an upcoming project. The system would also indicate when funds are simply not available for a proposed project and/or when the timing of funds is a problem requiring a rescheduling of the project cash outlays.

1.2 PURPOSE OF THE RESEARCH

The objective of this research is to employ two techniques - computer modeling and goal programming - to yield a decision support system to assist the top university financial officer in assessing the current and projected status of funds sources and uses in order to reach decisions concerning proposed projects, and to allocate funds from sources to proposed uses on an aggregate basis according to a rational set of prescribed procedures.

The specific purpose of this research is to construct a computer model including an imbedded goal programming model to accomplish the above-stated objectives. While goal programming is used to model the funds allocation process, the computer modeling facilitates the human-model interaction process by providing easy access to the data base and the model.

The decision support system provides on-line information regarding the availability and requirements of sources and uses, respectively. It also provides information on how these funds are being channeled to various uses over time. The administrator can use this information to determine whether actual funds allocation is taking place as planned. The user can also determine which sources have unused funds and may be used to fund an upcoming project. Therefore, the decision support system could also be used in conjunction with financial control as well as planning and decision modeling.

The computer model provides fast and easy access to the database. It permits the user to view the sources and uses that are presently included in the database. Using the computer model, the administrator can update the database as new information is received. For instance, it may be used to create a new source, delete a source, or to modify information pertaining to an existing source.

Goal programming is the selected technique for modeling the allocation process since it provides a framework for the inclusion of multiple goals that may be conflicting and incommensurable. For

instance, the objective of using multiple sources to support a particular use may conflict with a desire to deplete a particular source to avoid reduction in availability of funds from that source in the future. The goal programming model allocates funds from sources to uses based on a priority structure for these goals. The priority structure represents the relative importance that the administration places on these goals and objectives.

The decision support system provides the dialog between the user and the goal programming model. The DSS, which runs interactively, performs a number of tasks that include: selection of model parameters, formulating goals and priority structure, and solving the GP model. It also provides on-line access to the database so that it may be updated when necessary. In addition, it generates reports regarding funds allocation and goal achievements to provide analysis of the model results. The decision support system also provides a framework for experimentation with various goal and priority structures, thus facilitating what-if analyses. The user can also perform a sensitivity analysis by observing the effect of giving different relative importance to a goal, or set of goals.

1.3 METHODOLOGY OVERVIEW

As stated earlier, the basis for the decision support system is the application of two techniques - computer modeling and goal programming. Goal programming is used to model the funds allocation process, while the computer modeling facilitates the human-model interaction process by providing easy access to the database and model. The following sections discuss the appropriateness and the usefulness of these two techniques in the research.

1.3.1 Computer Modeling of the Funds Sources and Uses Over Time

Access to the database is provided through computer modeling. Information concerning all the relevant detail about cash flows over time, by source and by project, is provided by the computer model via interactive menu-driven screens. It permits the user to modify or update the database, thus providing the capability to change parameter values of the goal programming model. Through the use of computer modeling, the user can select sources and uses that he would like to include in the model and modify their relevant funds. This is very useful when there is some uncertainty as to source or uses of funds and a what-if analysis is desired to evaluate various possible scenarios. In such instances, the user might like to study the impact of these changes should those changes eventually materialize.

1.3.2 Modeling the Fund Allocation Process via Goal Programming

The fund allocation process, like most resource allocation processes, usually involves competitive and often conflicting goals. The university administration would like to allocate funds based on a number of goals and objectives that take into consideration factors such as: restrictions placed on lawful use of state funds, uncertainty about the availability of funds from some sources, and interest rates. Because of the scarcity of the available funds, and because of the competitive and conflicting nature of the university's goals, it is not generally possible to meet or satisfy all the goals. Consequently, it is not always possible to arrive at an allocation structure that would satisfy each and every goal of the university. The administration must decide which goals are more important and must attain them at the expense of those that are not as important. Consequently, the administration has to prioritize these goals on the basis of their relative importance and must often settle for a funds allocation structure that may not seem to be optimal, but rather satisfies most, or all

of the goals. That is, the administration has to settle for a satisficing solution instead of an optimal solution.

Goal programming is most appropriate for modeling a funds allocation process because of its ability to apply sensitivity analysis. The user specifies the priority structure based on the relative importance attached to the goals included in the model. The user can simulate varying conditions by simply modifying the parameters, goals, or the priority structure, thus facilitating testing and comparison of various allocation structures. The user may also observe the impact that a particular goal has on the allocation structure by including or deleting it from the model and evaluating the resulting solution. An objective of the computer model is to facilitate the user interaction with the goal programming model in as 'user-friendly' a manner as possible.

1.3.3 The Overall Decision Support System

The decision support system was developed with the objective of providing information about the various sources and uses of funds in the university while possessing the following features: (1) computer-based, (2) user-friendly, (3) on-line to the user, and (4) up-to-date information. Included was the objective of making the goal programming technique readily and easily accessible to the decision maker. It uses computer hardware and software to provide a dialog between the user and the model so that the user does not have to be an expert in computer programming or mathematical programming to be able to model the funds allocation process.

The DSS handles a number of tasks that include data handling and storage, formulating and solving a GP model, generating reports, and what-if analyses. Through the use of menus and panels, the user defines model parameters, goals, and the priority structure for the GP model. The DSS then automatically formulates the GP model and solves it using a commercial mathematical programming software package. The resulting allocation structure is then displayed in the form of reports,

along with goal achievement reports. Control is then passed back to the user who can continue testing and evaluating different goals and priority structures in search of an acceptable solution.

A word about the distinction between a model and a DSS is in order. While a model (e.g., a GP model) is employed to represent a problem or a process to obtain a solution, a decision support system places a greater emphasis on developing a system that allows involvement of the decision-maker in the decision making process. The objective of a decision support system is to make it easy for a decision-maker to interact with, and make use of, powerful computerized systems for information management and problem analysis. A DSS integrates database, decision models, and the computer to provide a mechanism for the decision maker to interact with the data and models in a convenient and supportive manner. Thus, a model is just one of the components of a decision support system.

1.4 REVIEW OF RELATED LITERATURE

A number of research papers have been presented and published relating to the use of decision support systems and goal programming for a wide variety of problems in academic institutions. However, very few studies have dealt with the specific area of sources and uses cash-flow models. The following sections will cover related literature on: (1) use of decision support systems in academic institutions, and (1) goal programming applications in academic institutions.

1.4.1 Use of Decision Support Systems in Academic Institutions

The concept of decision support systems began in the late 60's. However, their use in real applications was very limited until the 1980's. Since then, applications to a variety of problems have

included: portfolio management, merger and acquisition analysis, design of police force beats, redesign of school districts, market planning, corporate planning, manpower planning, state government policy analysis, R&D management, product planning, media planing, and budgeting [16]. The reported use of decision support systems in academic institutions, however, has been rather limited.

One of the best examples of a computer-based decision support system applied in an academic institution was done by Greenwood [7]. Greenwood developed a decision support system to enhance the planning, policy-setting, and decision-making processes associated with establishing university tuition and fee charges. The comprehensive computerized system integrates data, model, and reports into an on-line interactive user-friendly tuition and fee analysis package. The DSS embeds a goal programming model that is used to determine the tuition charges per credit hour for different student categories. The multi-year goal programming model considers: state-level tuition requirements, tuition as percentage of total cost, revenue requirements, and tuition charges at peer institutions.

Franz, Lee, and Van Horn developed a proposed approach for academic resource planning referred to as a decision support system [5]. The DSS was based on a single-period goal programming model of an academic department. The model is used to establish the departments personnel requirements and corresponding budget, based on a set of rank-ordered goals, and to investigate the impact of policy changes on staffing and budget requirements. The model's goal formulations consider: faculty distribution by rank, support staff, credit-hour demand, level of salary increases, advising activities, contractual commitments, and budget levels.

1.4.2 Goal Programming Applications in Academic Institutions

Goal programming has been applied to a wide variety of allocation problems. However, most of the research work relating to application of goal programming models in academic institutions has dealt with faculty/staff planning and student enrollments. One of the first such models was developed by Lee and Clayton, and deals with determining personnel requirements for a single academic unit over a single time period [22]. Schroeder extented the model to multiple academic units and time periods, and considered goals on: faculty/staff ratio, faculty/courses loads, faculty/graduate assistant ratio, and faculty ranks [33]. Walters, Mangold, and Haran used weights, instead of preemptive priorities in their GP model which took into consideration career constraints, teaching loads, tenure constraints, and budget constraints [38].

Greenwood used a goal programming model for determining the tuition and fees structure over multiple years [7]. The system establishes a tuition charge per credit hour for a number of student categories. These categories are based on academic level (undergraduate vs graduate), residency (resident vs non-resident), and location (on-campus vs off-campus). The model used goals that considered: state-level tuition requirements, tuition as percentage of total cost, revenue requirements, and tuition charges at peer institutions.

Lee and Moore developed a goal programming model for admissions planning [23]. It determines the number of students that should be admitted by various categories based on state residence policies, admissions standards, student mix, and residence hall capacity. A model for student recruiting activities was developed by Kendall and Luebbe, and determines the kind of recruiting activities that should be performed to reach the enrollment goals [19].

A mixed-integer goal programming model for capital budgeting was developed by Keown, Taylor, and Pinkerton [20]. The model is used to select projects based on a set of goals that consider, among others: capital budgets, operating expenses, building construction, and equipment purchases.

1.5 SCOPE AND LIMITATIONS

The purpose of this research is to develop a decision support system that provides an on-line data storage and retrieval capability to provide immediate access to information relating to sources and uses of funds and to the allocation structure. An additional purpose is to develop and include a scientific procedure (model) to accomplish the allocation of funds.

1.5.1 Scope

A database is developed to store information relating to the availability of funds and the specified requirements for funds, by categories of sources and uses, respectively. It also provides on-line access to the funds allocation structures which can be presented in various formats including summarized reports, and detailed reports by sources and uses categories.

A goal programming model is developed to aid the administration in allocating resources. It incorporates all factors that affect the allocation process. It will be capable of measuring the effect of changes in the values of these variables. The parameters for the GP model are selected from the database which is to be provided by the university budget office. The goals and priority structure for the model are formulated by the user, i.e., the Vice President in conjunction with the Provost and the President. Goal achievement reports are generated that specify which goals were achieved, and states the deviations, absolute and percentages, from the target value for goals that could not be achieved.

The decision support system provides the capability to test different goals and priority structures and observe their effect on the allocation structure. It is capable of providing a framework to test and evaluate alternatives and perform what-if analysis.

Even though this research work was tested and implemented at Virginia Polytechnic Institute and State University, it is not limited to this institution, or just an academic institution only. Since the funds allocation process is encountered in almost all kinds of organizations, a decision support system like this could find very widespread use.

1.5.2 Limitations

The are a number of obvious limitations. First, even though the decision support system is general enough to be implemented in different types of organizations, the maximum problem size, in terms of number of sources and uses and planning horizon, that it can handle would be constrained by the computing resources available at those organizations. This particular DSS was developed on the Virginia Polytechnic Institute and State University's IBM 3090 computer system and can handle sixteen sources, sixteen uses, and a planning horizon of four years. It also requires that availability of and requirements for funds be given by the quarter of each year. It can not handle situations where the time unit is, say, a year or a month unless those funds could be broken down or aggregated by the quarter for each year.

This research does not address the decision making process. The goal programming model developed to model the allocation process is intended to be used only as an aid to the decision maker and is not a decision making system. It is the user who must decide which goals are to be included in the model and at what priority. The role of the decision support system is essentially to facilitate the process of goal formulation, analysis of the results, and the what-if analysis.

Another limitation of this research is that it is not capable of estimating requirements or availability of funds in the future. All such data has to be gathered by the administration and entered into the database. It also does not help determine ways in which more funds could be generated.

1.6 PLAN OF PRESENTATION

Chapter 2, entitled The Sources and Uses of Funds System, defines the key features of the sources and uses cash flow system and the allocation of funds. It explains how the sources and uses categories are developed. It also introduces the concepts of deficits and the eligibility matrix.

Chapter 3, entitled The DSS Architecture, describes the DSS in terms of its three subsystems - data, dialog and model. It explains the various data files that comprise the overall database. It describes in detail the interaction that takes place between the user and the funds allocation model. It also explains how these subsystems are integrated to form the overall decision support system.

Chapter 4, entitled The Goal Programming Funds Allocation Model, presents the goal programming model of the funds allocation process. The decision variables are defined, and all the constraints included in the formulation of the GP model are described. The various types of goals that may be formulated are also described along with a discussion of the priority structure. Also included is a description of the solution methodology for the GP model, and the procedures used to validate the model and the program.

Chapter 5, entitled Summary and Conclusions, evaluates the research in terms of its components and suggests ways in which this decision support system can be integrated with other existing systems to develop a comprehensive financial control package.

2.0 THE SOURCES AND USES OF FUNDS SYSTEM

The sources and uses of funds system consists of funds defined in terms of sources from which to obtain funds and uses to which the funds can be put. The problem is one of keeping track of (1) all the possible sources of funds along with the projected schedule of dollar amounts that will be available over time out into the future, (2) all the identified uses or needs for funds along with the projected schedule of dollar amounts over time, (3) the proposed allocation of funds by category of source to each category of use for each time period, and (4) the excess available funds by source for each time period and the unmet funding needs by use by time period.

Such an information system allows university management to address the question of how to finance additional proposed projects, and of the potential need to look for additional funds sources for the case in which some projects are not fully funded (deficits exist).

An implicit problem in the sources and uses of funds system previously described is the problem of allocating funds from sources to uses. The allocation problem becomes quite complex when considering several sources, several uses, and several time periods. The allocation decisions must

be made while considering the various goals and objectives of the university as well as the state imposed restrictions on the use of various categories of funds sources.

In this chapter, the cash flow system is described in detail in terms of the sources and uses and the format in which their relevant data is assumed available or needed. Also explained are some other features of the cash flow system including the concepts of the eligibility matrix and deficits.

2.1 SOURCES

What is refered to as a source is actually a category of sources. In practice, any cash flow system at a university consists of a very large number of sources of funds. To include each such source individually in the model would make the model very complicated and cumbersome. Besides, a computer model for such a system will primarily be used by a top financial officer and he would not want to be burdened with details on all these sources, many of which provide relatively very small amounts of funds. Consequently, to keep the number of sources down to a manageable size, these many sources are classified into broad categories and then aggregated. Eventually, there remain only a limited number of sources, or source categories.

Funds from these sources are assumed available by the quarter for each fiscal year. Figure 1 shows the typical format for a two year planning horizon. For the first year of the planning horizon (i.e., 1986-87), for each source, there are entries corresponding to the total funds available during the entire planning horizon, the balance forward, funds available by each quarter, and total funds for the year. The balance forward represents any unused funds from previous years that are available for use and, therefore, have been brought forward. Entries for each of the subsequent years (i.e., 1987-88) include: cumulative funds up through the previous year, funds by each quarter, total funds for the year, and cumulative up through the current year. For example, the source 'Aux Prin Re-

FUNDS AVAILABILITY BY SOURCE - 1986-87

FUND	TOTAL	BAL FWD	1ST QT	2ND QT	3RD QT	4TH QT	YEAR
AUX PRIN RESERVE	139102	0	69551	0	0	0	69551
AUX INTEREST INCOME	18000	0	0	0	9000	0	9000
O/H FUNDS 20%	304	0	38	38	38	38	152
DEFICIT	179	0	91	88	0	0	179
TOTAL	157585	0	69680	126	9038	38	78882

FUNDS AVAILABILITY BY SOURCE - 1987-88

FUND	CUM	1ST QT	2ND QT	3RD QT	4TH QT	YEAR	TOT 2YR
AUX PRIN RESERVE	69551	69551	0	0	0	69551	139102
AUX INTEREST INCOME	9000	0	0	9000	0	9000	18000
O/H FUNDS 20%	152	38	38	38	38	152	304
DEFICIT	179	0	0	0	0	0	179
TOTAL	78882	69589	38	9038	38	78703	157585

Figure 1. Funds Availability by Source

serve' has available funds of $69,551 during 1986-87, $69,551 during 1987-88, and a total of $139,102 for the planning horizon.

2.2 USES (NEEDS)

Similar to categories of sources, individual uses are also aggregated into broad categories to reduce their number to a manageable size. In each case, the desired categories of sources and uses of funds were developed in consultation with the Vice President of Finance. The fund requirements for the uses are also specified by quarter for each fiscal year, as shown in Figure 2. Entries for the first year (i.e., 1986-87) include: total funds needed for the planning horizon, funds needed each quarter, and total for the year. For each subsequent year (i.e., 1987-88), the entries include cumulative funds up through the previous year, funds by each quarter, total for the year, and cumulative total up through the year. For example, 'Stu Fin Aid' needs $281 during 1986-87, $295 during 1987-88, and $576 over the planning horizon. Note that, unlike sources, there is no 'balance forward' for the uses. This results from the fact that the cash flow system does not permit funding needs of uses to be carried over to other periods, even in the case of insufficient availability of funds. In such an event either additional funding is arranged for, or the funding requirements of uses must be reduced, or the timing of funding needs must be rescheduled by administration.

2.3 ALLOCATIONS

Since the sources and uses of funds system involves a number of sources and uses categories, the task of allocating funds becomes very complex and time consuming. To assist the user in making

FUNDS REQUIREMENT BY USE - 1986-87

USE	TOTAL	1ST QT	2ND QT	3RD QT	4TH QT	YEAR
GEN OPERATIONS	1600	100	200	300	200	800
EQP ENHANCEMENT	66	0	0	33	0	33
STU FIN AID	576	55	88	75	63	281
TOTAL	2242	155	288	408	263	1114

FUNDS REQUIREMENT BY USE - 1987-88

USE	CUM	1ST QT	2ND QT	3RD QT	4TH QT	YEAR	TOT 2YR
GEN OPERATIONS	800	100	200	300	200	800	1600
EQP ENHANCEMENT	33	0	0	33	0	33	66
STU FIN AID	281	99	79	38	79	295	576
TOTAL	1114	199	279	371	279	1128	2242

Figure 2. Funds Requirements by Use

the allocations, a goal programming model is embedded within the decision support system to model the funds allocation process, subject to the goals and objectives of the university. These goals include: meeting restrictions placed on use of state funds, using multiple sources to fund projects, and depleting non-interest bearing funds prior to those bearing interest. The GP model allocates funds from sources to uses based on a priority structure for these goals. The priority structure represents the relative importance that the administration places on these goals and objectives.

Once the task of allocating funds from sources to uses has been accomplished using a goal programming model, the proposed allocations are stored in the database and provide on-line information to the Vice President. This information consists of: (1) allocations of funds from a specified source category to various use categories, and (2) allocations of funds from various source categories to a specified use category.

2.3.1 Allocations of Each Source to Various Uses

Allocation of funds from a specified source to various uses are given in the format shown in Figure 3. The information provided for the first year (i.e., 1986-87) includes, by each quarter, the balance carried forward, quarterly additions, allocations made to various uses, total amount of allocations made, and the ending balance. The same information is also available for the year on an aggregate basis. In addition, the total allocations made to various uses over the entire planning horizon are shown. For each subsequent year in the planning horizon, the entries correspond to, by each quarter, balance forward, quarterly additions, usage by various uses, total amount allocated, and the ending balance. This information is also aggregated and accumulated up through the year. For example, out of the $69551 available from 'Aux Prin Reserve' during 1986-87, a total of $505 was allocated to various uses, while in 1987-88 an additional $69551 was available out of which

AUX PRIN RESERVE — EXPENDITURES BY USE - 1986-87

		1ST QT	2ND QT	3RD QT	4TH QT	YEAR
BALANCE FORWARD		0	69501	69301	69208	0
QTRLY ADDITIONS		69551	0	0	0	69551
TOTAL FUNDS AVAILABLE		69551	69501	69301	69208	69551
EXPENDITURES	TOTAL					
GEN OPERATIONS	1022	50	200	60	162	472
EQP ENHANCEMENT	33	0	0	33	0	33
TOTAL	1055	50	200	93	162	505
ENDING BALANCE		69501	69301	69208	69046	69046

AUX PRIN RESERVE — EXPENDITURES BY USE - 1987-88

		1ST QT	2ND QT	3RD QT	4TH QT	CUM	
BALANCE FORWARD		69046	138527	138327	138247	69046	
QTRLY ADDITIONS		69551	0	0	0	69551	
TOTAL FUNDS AVAILABLE		138597	138527	138327	138247	138597	
EXPENDITURES	CUM						TOT 2YR
GEN OPERATIONS	472	70	200	80	200	550	1022
EQP ENHANCEMENT	33	0	0	0	0	0	33
TOTAL	505	70	200	80	200	550	1055
ENDING BALANCE		138527	138327	138247	138047	138047	

Figure 3. Source Expenditures

$550 was allocated. Thus, it is possible that all of the available funds from a source may not be allocated to the stipulated uses, resulting in a surplus of funds for the indicated source of funds.

2.3.2 Allocations to Each Use from Various Sources

Allocation of funds to a specified use from various sources is shown in Figure 4. In this example, the use category is 'Stu Fin Aid'. The information provided for the first year (i.e., 1986-87) shows which sources are providing funds by each quarter, and for the year as a whole. The total funds allocated from the sources over the entire planning horizon are also provided. For each subsequent year in the planning horizon, the entries correspond to the amount allocated from various sources by each quarter, and for the year. In addition, the total amount of funds provided by each source up through the previous year and up through the current year are also shown. For example, 'Stu Fin Aid' received $138 and $176 from 'Aux Interest Income' during 1986-87 and 1987-88, respectively, for a total of $314 for the entire planning horizon.

Note the presence of 'Deficit' in the list of sources providing funds to 'Stu Fin Aid'. This indicates that funds available from the sources eligible to fund this use were insufficient to satisfy all needs of 'Stu Fin Aid'. This point will be discussed in more detail in the following section.

2.4 DEFICITS

As mentioned earlier, a key feature of the cash flow system is that it does not allow funding needs to be carried over to future periods and, thus, every attempt must be made to meet those needs in the period required. There exists, however, the possibility that funds available from the sources may be insufficient to meet the needs of all the uses in some time periods. Therefore, to counter

STU FIN AID EXPENDITURES BY SOURCE - 1986-87

SOURCE	TOTAL	1ST QT	2ND QT	3RD QT	4TH QT	YEAR
AUX INTEREST INCOME	314	0	0	75	63	138
O/H FUNDS 20%	119	0	0	0	0	0
DEFICIT	143	55	88	0	0	143
TOTAL	576	55	88	75	63	281

STU FIN AID EXPENDITURES BY SOURCE - 1987-88

SOURCE	CUM	1ST QT	2ND QT	3RD QT	4TH QT	YEAR	TOT 2YR
AUX INTEREST INCOME	138	61	79	36	0	176	314
O/H FUNDS 20%	0	38	0	2	79	119	119
DEFICIT	143	0	0	0	0	0	143
TOTAL	281	99	79	38	79	295	576

Figure 4. Expenditure Sources

that possibility, it is assumed that there is another source called 'Deficit' with unlimited availability of funds and that funds from this source will be utilized in case funds from the stipulated sources are insufficient to fund all the requirements. Figures 4 and 5 illustrate situations involving deficits. Figure 5 represents a situation in which the aggregate sources and uses cash flow system had a deficit of $179 during 1986-87, though no deficits existed in 1987-88.

If an allocation solution results in an allocation structure that involves deficits, it implies that available funds are insufficient to meet the needs of the uses. There are three possible ways an administrator can handle such a situation: (1) arrange for additional funds to meet the requirements, (2) reduce the funding requirements of uses in an attempt to avoid deficits, or (3) revise the schedule of cash requirements to be within the schedule of funds availability.

2.5 ELIGIBILITY MATRIX

Another important feature of the cash flow system is the 'eligibility matrix' which indicates the eligibility of a particular use to be funded from a particular source. The reason behind the existence of this matrix is that very often restrictions are placed on a source as to which uses may receive funds from the source. This is especially true of federal and state funds. The eligibility matrix is specified in the format shown in Figure 6. A value of 'Y' in the matrix for the element corresponding to a particular source and use combination implies that the use may receive funds from the source. An 'N', however, prohibits that use from receiving any funds from the source. For example, 'Bonds' cannot fund 'Gen Operations' or 'Professorships'; they may, however, provide funds to 'Renovations'.

There is another instance where it might be useful to place restrictions on uses that may receive funds from a source. For instance, the administration may want to avoid using a particular source

SOURCE EXPENDITURES THROUGH TIME - 1986-87

SOURCE	AVAIL	USED	1ST QT	2ND QT	3RD QT	4TH QT	YEAR
AUX PRIN RESERVE	139102	1055	50	200	93	162	505
AUX INTEREST INCOME	18000	704	0	0	215	63	278
O/H FUNDS 20%	304	304	14	0	100	38	152
DEFICIT	179	179	91	88	0	0	179
TOTAL	157585	2242	155	288	408	263	1114

SOURCE EXPENDITURES THROUGH TIME - 1987-88

SOURCE	CUM	1ST QT	2ND QT	3RD QT	4TH QT	YEAR	TOT 2YR
AUX PRIN RESERVE	505	70	200	80	200	550	1055
AUX INTEREST INCOME	278	91	79	256	0	426	704
O/H FUNDS 20%	152	38	0	35	79	152	304
DEFICIT	179	0	0	0	0	0	179
TOTAL	1114	199	279	371	279	1128	2242

Figure 5. Funds Use Through Time

ELIGIBILITY MATRIX

Source \ Use	Gen Operations	Professorships	.....	Renovations
Bonds	N	N	.....	Y
Local Funds	Y	Y	.....	N
.	.	.	.....	.
.	.	.	.....	.
.	.	.	.....	.
.	.	.	.....	.
Borrowing	N	N	.....	Y

Figure 6. The Eligibility Matrix

so that interest may be earned on those funds. In such a situation, the user can make all uses ineligible to receive funds from that source by placing a 'N' in the eligibility matrix for all source-use combinations involving that source. As a result, when a goal programming model is formulated and solved, the resulting funds allocation structure will have no allocations from that source.

The eligibility matrix may also be used to give structure to the funds allocation process. For every 'N' in the eligibility matrix, all decision variables involving the corresponding source and use are forced to take a value of zero. This reduces the dimensionality of the allocation process and, therefore, reduces its complexity for the solution procedure used.

2.6 SUMMARY

This chapter has presented the sources and uses of funds system in terms of the sources that provide funds and the uses to which these funds can be channeled. The sources and uses were described as categories, instead of individual sources and uses. Sources and uses were categorized in order to reduce the large number of sources and uses involved in the system to a manageable size and to reduce the complexity of the system. The concepts of 'deficits' and the 'eligibility matrix' were also introduced.

The cash flow system provides multi-period information concerning: (1) possible sources along with dollar amount of funds available, (2) possible uses with dollar amounts of needed funds, (3) proposed allocation of funds from sources to uses, (4) excess available funds by source and time period, and (5) deficits in funding needs for some use categories. This information allows the Vice President to match up the schedule of available funds with the projected needs to determine if sufficient funds will be available to meet the needs during each of the time periods in the planning horizon.

3.0 THE DSS ARCHITECTURE

The decision support system performs a number of tasks including facilitating interaction with the data-base subsystem, the model subsystem, and the DSS user/decision maker. For example, the interaction associated with the allocation of funds solution procedure includes selecting the goals, setting the target values, specifying the priority structure, solving the GP model and analyzing the results. In addition, the DSS also performs the following functions: processing data, facilitating what-if analysis and generating reports.

For purposes of presentation of the above-mentioned tasks, the decision support system is divided into three categories: database, GP model, and computer modeling. This chapter will discuss the overall DSS architecture, and each of its three categories.

3.1 THE OVERALL DECISION SUPPORT SYSTEM

This section presents an overview of the system. This overview includes: (1) an outline of the various steps involved in a typical session, (2) important features/characteristics of the system, and (3) computer systems and programming languages used in the development of this DSS.

3.1.1 Steps in a Typical Session

A typical session starts with the user being provided access to the database which stores information relating to the sources and uses of funds system. The user is provided on-line access to information concerning the up-to-date status of the system, including the following information: (1) projection over time of all available funds by source, (2) projection over time of all funding requirements or needs, (3) projection over time of currently proposed allocations, and (4) projection over time of available (unallocated) funds by source. This information allows the user to match up the schedule of available funds with the projected needs to determine if sufficient funds would be available at the times needed. It also allows the user to reach new decisions concerning proposed new projects. The user also has an opportunity to modify or update the database. The possible changes include: adding a new source/use, deleting an existing source/use, or modifying funding availability, funding requirements, the eligibility matrix, or the planning horizon (time periods considered).

After the database has been updated, if required, the user can resolve for a new allocation solution of the cash flow system using a goal programming model. The modeling process starts with the user viewing results of the existing GP model from a previous session. This existing model, or the base model, is the GP model that has so far given the best results to the funds allocation problem being considered. The results of this model serve as a base from which to start looking for ways to improve the system in search of a better solution. Next, the problem framework needs to be

defined in terms of the planning horizon, and sources and uses that are to be included in the goal programming model. The problem framework need not be the same as that existing in the database. That is, the user decides which sources and uses to include in the goal programming model, and what the planning horizon should be. The funding availability or requirements and the eligibility matrix may also be changed for the sources and uses selected to be included in the model.

When the variables relating to the problem framework have been defined, the user may begin working on the GP model. There are two choices at this stage: either use the existing GP model, in which case all the goals in that model are automatically loaded, or formulate a new GP model, in which case the user must provide all goals that are to be included. It may be noted that since the user decides which sources and uses to include in the GP model, the base GP model is automatically modified when changes to the temporary database are made. For instance, if a particular source exists in the base model, but is excluded from the current problem framework, then all goals and rigid allocations concerning that source are deleted from the base model. Regardless of whether the existing model is used or a new model created, goals may be added, modified, or deleted at the user's discretion. Formulation of a goal requires specification of the target value, deviation type, priority and weight.

After all goals have been formulated, the GP model is ready to be solved. The DSS automatically executes the GP model by generating the model code in an appropriate format and invoking the solution algorithm. The model results are then displayed in the form of reports which summarize funding availability and requirements over time and how these funds are to be allocated. The reports also describe in detail how funds from a particular source are to be channeled to various uses, and which sources are funding a particular use. The user also has an opportunity to view goal achievement reports that describe which goals were achieved. These reports include the deviations, both absolute and percentage, from the target value for goals that could not be achieved. The control is then returned to the user who, if not satisfied with the allocation structure, can test and evaluate alternative goals and priority structures in the search for a more acceptable funds allocations structure.

3.1.2 Design Philosophy

For any decision support system to be an effective and valuable tool as an aid to decision-making, it must possess certain key features or characteristics [18]. This DSS was designed and developed to possess the following features:

INTERACTIVE: to provide on-line information and access to the sources and uses of funds model and immediate feedback on the goal programming model results to facilitate evaluation of the solution results by the user as well as an opportunity to perform what-if and sensitivity analyses.

COMPREHENSIVE: to integrate the three subsystems of the DSS: database, model, and computer modeling.

USER-FRIENDLY: to facilitate the interaction between the user, database, and the model so that it is not necessary for the user to be an expert in computer programming or goal programming to be able to use the system effectively.

MENU-DRIVEN: to keep the user informed of all possible options at different stages of a session and facilitate back and forth movement from one hierarchical level of the system to another.

FLEXIBLE: to let the user decide the problem framework, and goals and rigid allocations that are to be included in the goal programming model, and facilitate experimentation with various different goal and priority structures.

The need to incorporate these features and characteristics in the decision support system strongly influenced the design and development of this system, including: structuring of the system, selection of programming languages, design of the database, and the mechanism for solving the goal programming model.

Figure 7 illustrates the overall architecture of the DSS. The DSS has been divided into three components, or subsystems: (1) Database, (2) GP model, and (3) Computer modeling. Note the bilateral flow of information from one subsystem to another. The computer modeling provides the user information from the database, and allows the user to update the database. The database stores information relating to the sources and uses of funds system including the funding availability by sources, funding needs of uses, and the GP model allocation results. It also provides the interaction between the user and the allocation model. The model takes the parameter values from the database and, in return, updates the database after the model has been formulated and solved. The use of these subsystems was very effective in the development of this DSS. Each of these subsystems was developed separately before they were integrated to form the overall system. Developing each system separately greatly facilitated the testing and validation of the DSS. Also, modifications to the system translated into modifying one or more of these subsystems, and each of these subsystem could then be modified and validated before being reintegrated into the overall system.

3.1.3 The Computer System and Programming Languages

The DSS was developed and implemented on the Virginia Polytechnic Institute and State University's IBM 3090 computer system, which uses the VM/SP (Virtual Machine/System Product) operating system. It is run in an interactive mode in the CMS (Conversational Monitoring System) environment on an IBM 3270, or emulater terminal.

All programs and data are kept in files which are stored on minidisks. Each file is identified by a filename, a filetype, and a filemode. The filemode identifies the minidisk on which the file is stored; the file type determines the type of contents (DATA, EXEC, FORTRAN, PANEL) of the file; and filename gives a specific indication of their contents (for data files) or their purpose (for program files). The DSS uses the following programming languages and systems: EXEC 2, FORTRAN,

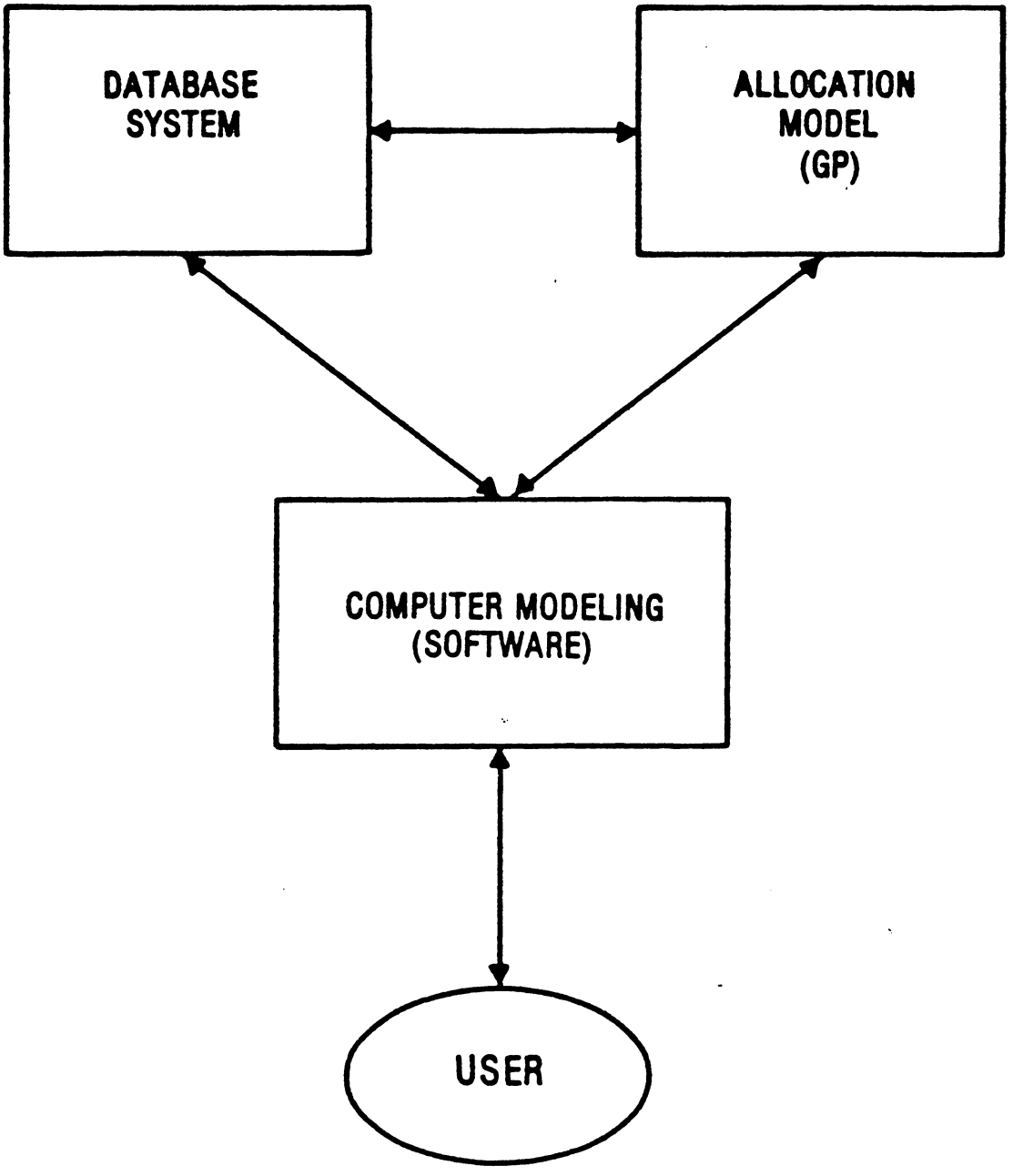

Figure 7. The DSS Architecture

LINDO, and DMS (Display Management System). Each language or system will be described in the following discussion.

3.1.3.1 EXEC 2

All control programs are written in EXEC 2. The justification for selecting EXEC 2 is that it can be used both as a programming language and as a command language. Also, it is one of the few languages that can provide access to DMS (Display Management System) that is used to prepare panels for presenting menus and performing input/output operations in the DSS. Aside from being used to write programs, EXEC 2 has been used as a command language to perform a variety of functions including: (1) read and write files, (2) invoke the DMS, (3) invoke the LINDO program, and (4) execute CP and CMS commands.

3.1.3.2 FORTRAN

FORTRAN programs are used to perform computations, create data files, generate the GP model code in MPS format, and write reports. The programs, which run interactively, are executed from EXEC 2 control programs. Most of their input/output operations are performed on data files, which are specified using the FILEDEF commands. FORTRAN programs have been used quite frequently and extensively in the DSS due to the fact that EXEC 2 has very limited computational capabilities and cannot read or write files in a formatted mode.

3.1.3.3 LINDO

The goal programming model is solved using LINDO [29,30,31], a commercial linear programming package. LINDO, an interactive package, provides the software for the simplex solution algorithm

and the USER subroutine is used to solve the goal programming model as a sequence of linear programming models using LINDO. There are two files that serve as the input to LINDO. FILE FT25F001 contains the mathematical constraints and a dummy objective function in the MPS format, and FILE FT75F001 contains the achievement function in terms of deviation variables at various priority levels. Both these files are generated by FORTRAN programs after the goals and rigid allocations have been formulated by the user.

3.1.3.4 DMS

The menu-driven decision support system utilizes the IBM Display Management System (DMS) [10] to prepare panels which can be used for presenting menus as well as for performing data input/output operations.

Before a screen can be used, it has to be designed as a panel using the DMS. The designing phase essentially consists of defining all the titles and the data fields. These titles may be highlighted, if needed. The options for data fields include whether they are to be numeric or alphanumeric, protected or unprotected, and highlighted. Once a screen has been designed, it is stored in the form of a file with a file name and a filetype of PANEL.

When a screen needs to be shown, the particular panel is selected and data fields, if any, are given names and values, and the panel is then displayed. These panels can be printed immediately, using the PRINT SCREEN key on the terminal keyboard. This invoking of the DMS environment is possible from only a limited number of programming languages that include: EXEC, EXEC 2, COBOL, PL/I, and the Assembly language.

3.1.4 The System Flow-Chart

The system flowchart for the DSS is given in Figure 8. The flowchart details various tasks that are performed by the system. The modular form of the system implies that each function of the DSS can be explained and developed independent of the others. Note that a number of options are provided to the user at various stages of the DSS. Using the menus provided, the user can go back and forth to various levels, skipping options that he/she does not wish to use.

3.2 THE DATABASE SUBSYSTEM

As previously stated, the database subsystem represents one of the three major components of the DSS. The database subsystem stores and processes all information relating to the sources and uses of funds. This information base also includes the parameter values that are used in formulating the GP model. It is comprised of two kinds of data: those that define the problem framework and those that define the goals for the GP model used to model the cash flow system. All data is stored on a minidisk in the form of files. In the following sections, these data files will be discussed.

3.2.1 Data Files Relating to Sources and Uses

There are seven such data files, each with a file type of PERM, that serve as the permanent data base. When a DSS session is initiated, copies of each of these files are made with the same file name but with a file type of DATA, and these form the temporary database. All temporary changes that are made are incorporated into these files so as not to change the permanent data base, unless the

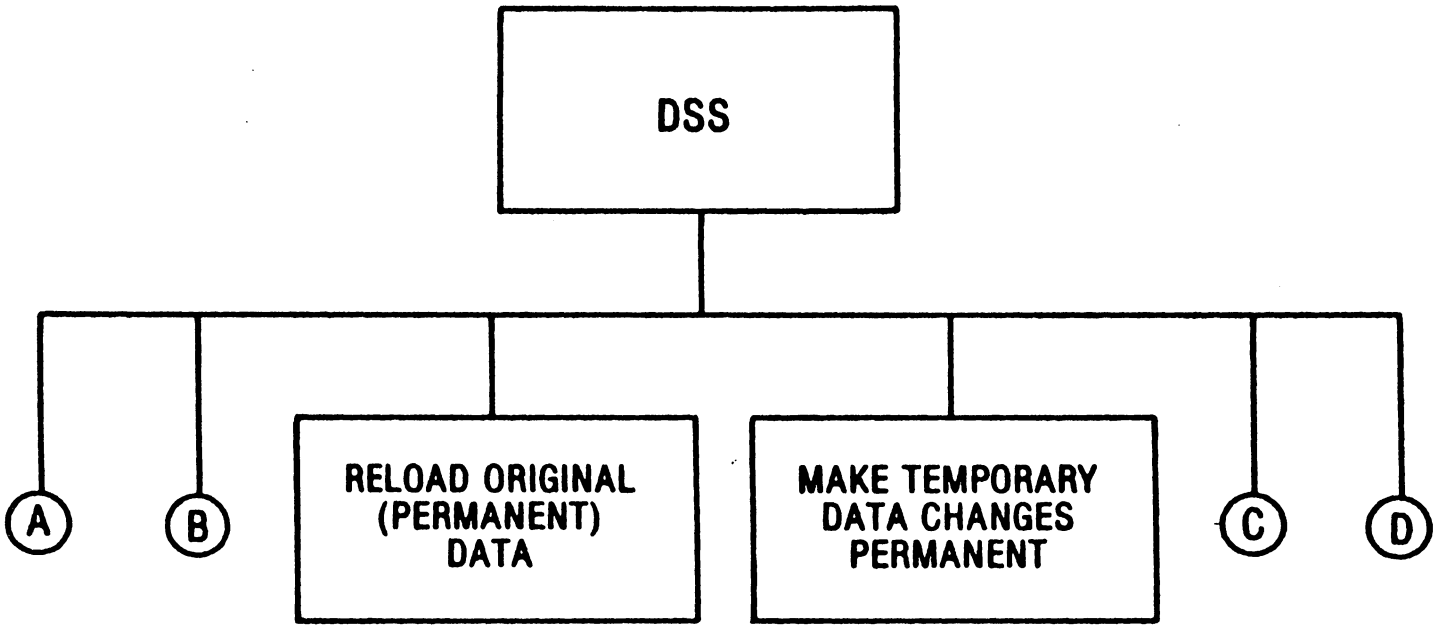

Figure 8(a). Flow-Chart of the DSS Structure

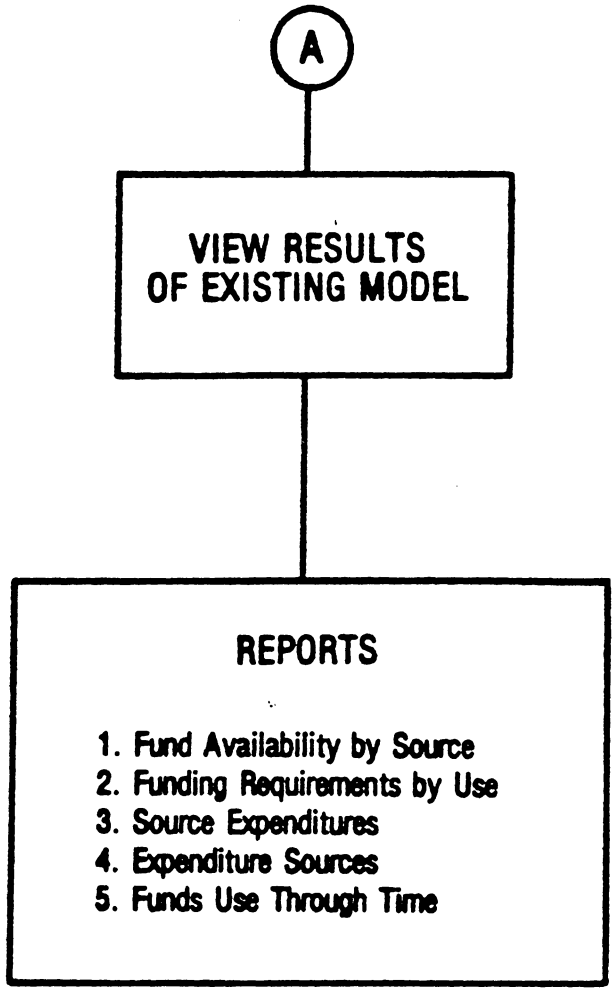

Figure 8(b). View Results of Existing Model

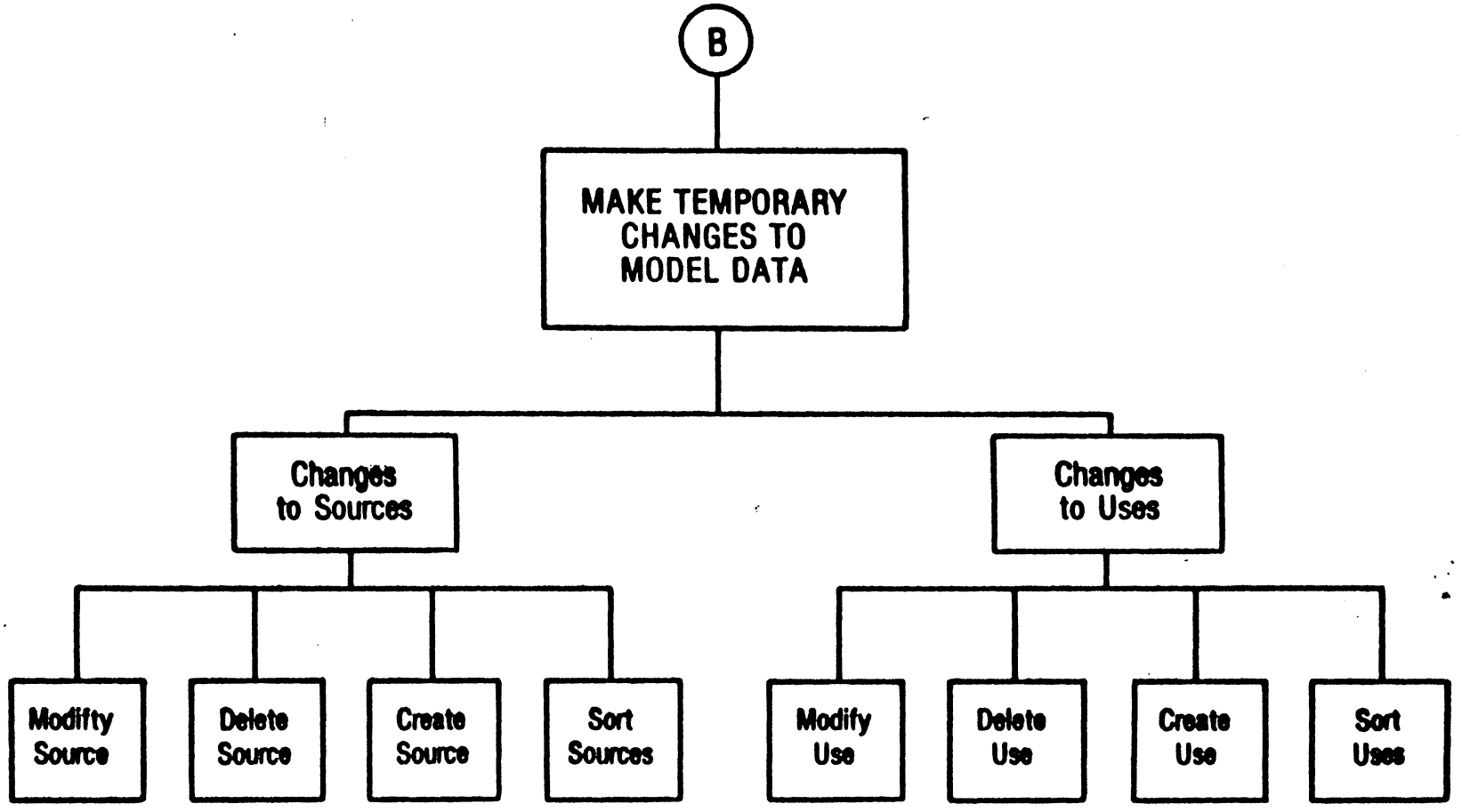

Figure 8(c). Make Temporary Changes to Model Data

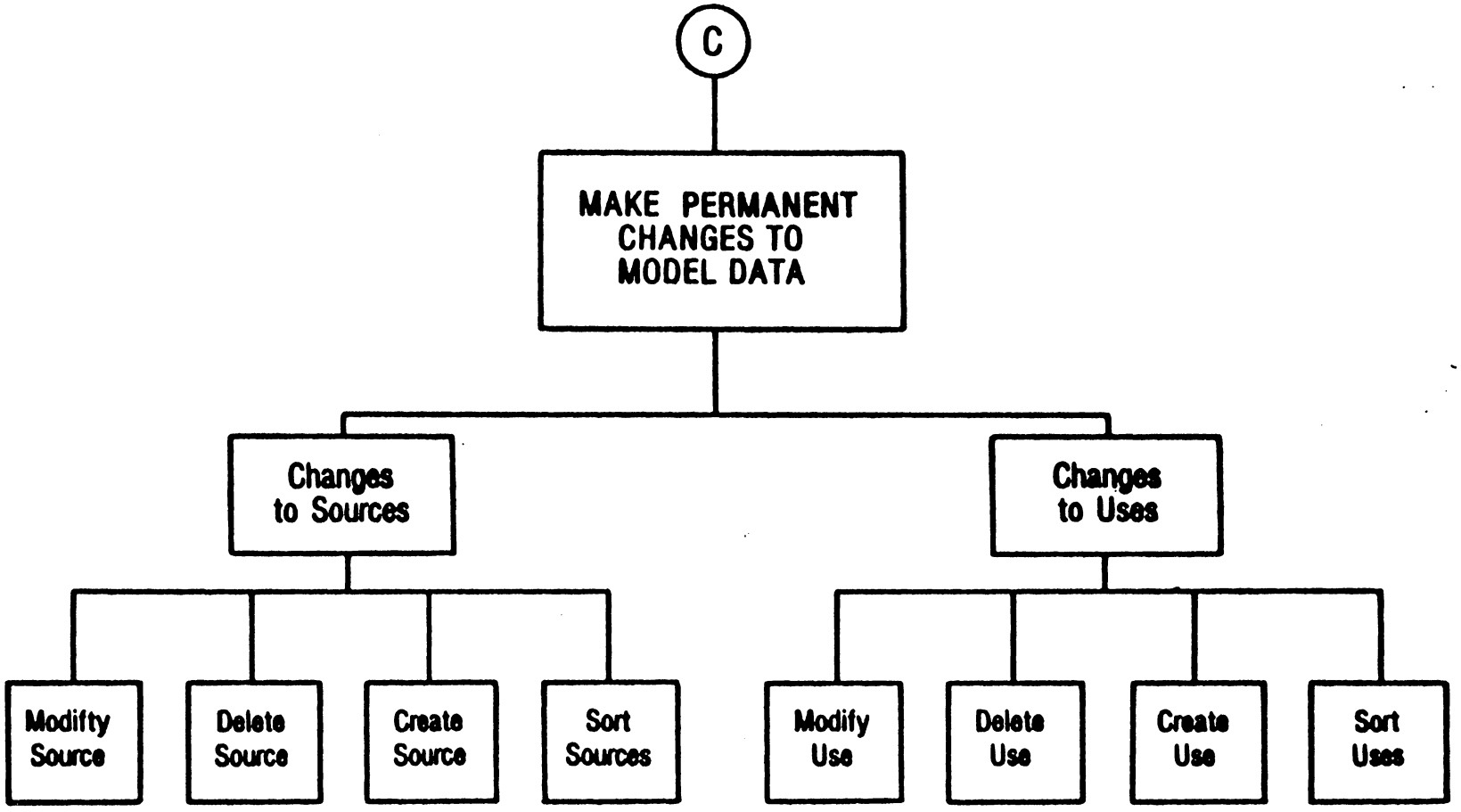

Figure 8(d). Make Permanent Changes to Model Data

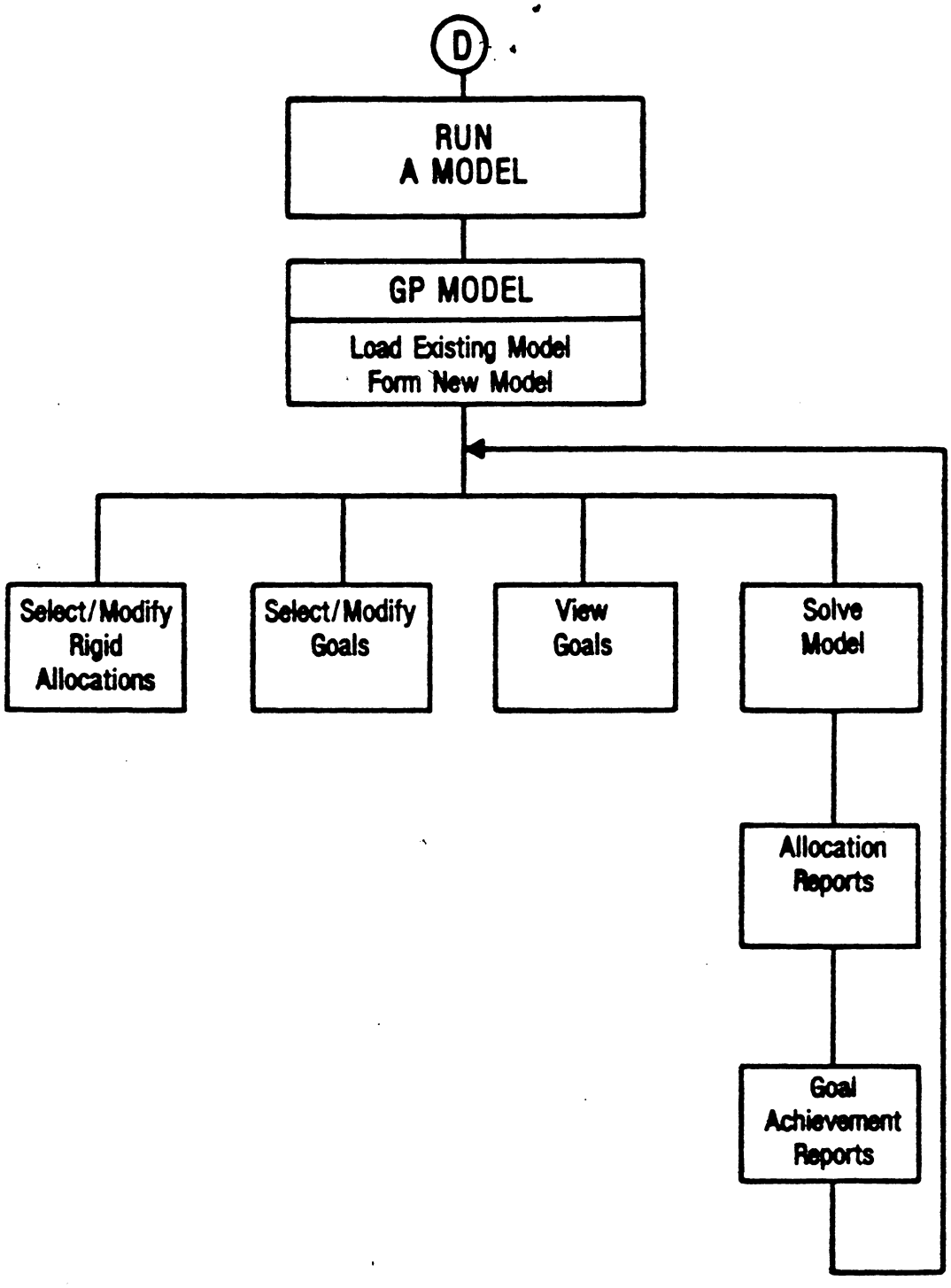

Figure 8(e). Run a Model

user so authorizes. The data contained in these files is used to provide on-line information about the cash flow system and to define parameters of the GP model.

3.2.1.1 INIT

This file consists of a single record that contains the following pieces of information, in a free format, relating to the problem framework:

- Number of Sources
- Number of Uses
- Planning Horizon in Years
- Starting Year

The primary purpose of this file is to determine the structure of other data files since the number of records per source or use depends on the planning horizon. This file allows the computer programs to know which record corresponds to which source or use and for which fiscal year.

3.2.1.2 YEAR

This file stores the fiscal years that comprise the planning horizon. For example, if the planning horizon is three years and the initial year is 1986-87, this file would have three records with the following entries:

1986-87

1987-88

1988-89

3.2.1.3 SOURCEN

This file stores the names of all sources that will provide funds. Each name is written on a separate record and can contain a maximum of twenty characters. Because a printed line on the terminal can contain only eighty characters, in some of the reports that are displayed on the terminal these names are truncated to the right to fit all relevant data on one line. All printed reports, however, contain the full twenty characters of a source name.

3.2.1.4 USEN

This file stores the names of all uses that require funds. Each name is written on a separate record and can contain a maximum of twenty characters. As in the case of sources, these names are sometimes truncated in reports that are displayed on the terminal.

3.2.1.5 SOURCED

This file stores data pertaining to the availability of funds for each source included in the sources and uses of funds system. For each source, there is one record for the initial balance, and one record for each year in the planning horizon that contains data for the four quarters of that year.

3.2.1.6 USED

This file stores data pertaining to requirements (needs) for funds for each use included in the data base. For each use, there is one record for each year in the planning horizon that contains data for the four quarters of that year.

3.2.1.7 CONST

This file contains the eligibility matrix which determines the eligibility of a source to fund a use. The rows and columns correspond to sources and uses, respectively; a '1' for a particular source-use combination indicates the source may fund the use, while a '0' prohibits any such funding. The user decides whether a source may fund a use or not by entering a 'Y' or an 'N'. These 'Y's and 'N's are then automatically transformed into '1's and '0's, respectively, by the program.

3.2.2 Data Files Relating to the GP Model

These files contain information relating to rigid constraints and goals included in the existing or the base GP model. When a user asks for the existing model to be loaded, the rigid constraints and goals of the existing GP model are loaded from these files. There are four such files explained in the sections that follow.

3.2.2.1 RIGID

These constraints, which must always be satisfied, are used to allocate a specified amount of funds from a source to a use during a period. For example, one such rigid allocation might be to allocate $500 from 'Private Funds' to 'Professorships' during the third period. The file RIGID keeps one record for each such constraint that exists in the existing GP model. Each record contains:

- Source number
- Use number
- Period number
- Amount allocated

3.2.2.2 GOAL1

This file contains information concerning type I goals: allocate within a specified target dollar amount from a source to a use during a particular period. The user must specify the deviation type of the goal, that is, whether the amount to be allocated is to be at most, at least, or exactly equal to the target value, by using the symbols $\leq$, $\geq$, and $=$, respectively. For example, one such goal might be to allocate exactly $800 from 'Private Funds' to 'Professorships' during the fifth period at a priority of 3 and a weight of 1. Each record of this file contains the following data for such a goal:

- Source number
- Use number
- Period number
- Target amount
- Deviation type
- Priority
- Weight

3.2.2.3 GOAL2

Type II goals are used to allocate a percentage of available funds from a source to a use during a specified year. The user must specify whether the percentage amount to be allocated is to be at most, at least, or exactly equal to the target value. For example, one such goal might be to allocate 20% of 'Private Funds' to 'Professorships' during the first year (i.e., 1986-87) of the planning horizon at a priority of 4 and a weight of 1. Each record of this file contains the following information for such a goal:

- Source number
- Use number
- Year
- Target percentage
- Deviation type
- Priority
- Weight

3.2.2.4 GOAL3

Type III goals are used to allocate a percentage of total funds needed for a project from a specific source during a specified year. The user must specify whether the percentage amount to be allocated is to be at most, at least, or exactly equal to the target value. For example, one such goal might be to fund 50% of the cost of 'Student Aid' from 'Overhead' funds during the second year (i.e., 1987-88) of the planning horizon at a priority of 2 and a weight of 1. Each record of this file contains the following information.

- Source number
- Use number
- Year
- Target percentage
- Deviation type
- Priority
- Weight

3.2.2.5 ALLOCATN

This file contains the allocation results of the goal programming model. There are as many records as the number of decision variables, with each record containing the value for one decision variable. For example, if the GP model contained ten sources, ten uses, and a planning horizon of two years (i.e., eight quarterly periods), the ALLOCATN file would have 10*10*8 = 800 records.

3.3 THE DIALOG SUBSYSTEM

The dialog subsystem is probably the most important of the three subsystems as it provides the interaction between the user on the one hand and data and models on the other. It allows the Vice President to access information, via an on-line terminal, concerning the up-to-date status of all funds available to the university. The system provides a projection over time of all funding requirements or needs, and a projection over time of currently proposed allocations of available funds to specified needs. Thus, the system also provides up-to-date information concerning available (unallocated) funds by source and by time period available. This allows the Vice President to match up the schedule of available funds with the projected needs to determine if sufficient funds would be available at the times needed. It also allows the user to model the funds allocation process by formulating a goal programming model, solving it, analyzing the results, and performing a what-if analysis without having an expertise in goal programming or computer programming languages.

The decision support system uses menus to provide various options to the user. The user selects the option using program function, or PF, keys. After each selection, additional menus may be provided to pinpoint the specific option available to the user.

At the time a session is initiated, the user is presented with six major options at the highest level, as shown in Figure 9. The following sections will discuss these major high level options, and any further lower level options provided within each of these.

3.3.1 View Results of Existing Model

This option provides information about the sources and uses of funds system in the form of reports. These reports also include results of the GP model used to model the allocation process. These reports, which include summaries as well as detailed reports, are explained below.

Funds Availability by Sources:	Describes, for each year in the planning horizon, the dollar amount of funds available from each source by quarter.
Funding Requirements by Uses:	Describes, for each year in the planning horizon, the dollar amount of funds needed for each use by quarter.
Source Expenditures:	Describes in detail how funds from a particular source are being channeled to various uses over time, as determined by the allocation model. A different report is generated for each source category.
Expenditure Sources:	Describes in detail how a particular use is being funded from various sources over time, as determined by the allocation model. A different report is generated for each use category.
Funds Use Through Time:	Describes how much funds are available from each source and how much of these have been allocated to various uses by quarter, as determined by the allocation model.

FUND SOURCES AND USES MODEL

PF1 VIEW RESULTS OF EXISTING MODEL

PF2 MAKE TEMPORARY CHANGES (WHAT-IF ANALYSES) TO DATA

PF3 RELOAD ORIGINAL (PERMANENT) DATA

PF4 MAKE TEMPORARY CHANGES TO DATA PERMANENT

PF5 MAKE PERMANENT CHANGES TO DATA

PF6 RUN A MODEL

PF10 QUIT

Figure 9. The Main Menu

3.3.2 Make Temporary Changes to Model Data

This option is used to change the length of the planning horizon, the number of sources or uses along with the available or needed funds, and the constraint matrix for data stored on the temporary database. All of these changes are temporary in nature and do not affect the permanent data base. When a terminal session is initiated, the permanent database is copied to the temporary database, which in turn is used to provide parameters for the GP model of the cash flow system. The primary purpose in providing this temporary database is to ensure that the user is not restricted to using the problem framework of the permanent database. Thus, for modeling the cash flow system, the user need not use all sources and uses residing on the database. The user can decide which elements to include by appropriately modifying the temporary database to define the problem framework for the decision problem at hand. This prevents the permanent database from being needlessly and unintentionally changed while allowing flexibility in decision analysis.

As mentioned previously, this option is used to make changes relating to the planning horizon and the sources and uses. The planning horizon is specified in terms of the number of years in the planning horizon, and the starting year. The default values are the same as stored for the permanent database. The user has the option of changing either or both the planning horizon and the starting year. The DSS will automatically modify the temporary database to reflect these new values by deleting data that corresponds to fiscal years not included in the planning horizon and by asking the user to provide data for those years that are in the planning horizon but for which data is not available in the permanent database.

Changes to sources include: (1) deleting a source, (2) modifying a source, (3) creating a new source, and (4) sorting (rearranging the order of) the sources. When a source is deleted, all data relating to that source is purged from the temporary database. In addition, all rigid allocations and goals involving the source are also purged from the existing GP model. A source may be modified in terms of its initial balance, the funding available over each period of the planning horizon, and the list of

uses that are eligible to receive funds from the source. Just as in the case of deleting a source, when a source is modified, all rigid allocations and goals involving the source are purged from the existing GP model. When a new source is created, the user has to input the initial balance, the funding available over each period of the planning horizon, and the list of uses eligible to receive funds from the new source. Sorting the sources essentially means specifying the order in which these sources will appear in various reports.

When a source is deleted, the sources listed below that source are moved up one notch. A newly created source is added at the bottom of the existing list of sources. Modifying a source does not change its position in the list. The user has the option to change the order in which the sources are listed by sorting them on a number of criteria that include: alphabetically, decreasing amount of funds, increasing amount of funds, and user-specified. All of these criteria are self-explanatory except the user-specified criteria, in which a list of all sources is displayed and the user can specify the order in which these should be sorted by placing a rank-order number after each source.

Possible changes to uses are exactly the same as those for sources; that is, they may be deleted, modified, or created. It may be noted, however, that uses do not involve any initial balance. They may also be sorted using criteria similar to those for the sources.

3.3.3 Reload Original (Permanent) Data

If, while making temporary changes to data, the user realizes that some unintentional changes have been made, or simply wishes to start all over again, this option can be used to erase all temporary data changes that have been made thus far. When this option is used, the current temporary database is erased and a new one is copied from the permanent database. No further user interaction is required when this option is selected.

3.3.4 Make Temporary Changes to Data Permanent

If a user has been experimenting with temporary changes to the data, feels satisfied with these changes and would like to make the same changes to the permanent data base, then the "Make Temporary Changes to Data Permanent" option may be used. In selecting this option, the user has no further interaction with the DSS. Using this option after some temporary changes have been made would have the same effect as making permanent changes to begin with. This could provide more flexibility, since the user can experiment with various temporary changes before deciding to implement those changes permanently.

3.3.5 Make Permanent changes to Model Data

This option works the same way as the option "Make Temporary Changes" to Data, except that changes made using this option are permanent and are incorporated into the permanent database.

Because the use of this option can have a tremendous impact on the contents of the permanent database, extreme caution must be taken when using this option. In fact, it is highly recommended that instead of using this option, the user use a combination of two options: "Make Temporary Changes to Data", followed by "Make Temporary Changes to Data Permanent". This will achieve the same results and provide a margin for changing one's mind about what changes to make permanent.

3.4 THE MODEL SUBSYSTEM

All user interaction relating to GP model formulation is achieved using the option: "Run a Model". When this option is used, the user is informed of the variables that define the problem, including number of sources, number of uses, planning horizon, and the starting year. These variables cannot be changed by the user at this point. They can only be changed using the option "Make Temporary Changes to Data". It is assumed that the user has already exercised that option to define the values of these variables before moving on to this part of the program.

Next, the user must decide whether the existing GP model is to be used or a new model is to be formulated. In the former case, goals and rigid allocations of the existing model are automatically loaded, while in the latter case there are no default goals or rigid allocations and the user must formulate all such allocations and goals that are to be included in the model. In either case, the user has the option to create, delete, or modify goals and allocations.

After the user has made a choice as to whether the existing model is to be loaded or a new one is to be created, there are a number of options. These include: (1) view results of existing model, (2) select/modify rigid allocations, (3) select/modify goals, (4) view current goals and allocations, and (4) run model. These options are discussed in greater detail in the following sections.

3.4.1 View Results of Existing Model

This option provides information relating to the solution results previously obtained from the GP model (if any). This includes the sources and uses included in the model, and the resulting fund allocations in the form of reports. These reports, which include summaries as well as detailed reports, are explained below.

Funds Availability by Sources:	Describes, for each year in the planning horizon, the dollar amount of funds available from each source by quarter.
Funding Requirements by Uses:	Describes, for each year in the planning horizon, the dollar amount of funds needed for each use by quarter.
Source Expenditures:	Describes in detail how funds from a particular source are being channeled to various uses over time, as determined by the allocation model. A different report is generated for each source category.
Expenditure Sources:	Describes in detail how a particular use is being funded from various sources over time, as determined by the allocation model. A different report is generated for each use category.
Funds Use Through Time:	Describes how much funds are available from each source and how much of these have been allocated to various uses by quarter, as determined by the allocation model.

3.4.2 Select/Modify Rigid Allocations

As was previously explained, rigid constraints are used to allocate a specified dollar amount from a source to a use during a quarter. When this option is used, a screen containing a list of all sources and uses is displayed. The user selects the particular source and use categories for which the specified allocation is to be made by entering their respective numbers. Once these numbers are entered, a screen displays the funds available from the source and the funds needed for the use, by quarter for each year of the planning horizon. Any existing allocations are also displayed. The user can enter the appropriate allocation amount for each quarter of the planning horizon, or modify an existing value. A test is made (by the program) after each such allocation to ensure that the entered amount in not greater than either what is needed or what is available.

Figure 10 illustrates how this allocation process takes place. For the year 1986-87, the source 'Aux Prin Reserve' has $69551 available during the first quarter and none during the second quarter. The funding needs for 'Gen Operations' during the two quarters are $100 and $200 respectively. When the user makes an allocation of $100 from 'Aux Prin Reserve' to 'Gen Operations' out of the $69551 available from 'Aux Prin Reserve' during the first quarter, only $100 is used, and the remaining amount of $69451 is carried forward to the next quarter. The funds available from this source for the second quarter now become $69451 instead of the initial amount of zero funds available during that quarter. This process continues on as allocations are made in subsequent time periods.

3.4.3 Select/Modify Goals

There are three types of goals that may be included in the GP model: (1) allocate specified dollar target amount from a source to a use, (2) allocate percentage of a source to a use, and (3) allocate percentage of a use from a source. The following sections discuss the formulation of these three types of goals within the Run a Model option of the program.

3.4.3.1 Allocate Specified Dollar Target Amount From a Source to a Use

To formulate this goal, the source-use combination needs to be selected using a procedure similar to that for the rigid constraints. The user fills in the target dollar amount, the deviation type of the goal, and the goal priority and weight for each quarter. The deviation type of the goal specifies whether the amount to be allocated is to be at most, at least, or exactly equal to the target value. In case this goal had already been formulated, the relevant values would appear in the data fields and the user has the option to modify those values, or delete this goal altogether by putting a Y in the 'delete ?' field. Also provided at the bottom of the screen are fields relating to goal achievement.

GOAL PROGRAMMING MODEL

SOURCE NAME: AUX PRIN RESERVE

USE NAME : GEN OPERATIONS

YEAR : 1986-87

	QTR1	QTR2	QTR3	QTR4
AVAILABLE FROM SOURCE:	69551	0	0	0
REQUIRED FOR USE :	100	200	300	200
AMOUNT ALLOCATED :				

GOAL PROGRAMMING MODEL

SOURCE NAME: AUX PRIN RESERVE

USE NAME : GEN OPERATIONS

YEAR : 1986-87

	QTR1	QTR2	QTR3	QTR4
AVAILABLE FROM SOURCE:	69551	69451	0	0
REQUIRED FOR USE :	100	200	300	200
AMOUNT ALLOCATED :	100			

Figure 10. Select/Modify Rigid Allocations

If a goal for this combination had been included in the last GP model that was solved, these fields would contain the relevant goal achievement values. These values provide some feedback as to the achievement of that goal so that the user may suitably change the priority or weight for this goal in case the goal attainment was vastly off the target. Note that four such goals, one per quarter, are possible for each year in the planning horizon for each source-use combination.

A typical goal formulation process for this type of goal for the source 'O/H Funds 20%' and the use 'Stu Fin Aid' is shown in Figure 11. The screen displays the amount of funds available from the source and the amount needed by the use for each quarter of the year 1986-87. For each quarter, there are four fields for data entry, including data on the target value, deviation type, priority, and the weight for the goal formulated. These are followed by fields that detail the goal achievement results. Note that a goal to allocate exactly $30 from 'O/H Funds 20%' to 'Stu Fin Aid' at a priority of 3 and a weight of 1 had been included in the previous model. As the goal achievement fields indicate, this goal could not be achieved as no funds were allocated from the source to the use during that quarter, thus, resulting in an absolute deviation of $30 and a percentage deviation of 100% from the goal target value. As can be seen, the user has formulated a new goal for the first quarter to allocate at least $25 from the source to the use at a priority of 3 and a weight of 1. In addition, the existing goal for the second quarter has been modified so as to allocate exactly $35 at a priority of 1 and a weight of 1.

3.4.3.2 Allocate Percentage of a Source to a Use

Since this is an aggregate goal, i.e., for a year instead of for each quarter, only one goal per year is possible for every source-use combination. The user needs to input the target percentage, deviation type, priority, and the weight. As in the previous case, if the goal already exists relevant values would fill these fields and could be changed if needed, or the goal could be altogether dropped by using the 'delete ?' option. Also, if a goal had been included in the last GP model that was solved, goal achievement data would be provided in the relevant fields.

GOAL PROGRAMMING MODEL

GOAL: ALLOCATE SPECIFIED AMOUNT FROM SOURCE TO USE

SOURCE : O/H FUNDS 20%
USE : STU FIN AID
YEAR : 1986-87

	QTR 1	QTR 2	QTR 3	QTR 4
AVAILABLE FROM SOURCE	38	38	38	38
REQUIRED FOR USE	55	88	75	63
ALLOCATION TARGET		30		
DEVIATIONAL TYPE (<,=,>)		=		
PRIORITY		3		
WEIGHT	1	1	1	1
DELETE ?	N	N	N	N
AMOUNT TARGETED		30		
AMOUNT ACHIEVED		0		
ABSOLUTE DEVIATION		30		
PERCENTAGE DEVIATION		100.0		

GOAL PROGRAMMING MODEL

GOAL: ALLOCATE SPECIFIED AMOUNT FROM SOURCE TO USE

SOURCE : O/H FUNDS 20%
USE : STU FIN AID
YEAR : 1986-87

	QTR 1	QTR 2	QTR 3	QTR 4
AVAILABLE FROM SOURCE	38	38	38	38
REQUIRED FOR USE	55	88	75	63
ALLOCATION TARGET	25	35		
DEVIATIONAL TYPE (<,=,>)	>	=		
PRIORITY	3	1		
WEIGHT	1	1	1	1
DELETE ?	N	N	N	N
AMOUNT TARGETED		30		
AMOUNT ACHIEVED		0		
ABSOLUTE DEVIATION		30		
PERCENTAGE DEVIATION		100.0		

Figure 11. Select/Modify Goal Type I - Allocate Specified Amount From a Source to a Use

Figure 12 illustrates the goal formulation process for this type of goal. The screen provides funds availability and requirements for the current year (i.e., 1987-88), cumulative up through this year, and total over the entire planning horizon. The screen does not contain any goal, implying that the previous GP model did not include this goal and consequently the goal achievement fields at the bottom of the screen are left blank. In this case, the user has formulated a goal to allocate at most 10% of funds available from the source 'O/H Funds 20%' to the use 'EQP Enhancement' at a priority of 5 and a weight of 1 for the year 1987-88.

3.4.3.3 Allocate Percentage of a Use from a Source

The formulation for this type of goal involves exactly the same procedure as in the previous goal type. It may be noted, however, that the percentage now applies to funds needed (use) instead of funds available (source).

A typical goal formulation for this type of goal is shown in Figure 13. As may be seen, a goal to allocate exactly 50% of the needed funds for 'Gen Operations' from 'O/H Funds 20%' at a priority of 4 and a weight of 1 during 1986-87 had been included in the previous model, and as the goal achievement fields indicate, the goal fell short by $248 or 62%. In this case, the user has modified the goal to allocate exactly 25% of the needed funds at a priority of 3 and a weight of 1.

3.4.4 View Existing Goals

This option permits the user to view, in the form of reports, all rigid constraints and goal formulations that have been included in the model. The basic objective is to provide the user with an idea of the total number of goals of each type that have been included, and the priorities of these goals. There are six such reports including: (1) Rigid Allocations (sorted by source), (2) Rigid Allocations (sorted by use), (3) Goal Type I (sorted by priority), (4) Goal Type II (sorted by priority), (5) Goal

GOAL PROGRAMMING MODEL

GOAL: ALLOCATE PERCENTAGE OF A SOURCE TO A USE

SOURCE : O/H FUNDS 20%
USE : EQP ENHANCEMENT
YEAR : 1987-88

	FUNDS AVAILABLE	FUNDS REQUIRED
THIS YEAR	152	33
CUMMULATIVE	304	66
TOTAL	304	66

PERCENTAGE TO BE ALLOCATED : 10.0
DEVIATIONAL TYPE (<,=,>) : <
PRIORITY : 5
WEIGHT : 1 DELETE ? N

	PERCENTAGE	$ AMOUNT
TARGET :		
ACHIEVED :		
ABSOLUTE DEVIATION :		
PERCENTAGE DEVIATION :		

Figure 12. Select/Modify Goal Type II - Allocate Percentage of a Source to a Use in a Year

GOAL PROGRAMMING MODEL

GOAL: ALLOCATE PERCENTAGE OF A USE FROM A SOURCE

SOURCE : O/H FUNDS 20%
USE : GEN OPERATIONS
YEAR : 1986-87

	FUNDS AVAILABLE	FUNDS REQUIRED
THIS YEAR	152	800
CUMMULATIVE	152	800
TOTAL	304	1600

PERCENTAGE TO BE ALLOCATED : 50.00
DEVIATIONAL TYPE (<,=,>) : =
PRIORITY : 4
WEIGHT : 1 DELETE ? N

		PERCENTAGE	$ AMOUNT
TARGET	:	50.0	400
ACHIEVED	:	19.0	152
ABSOLUTE DEVIATION	:	31.0	248
PERCENTAGE DEVIATION	:	62.0	62.0

GOAL PROGRAMMING MODEL

GOAL: ALLOCATE PERCENTAGE OF A USE FROM A SOURCE

SOURCE : O/H FUNDS 20%
USE : GEN OPERATIONS
YEAR : 1986-87

	FUNDS AVAILABLE	FUNDS REQUIRED
THIS YEAR	152	800
CUMMULATIVE	152	800
TOTAL	304	1600

PERCENTAGE TO BE ALLOCATED : 25.00
DEVIATIONAL TYPE (<,=,>) : =
PRIORITY : 3
WEIGHT : 1 DELETE ? N

		PERCENTAGE	$ AMOUNT
TARGET	:	50.0	400
ACHIEVED	:	19.0	152
ABSOLUTE DEVIATION	:	31.0	248
PERCENTAGE DEVIATION	:	62.0	62.0

Figure 13. Select/Modify Goal Type III - Allocate Percentage of a Use From a Source in a Year

Type III (sorted by priority), and (6) All Goals (sorted by priority). These reports are illustrated in Figure 14.

3.4.5 Run Model

When all constraints and goals have been formulated, the GP model is ready to be solved. The DSS automatically uses a series of FORTRAN programs and SYSTEM UTILITIES to create two files: FILE FT25F001 which stores the GP model constraints in the MPS format, and FILE FT75F001 which contains the objective function of the model. These two files form the input to LINDOGP which solves the GP model as a series of linear programming models by utilizing the USER subroutine to invoke LINDO for each priority level in the GP objective function.

After the GP model has been solved, control is automatically passed to the option: "View Results of the GP Model", where the results are displayed in the form of reports as previously described. The user can analyze these reports to evaluate the fund allocations that have been made by the GP model. If the user wishes to skip viewing the results, the PF10 option (to quit) may be selected.

Next, control is automatically passed to the option: "View Goal Achievement Reports", where the results in terms of goal achievement reports are provided. These reports, one for each type of goal, describe which goals were attained, and state the deviations, in absolute values and percentage values, for goals that could not be attained. Figure 15 provides an example of the goal achievement reports. After the goal achievement reports have been viewed, the user is provided an opportunity to store the current GP model as the permanent, or base model, for future DSS sessions.

Control is then transferred to the user who can further modify the existing goals and/or model parameters in order to search for a better solution if the current solution is not acceptable. The user may also delete the current model and restart with the base model, or with a totally new model.

VIEW GP MODEL'S GOALS/RIGID ALLOCATIONS

RIGID ALLOCATIONS (BY USE)

	SOURCE	USE	YR/QTR	AMOUNT
1.	AUX PRIN RESERVE	GEN OPERATIONS	1/1	50
2.	AUX PRIN RESERVE	GEN OPERATIONS	1/3	60
3.	AUX PRIN RESERVE	GEN OPERATIONS	2/1	70
4.	AUX PRIN RESERVE	GEN OPERATIONS	2/3	80

Figure 14 (a). View Rigid Allocations (Sorted by Source)

VIEW GP MODEL'S GOALS/RIGID ALLOCATIONS

RIGID ALLOCATIONS (BY SOURCE)

	SOURCE	USE	YR/QTR	AMOUNT
1.	AUX PRIN RESERVE	GEN OPERATIONS	1/1	50
2.	AUX PRIN RESERVE	GEN OPERATIONS	1/3	60
3.	AUX PRIN RESERVE	GEN OPERATIONS	2/1	70
4.	AUX PRIN RESERVE	GEN OPERATIONS	2/3	80

Figure 14 (b). View Rigid Allocations (Sorted by Use)

VIEW GP MODEL'S GOALS/RIGID ALLOCATIONS

GOAL 1 : SPECIFIC ALLOCATION

	SOURCE	USE	YR/QTR	AMOUNT	TYPE	PR	WT
1.	O/H FUNDS 20%	GEN OPERATIONS	1/3	100	=	1	3
2.	O/H FUNDS 20%	GEN OPERATIONS	1/1	100	=	2	1
3.	O/H FUNDS 20%	GEN OPERATIONS	1/2	100	=	3	2
4.	O/H FUNDS 20%	GEN OPERATIONS	1/4	100	=	4	4

Figure 14 (c). View Goal Type I - Allocate Specified Amount From a Source to a Use

VIEW GP MODEL'S GOALS/RIGID ALLOCATIONS

GOAL 2 : ALLOCATE PERCENTAGE OF SOURCE TO USE

	SOURCE	USE	YEAR	PERCENT	TYPE	PR	WT
1.	O/H FUNDS 20%	EQP ENHANCEMENT	1	50.00	=	6	1
2.	O/H FUNDS 20%	EQP ENHANCEMENT	2	100.00	=	6	2

Figure 14 (d). View Goal Type II - Allocate Percentage of a Source to a Use in a Year

VIEW GP MODEL'S GOALS/RIGID ALLOCATIONS

GOAL 3 : ALLOCATE PERCENTAGE OF USE FROM SOURCE

	SOURCE	USE	YEAR	PERCENT	TYPE	PR	WT
1.	O/H FUNDS 20%	STU FIN AID	1	50.00	=	7	1
2.	O/H FUNDS 20%	STU FIN AID	2	100.00	=	7	2

Figure 14 (e). View Goal Type III - Allocate Percentage of a Use From a Source in a Year

VIEW GP MODEL'S GOALS/RIGID ALLOCATIONS

ALL GOALS : BY PRIORITY

	GT	SOURCE	USE	YR/QTR	TARGET	TYPE	PR	WT
1.	1	O/H FUNDS 20%	GEN OPERATIONS	1/3	100	=	1	3
2.	1	O/H FUNDS 20%	GEN OPERATIONS	1/1	100	=	2	1
3.	1	O/H FUNDS 20%	GEN OPERATIONS	1/2	100	=	3	2
4.	1	O/H FUNDS 20%	GEN OPERATIONS	1/4	100	=	4	4
5.	2	O/H FUNDS 20%	EQP ENHANCEMENT	1	50.00	=	6	1
6.	2	O/H FUNDS 20%	EQP ENHANCEMENT	2	100.00	=	6	2
7.	3	O/H FUNDS 20%	STU FIN AID	1	50.00	=	7	1
8.	3	O/H FUNDS 20%	STU FIN AID	2	100.00	=	7	2

Figure 14 (f). View All Goals

GOAL ACHIEVEMENTS

GOAL 1 : SPECIFIC ALLOCATION

SOURCE	USE	YR/QT	TY	PR	WT	TARGET	ACHVED	ABS-DEV	%-DEV
1. O/H FUNDS 20%	GEN OPERATIONS	1/3	=	1	3	100	100	0	0.0
2. O/H FUNDS 20%	GEN OPERATIONS	1/1	=	2	1	100	14	86	86.0
3. O/H FUNDS 20%	GEN OPERATIONS	1/2	=	3	2	100	0	100	100.0
4. O/H FUNDS 20%	GEN OPERATIONS	1/4	=	4	4	100	38	62	62.0

Figure 15 (a). Achievements of Goal Type I - Allocate Specified Amount From a Source to a Use

GOAL ACHIEVEMENTS

GOAL 2 : ALLOCATE PERCENTAGE OF SOURCE TO USE

	SOURCE	USE	YR	TY	PR	WT	TARGET DOLLAR/PRCNT	ACHIEVED DOLLAR/PRCNT	ABS DEVTN DOLLAR/PRCNT	PRCNT DEVTN
1.	O/H FUNDS	EQP ENHAN	1	=	6	1	76/ 50.0	0/ 0.0	76/ 50.0	100.0
2.	O/H FUNDS	EQP ENHAN	2	=	6	2	152/100.0	33/ 21.7	119/ 78.3	78.3

Figure 15 (b). Achievements of Goal Type II - Allocate Percentage of a Source to a Use in a Year

GOAL ACHIEVEMENTS

GOAL 3 : ALLOCATE PERCENTAGE OF USE FROM SOURCE

	SOURCE	USE	YR	TY	PR	WT	TARGET DOLLAR/PRCNT	ACHIEVED DOLLAR/PRCNT	ABS DEVTN DOLLAR/PRCNT	PRCNT DEVTN
1.	O/H FUNDS	STU FIN	A 1	=	7	1	140/ 50.0	0/ 0.0	140/ 50.0	100.0
2.	O/H FUNDS	STU FIN	A 2	=	7	2	295/100.0	119/ 40.3	176/ 59.7	59.7

Figure 15 (c). Achievements of Goal Type III - Allocate Percentage of a Use From a Source in a Year

GOAL ACHIEVEMENTS

ALL GOALS : BY PRIORITY

	GT	SOURCE	USE	Y/Q	TY	PR	WT	TARGET DOLLAR/PRCNT	ACHIEVED DOLLAR/PRCNT	ABS DEVTN DOLLAR/PRCNT	PRCNT DEVTN
1.	1	O/H FUN	GEN OPE	1/3	=	1	3	100	100	0	0.0
2.	1	O/H FUN	GEN OPE	1/1	=	2	1	100	14	86	86.0
3.	1	O/H FUN	GEN OPE	1/2	=	3	2	100	0	100	100.0
4.	1	O/H FUN	GEN OPE	1/4	=	4	4	100	38	62	62.0
5.	2	O/H FUN	EQP ENH	1	=	6	1	76/ 50.0	0/ 0.0	76/ 50.0	100.0
6.	2	O/H FUN	EQP ENH	2	=	6	2	152/100.0	33/ 21.7	119/ 78.3	78.3
7.	3	O/H FUN	STU FIN	1	=	7	1	140/ 50.0	0/ 0.0	140/ 50.0	100.0
8.	3	O/H FUN	STU FIN	2	=	7	2	295/100.0	119/ 40.3	176/ 59.7	59.7

Figure 15 (d). Achievements of All Goals

3.5 TESTING AND VALIDATING THE DSS

It was quite apparent from the beginning that testing and validation would be a very demanding task for such a large and complicated system. To facilitate the validation and testing, the basic approach taken was to build the decision support system in modular form. That is, the overall system was broken down into a number of small, manageable components. Each of these components, which usually consisted of EXEC 2 and FORTRAN programs, was tested independently and then integrated into the overall decision support system after proving to be working correctly.

The use of components greatly facilitated not only the validation, but also the development of the DSS. The system had to be modified frequently as a result of either improvements or problems that could not be foreseen earlier on. Using the modular form meant that modifying the system translated into modifying one or more components, which was a relatively easy task because these components could be removed and tested independently and then again reintegrated into the overall system.

The EXEC 2 programs were tested by inserting the command 'TRACE ALL' at the beginning of each EXEC 2 program. The 'TRACE ALL' option traces all executable statements in the program and displays the trace on the terminal. The trace includes: (1) the order in which the executable statements were executed, and (2) the exact operation that these executable statements performed. Whenever it was felt necessary to get a hard copy of the trace, the 'CP SPOOL CON START *' command was used to spool a copy of input/output operations at the terminal to the virtual reader and then have it printed.

The FORTRAN programs were tested by using write statements to: (1) trace the execution path, and (2) print the values that the variables took during the execution.

To ensure that all parts of the programs were validated, the above mentioned testing was performed a number of times using different inputs to the programs. In the case of EXEC 2 control programs, that meant selecting each and every option provided at different stages of the programs. In the case of FORTRAN programs, which usually involved input/output operations using files, the contents of the input files were given different values and the resulting output files were printed and manually checked to ensure that they contained the correct values.

The goal programming model validation consisted of two parts: (1) testing the FORTRAN programs that generate the MPS code and the achievement function files, and (2) testing the GP solution algorithm. The first part was validated by testing the FORTRAN programs on a number of 'textbook' problems and manually checking the resulting MPS code and objective function files. Once these files were found to be correct, they were then used to validate the GP solution algorithm by invoking the LINDO package and issuing the USER command. The results were then checked to ensure that the solution algorithm worked properly.

3.6 SUMMARY

This chapter has presented the decision support system that was developed for the sources and uses of funds system. The system provides up-to-date on-line information on: (1) funds availability by source for each time period, (2) funds requirements by use for each time period, (3) the proposed allocations from sources to uses by time periods, and (4) the available (unallocated) funds by source and by time period.

The highly integrated system was described in terms of its three subsystems: database, model, and dialog. The database stores all information relating to the sources and uses of funds system; a goal

programming model is used to allocate funds from the sources to the uses; and the dialog subsystem provides the interaction between the user and the database, and between the user and the model.

4.0 THE GOAL PROGRAMMING FUNDS ALLOCATION MODEL

A key component of the decision support system is the goal programming model used to perform the allocation of funds from sources to uses. This chapter discusses the goal programming technique used to model the cash flow system. The decision variables are defined and the basic components of the general goal programming model formulation are presented. The chapter also discusses the algorithm used to solve the GP model.

4.1 MODELING THE SOURCES AND USES CASH-FLOW SYSTEM AS A GOAL PROGRAMMING MODEL

As previously indicated, the funds allocations are made after the availabilities of and requirements for funds, by sources and uses respectively, have been determined. These allocations are made based on a set of objectives and goals of the university administration, as well as restrictions or constraints on the allowable use of state funds. Some examples of model constraints and goals are: meeting the state restrictions regarding the use of state funds, depleting non-interest bearing funds prior to those bearing interest, and utilizing several funding sources in order to find sufficient money to complete a project. The process is shown in Figure 16.

Because of restrictions imposed on the rather limited variety of the available funds, and because of the high diversity of the university's objectives, the goals are often conflicting and competitive. Consequently, it is not generally possible to meet or satisfy all goals. As a result, the administration must prioritize its goals and must settle for a 'satisficing', or acceptable solution.

Goal programming is used to allocate funds from the sources to the uses. GP is a management science technique that attempts to attain a satisfactory level of achievement for several objectives. Within the GP model, some goals may be achieved only at the expense of other goals. Although it may not be possible to achieve every goal, goal programming attempts to maximize the levels of goal attainment possible yielding the best possible combination of goal achievements. This necessitates the establishment of a priority system for the goals such that lower-ranked goals are considered only after higher-ranked goals have been satisfied or cannot be further improved (See Ignizio [11], [12], and [14], and Lee [21]).

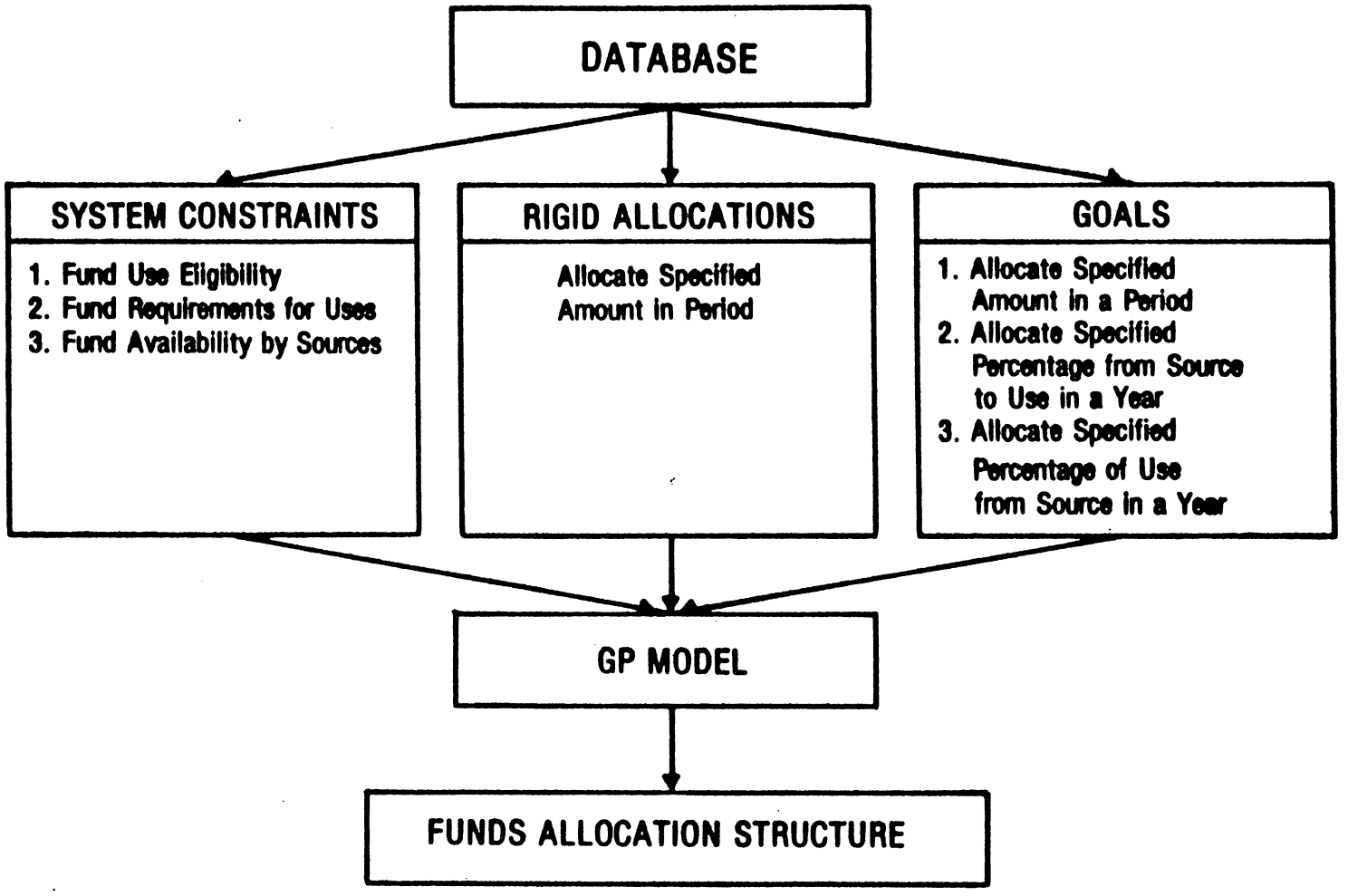

Figure 16. Using a GP Model to Allocate Funds

In practice, any cash flow system at a university level consists of a very large number of sources and uses of funds. To include each source and use individually in the model would make the goal programming model very complicated and cumbersome. Besides, a computer model for such a system will primarily be used by a top financial officer and he would not like to be burdened with details on all of these sources and uses, many of which involve relatively very small amounts of funds. Consequently, to keep the number of sources and uses down to a manageable size, these many sources are classified into broad categories and then aggregated. Eventually, there remains only a limited number of source and use categories and, thus, the resulting goal programming model is relatively easier to manage.

4.2 DECISION VARIABLES

The decision variables are defined as the amount allocated from a source to a use during a period (i.e. a quarter). In mathematical terms, the decision variables are given by:

$$X_{ijk} = \text{amount allocated from source i to use j in period k.} \qquad [1]$$

For example, X_{237} is the amount allocated from source number 2 to use number 3 during the seventh period (i.e. third quarter of second year).

4.3 SYSTEM CONSTRAINTS

System constraints are those restrictions that must be included when defining the problem, and must always be satisfied. The GP model used in the decision support system has such constraints involving three aspects of the cash-flow model:

1 - Fund use eligibility

2 - Fund requirements for uses

3 - Fund availability by sources

These constraints are discussed in the next few sections.

4.3.1 Fund Use Eligibility

The concept of the eligibility matrix was presented in chapter 2. The eligibility matrix determines the eligibility of a source to fund a use. To enforce that eligibility criteria, for each source-use combination that does not meet the eligibility criteria a constraint is needed that will set the allocation amount for that source-use combination in each period to zero.

$$X_{ijk} = 0 \,, \quad \text{for all } k \qquad [2]$$

where (i,j) is a source-use combination for which the corresponding eligibility matrix element is an 'N'. These constraints do not require any user input, and are automatically formulated and included in the GP model.

There are two possible reasons why a particular use may not be allowed to receive funds from a particular source. First, it could be that legal restrictions are placed on a source which permit the source to fund only a select few uses, as in the case of some federal and state funds. Second, it could

be a tool used by the administration to structure the allocation process. For instance, all or most of the uses could be made ineligible to be funded from a certain source if it is desired to avoid using funds from that source. Or, it could be used to reduce the problem size since for every 'N' in the eligibility matrix, all decision variables involving the corresponding source and use are forced to take a value of zero. This reduces the dimensionality of the allocation process and, therefore, reduces its complexity.

4.3.2 Fund Requirements of Uses (Demand)

These constraints ensure that, for each period, fund requirements for all uses are met.

$$\sum_i X_{ijk} \geq U_{jk}, \quad \text{for all } j, k \qquad [3]$$

where, U_{jk} is the amount needed by use j in period k,

and, $\sum_i X_{ijk}$ is the total amount allocated to use j from all sources in period k.

For each use (i.e., project), there will be one such constraint for every period of the planning horizon. These constraints do not require any user input and are automatically formulated and included in the GP model. Note that since all of the requirements for funds have to be satisfied, the possibility may arise that the available funds may not be sufficient to meet all of the requirements. In such an event, funds will be allocated by the model from a source identified as 'Deficit'.

There are a number of ways to tackle deficits. On one hand, deficits could be perceived to be funds that currently don't exist and will have to be arranged for. On the other hand, deficits could be used to imply that the needs of all uses can not be satisfied and, therefore, the funding needs of some uses must be curtailed by an amount sufficient to erase the deficits. It may be noted, however, that these deficits could also arise because of the way the goals and their priorities have been formulated.

In such instances, it may be possible to erase the deficits by altering the goals and/or priority structure, or by rescheduling the periods of funding needs to correspond to the schedule of when funds are available.

4.3.3 Fund Availability of Sources (Supply)

The total amount of funds that may be allocated from a source during any period must not be greater than the amount available in that period plus any unused or unallocated funds carried over from previous periods.

$$\sum_{t=1}^{k} \sum_{j} X_{ijt} \leq \sum_{t=1}^{k} S_{it}, \quad \text{for all i, k} \qquad [4]$$

where, $\sum_{t=1}^{k} S_{it}$ is the total amount available from source i up to and including period k,

and, $\sum_{t=1}^{k} \sum_{j} X_{ijt}$ is the total amount allocated from source i to all uses up to and including period k.

For each source, there will be one such constraint for every period of the planning horizon. These constraints are automatically formulated and included in the GP model and do not require any user input. Note that since the constraint involves a less-than inequality sign, it is possible that the goal programming model solution may result in a surplus of funds for some sources, i.e., funds that are not allocated to uses. The existence of surplus funds for a source could be because: (1) overall funds availability was greater than overall funds needs, or (2) the source was eligible to fund only a limited number of uses, and could not be used to fund other uses.

4.4 RIGID ALLOCATIONS

These are constraints that may be employed by the user to make an allocation of some specific amount from a certain source to a certain use during a certain period. These are not goals and, like the previously described system constraints, they must be satisfied for any solution to the GP model. To ensure that the resulting solution to the GP model does not become infeasible due to such constraints, tests are made at the time of making these allocations to ensure that such allocations are indeed feasible. The tests ensure that the entered amount does not exceed either what is available from the source, or what is needed by the use.

These constraints may mathematically be written as:

$$X_{ijk} = b \qquad [5]$$

where b is the dollar amount that must be allocated from source i to use j during period k. For example, one such rigid allocation might be to allocate $500 from 'Private Funds' to 'Professorships' during the third period.

Rigid allocations can be used to give structure to the allocation process. These allocations serve to set the corresponding decision variables at the specified values, and thus reduce the number of 'free' variables. Rigid allocations reduce the complexity of the GP model by reducing the dimensionality of the problem.

4.5 GOALS FORMULATION

The goals in the goal programming model are formulated as follows:

$$f(X_{ijk}) + d^- - d^+ = b \qquad [6]$$

where $f(X_{ijk})$ is a function of the decision variables and defines the goal. The target level of the goal is given by b. The negative and positive deviation variables for the goal are shown by d^- and d^+, and represent the under-achievement and over-achievement, respectively, of the solution value from the desired target value of b. A goal may be underachieved, overachieved, or exactly achieved depending on whether d^+, or d^-, or both d^+ and d^-, respectively, take a value of zero in the solution of the goal programming model.

In the goal programming model developed for the funds allocation process, there are three kinds or 'types' of goals that may be formulated by the user. These are:

1 - allocate specified dollar target amount from a source to a use during a period.

2 - allocate specified percentage of the available funds of a source to a use, during a year.

3 - allocate specified percentage of needed funds for a use from a source, during a given year.

The following sections will discuss these three general types of goals.

4.5.1 Allocate Specified Dollar Target Amount in a Period

Sometimes it is desired that all or some specified amount of the needed funds of a use be allocated from a certain source during some given period of the planning horizon. This goal may be formulated as:

$$X_{ijk} + d^- - d^+ = b \qquad [7]$$

X_{ijk} , the amount allocated from source i to use j in period k, is to be set to a target value b. For example, $4,000 of 'General Funds' must be used for 'Renovations' in the fifth period (first quarter of second year, i.e., 1987-88). Depending on whether the user wants the amount X_{ijk} to be at most, at least, or exactly equal to b, d^+, d^-, or both d^+ and d^-, respectively, will need to be minimized in the GP objective function.

4.5.2 Allocate Specified Percentage from Source to Use in a Year

This goal sets the amount allocated from a source to a use during a year close to some specified percentage, p, of the total funds available from the source in that year.

This goal may be formulated as:

$$\sum_{t=4(n-1)+1}^{t=4(n-1)+4} X_{ijt} + d^- - d^+ = \left(\frac{p}{100}\right) \times \sum_{t=4(n-1)+1}^{t=4(n-1)+4} S_{it} \qquad [8]$$

$\sum_{t=4(n-1)+1}^{t=4(n-1)+4} X_{ijt}$, the total amount allocated from source i to use j in year n, is to be set to a target value which is equal to a percentage, p, of the total funds available from source i in year n, i.e., $\sum_{t=4(n-1)+1}^{t=4(n-1)+4} S_{it}$. For instance, one such goal might be to allocate 20% of 'Private Funds' to 'Professorships' during the first year (i.e., 1986-87) of the planning horizon. Note that when n, the year, takes the value 1 in the equation, the summation is performed over the periods 4(1-1) + 1 to 4(1-1) + 4, i.e., periods 1 through 4. Similarly, when n takes the value 2, the summation covers the periods 4(2-1) + 1 to 4(2-1) + 4, that is, periods 5 through 8.

4.5.3 Allocate Specified Percentage of Use from Source in a Year

This goal sets the amount allocated from a source to a use during a year close to some specified percentage, p, of the total funds needed by the use in that year. This goal may be formulated as:

$$\sum_{t=4(n-1)+1}^{t=4(n-1)+4} X_{ijt} + d^- - d^+ = \left(\frac{p}{100}\right) \times \sum_{t=4(n-1)+1}^{t=4(n-1)+4} U_{jt} \qquad [9]$$

$\sum_{t=4(n-1)+1}^{t=4(n-1)+4} X_{ijt}$, the total amount allocated from source i to use j in year n, is to be set to a target value which is equal to a percentage, p, of the total funds needed by use j in the year n, i.e., $\sum_{t=4(n-1)+1}^{t=4(n-1)+4} U_{jt}$. For instance, one such goal might be to fund 50% of the cost of 'Student Aid' from 'Overhead' funds during the second year (i.e., 1987-88) of the planning horizon.

4.6 THE PRIORITY STRUCTURE AND ACHIEVEMENT FUNCTION

The priority structure and the achievement function are determined by the relative importance placed on the goals of the university. The achievement function dictates the order in which the solution algorithm will attempt to attain the specified goals.

4.6.1 The Priority Structure

The priority structure for the goals is determined by the administration and depends on the objectives of the institution. It is established at the time goals are formulated in the GP model. Along with the target value and the deviational type, the user is required to assign a priority and weight to each goal. The priority determines the relative importance of the goals; the lower ranked goals are satisfied only after the higher-ranked goals are satisfied, or cannot be further improved. Goals at the same priority level have equal importance.

Weights, which are usually assigned to goals at the same priority level, are equivalent to coefficients in the objective function of the linear programming problem. Numerically, weights assigned to deviation variables in a GP model can be translated into coefficients for decision variables. The impact of these weights is, therefore, similar to that of coefficients in the objective function of linear programming. However, it is very difficult to predict the impact of the weights on the solution because the decision variables are not included in the objective function, as they are in linear programming. Therefore, the assignment of numerical weights should be done very judiciously. In fact, it is generally recommended that the use of numerical weights should be avoided by using different priority levels, instead of weights at the same priority level, to establish the relative importance of goals.

Figure 17 illustrates the use of different priorities and weights to establish the relative importance of goals included in the goal programming model. The first three goals are assigned to different priority levels to establish their relative importance. The next two goals are assigned to the same priority level 6, but are given different weights (1 and 3) to establish their relative importance.

PRIORITY STRUCTURE

	GT	SOURCE	USE	YR/QTR	TARGET	TYPE	PR	WT
1.	1	O/H FUNDS 20%	GEN OPERATIONS	1/3	100	=	1	1
2.	1	O/H FUNDS 20%	GEN OPERATIONS	1/1	100	=	2	1
3.	1	O/H FUNDS 20%	GEN OPERATIONS	1/2	100	=	3	1
5.	2	O/H FUNDS 20%	EQP ENHANCEMENT	1	50.00	=	6	2
6.	2	O/H FUNDS 20%	EQP ENHANCEMENT	2	100.00	=	6	3

Figure 17. An Example of Priority Structure

4.6.2 The Achievement Function

Once the goals have been prioritized and weighted, if necessary, the appropriate deviation variable, or variables, of the goals are sorted by decreasing order of priority. As a result, each priority level of the objective function consists of a number of deviation variables corresponding to goals at that priority level. The resulting achievement function has the form:

$$A = \{p_1(d^-,d^+), p_2(d^-,d^+), \ldots\ldots\ldots\ldots, p_n(d^-,d^+)\} \qquad [10]$$

where n is the total number of different priority levels that have been used in the goals formulation and $p_i(d^-,d^+)$ is a function of deviation variables corresponding to goals at ith priority level. When the GP model is solved, the solution algorithm starts by attempting to minimize $p_1(d^-,d^+)$. Then, the solution algorithm successively tries to minimize the remaining functions, by decreasing order of priority, while ensuring that the higher ranked functions are not allowed to deteriorate.

4.7 GP SOLUTION METHODOLOGY

Once the goals have been specified, they are translated into mathematical constraints and the achievement function is generated. Along with the system constraints and the rigid allocations, these constitute the GP model.

The GP model is solved using LINDOGP [8], which uses the sequential linear programming approach whereby the GP model is solved as a series of linear programming models. At each step, a different priority level serves as the objective function, starting with the highest priority level and ending with the lowest priority level. LINDOGP is an extension of LINDO, the commercial LP

solution code and makes use of the USER (FORTRAN) subroutine to solve the GP model as a series of LP models which are each solved using LINDO.

LINDO contains a dummy subroutine called USER which is executed when the command USER is typed after LINDO has been invoked. The user may replace this dummy subroutine with his own USER subroutine to perform a variety of operations which include special purpose input/output procedures and incorporating LINDO within a larger computer system.

The way a goal programming problem is solved using LINDO is as follows: input from the GP model is fed to LINDO in the same form as a LP model, with the exception that the objective function consists of only one term, MIN DUMMY. DUMMY, as the name suggests, is a dummy variable and is used simply because the model must contain at least one term in the objective function. The priority structure of the GP achievement function is stored in a file and a USER subroutine is created in such a way that it will provide the logic to solve the GP model as a sequential LP model. When the GP model is to be solved, the command USER is issued by the user and the subroutine will solve the GP model by invoking the LINDO package and solving the model for each priority level in the objective function. Thus, solving a GP model requires two separate inputs: (1) the mathematical constraints along with the dummy objective function, and (2) the objective function.

LINDO has commands for taking input from files in two possible formats: TAKE, where the model code is written onto a file instead of inputting from the terminal, and MPS, where the model code is stored in a special format. When a problem is being 'generated' the TAKE option becomes very difficult to use and creates a variety of problems including spacing between terms of a mathematical constraint. The MPS format, on the other hand, is much easier to generate and is very widely used and accepted by most commercial LP packages. The MPS format for storing an LP model and the file for storing the objective function are described in the following sections.

4.7.1 MPS Format

The mathematical constraints of the goal programming model are written in the MPS (Mathematical Programming System) format. This format consists of four components, including:

ROWS: lists the row number and a symbol depicting the equality or inequality sign for each row. The symbol can take the following values: 'L' for a $\leq$ constraint, 'E' for a $=$ constraint, 'G' for a $\geq$ constraint, and 'N' for the row corresponding to the objective function.

RHS: lists the row number and the right hand side value for each constraint. No entry is needed for the row corresponding to the objective function, which does not involve a right hand side.

COLUMNS: lists each term in terms of the variable and its coefficient, along with the row number in which it appears for each constraint in the model. For instance, suppose the third constraint in the model is: $2X + 4Y = 3$. The COLUMN section will contain two records to depict this constraint: one will contain the entries 'X', '3', and '2', while the second will contain 'Y', '3', and '4', corresponding to the variable name, row number, and the coefficient of the variable, respectively. Thus, for each constraint, the COLUMNS section contains one record for each term in that constraint.

BOUNDS: describes upper bounds, if any, on the decision variables. The BOUNDS section provides an alternate way of describing simple upper bound constraints of the form $X \leq 5$. The reason for allowing this option is that most LP codes, including LINDO, have specialized procedures for efficiently handling such constraints during the solution computations. This section can also be used to indicate variables 'free', or unconstrained in sign.

All the constraints of the goal programming model are described using these components of the MPS format. These sections are then consolidated into one file whose file number should be between 1 and 50, excepting 5 and 6. For the GP model formulated by the DSS, this file is given a

number of 25. This file then serves as one of the inputs to LINDO. The MPS format code for a sample goal programming model is shown in Figure 18. The model involves three sources, three uses, and a planning horizon of two years. It includes four rigid allocations, and nine goals.

4.7.2 Objective Function

The objective function, in terms of all of the different priority levels, is stored in a special format in a file. The file starts with a scale as its first record which serves a purpose only during the debugging process when the user can use it to determine if the entries have been made in the correct format. The next two records contain the number of priority levels and the number of variables in each priority level, by decreasing order of priority. Then for each priority level, starting with the highest priority level and moving down to the lowest priority level, the file lists all variables that are included at that priority, followed by their coefficients.

When the command USER is issued, the USER subroutine uses this file to read all of the relevant information, including the number of priority levels, the number of variables in each priority level, and the variables along with their coefficients that are included at each priority level. The USER subroutine then invokes LINDO for each priority level to solve the GP model as a sequential LP model.

This file, which is supposed to have a file number between 51 and 99, is given a number of 75 for the GP model formulated by the DSS. The USER subroutine used in the decision support system can handle objective functions that involve up to twenty different priority levels, with each priority level containing at most forty terms at that priority. The objective function file for the goal programming model used to illustrate the MPS format code is shown in Figure 19. As may be observed, the nine goals included in the model are assigned to a total of seven different priority levels.

```
NAME GP MODEL FOR SANDU
ROWS
  N        1
  E        2
  E        3
  E        4
  E        5
  E        6
  E        7
  E        8
  E        9
  E       10
  E       11
  E       12
  E       13
  E       14
  E       15
  E       16
  E       17
  E       18
  E       19
  E       20
  E       21
  E       22
  E       23
  E       24
  E       25
  L       26
  L       27
  L       28
  L       29
  L       30
  L       31
  L       32
  L       33
  L       34
  L       35
  L       36
  L       37
  L       38
  L       39
  L       40
  L       41
```

Figure 18. The MPS Format for an Example GP Model

```
  L        42
  L        43
  L        44
  L        45
  L        46
  L        47
  L        48
  L        49
  E        50
  E        51
  E        52
  E        53
  E        54
  E        55
  E        56
  E        57
  E        58
  E        59
  E        60
  E        61
  E        62
COLUMNS
    DUMMY            1          1.00
    D030101M        54          1.00
    D030101P        54         -1.00
    D030102M        55          1.00
    D030102P        55         -1.00
    D030103M        56          1.00
    D030103P        56         -1.00
    D030104M        57          1.00
    D030104P        57         -1.00
    E030201M        58          1.00
    E030201P        58         -1.00
    E030202M        59          1.00
    E030202P        59         -1.00
    F030301M        60          1.00
    F030301P        60         -1.00
    F030302M        61          1.00
    F030302P        61         -1.00
    GM              62          1.00
    GP              62         -1.00
    X010101          2          1.00
    X010101         26          1.00
    X010101         27          1.00
    X010101         28          1.00
    X010101         29          1.00
    X010101         30          1.00
```

Figure 18 (cont'd).

X010101	31	1.00
X010101	32	1.00
X010101	33	1.00
X010101	50	1.00
X010102	3	1.00
X010102	27	1.00
X010102	28	1.00
X010102	29	1.00
X010102	30	1.00
X010102	31	1.00
X010102	32	1.00
X010102	33	1.00
X010103	4	1.00
X010103	28	1.00
X010103	29	1.00
X010103	30	1.00
X010103	31	1.00
X010103	32	1.00
X010103	33	1.00
X010103	51	1.00
X010104	5	1.00
X010104	29	1.00
X010104	30	1.00
X010104	31	1.00
X010104	32	1.00
X010104	33	1.00
X010105	6	1.00
X010105	30	1.00
X010105	31	1.00
X010105	32	1.00
X010105	33	1.00
X010105	52	1.00
X010106	7	1.00
X010106	31	1.00
X010106	32	1.00
X010106	33	1.00
X010107	8	1.00
X010107	32	1.00
X010107	33	1.00
X010107	53	1.00
X010108	9	1.00
X010108	33	1.00
X010201	10	1.00
X010201	26	1.00
X010201	27	1.00
X010201	28	1.00
X010201	29	1.00

Figure 18 (cont'd).

X010201	30	1.00
X010201	31	1.00
X010201	32	1.00
X010201	33	1.00
X010202	11	1.00
X010202	27	1.00
X010202	28	1.00
X010202	29	1.00
X010202	30	1.00
X010202	31	1.00
X010202	32	1.00
X010202	33	1.00
X010203	12	1.00
X010203	28	1.00
X010203	29	1.00
X010203	30	1.00
X010203	31	1.00
X010203	32	1.00
X010203	33	1.00
X010204	13	1.00
X010204	29	1.00
X010204	30	1.00
X010204	31	1.00
X010204	32	1.00
X010204	33	1.00
X010205	14	1.00
X010205	30	1.00
X010205	31	1.00
X010205	32	1.00
X010205	33	1.00
X010206	15	1.00
X010206	31	1.00
X010206	32	1.00
X010206	33	1.00
X010207	16	1.00
X010207	32	1.00
X010207	33	1.00
X010208	17	1.00
X010208	33	1.00
X010301	18	1.00
X010301	26	1.00
X010301	27	1.00
X010301	28	1.00
X010301	29	1.00
X010301	30	1.00
X010301	31	1.00
X010301	32	1.00

Figure 18 (cont'd).

X010301	33	1.00
X010302	19	1.00
X010302	27	1.00
X010302	28	1.00
X010302	29	1.00
X010302	30	1.00
X010302	31	1.00
X010302	32	1.00
X010302	33	1.00
X010303	20	1.00
X010303	28	1.00
X010303	29	1.00
X010303	30	1.00
X010303	31	1.00
X010303	32	1.00
X010303	33	1.00
X010304	21	1.00
X010304	29	1.00
X010304	30	1.00
X010304	31	1.00
X010304	32	1.00
X010304	33	1.00
X010305	22	1.00
X010305	30	1.00
X010305	31	1.00
X010305	32	1.00
X010305	33	1.00
X010306	23	1.00
X010306	31	1.00
X010306	32	1.00
X010306	33	1.00
X010307	24	1.00
X010307	32	1.00
X010307	33	1.00
X010308	25	1.00
X010308	33	1.00
X020101	2	1.00
X020101	34	1.00
X020101	35	1.00
X020101	36	1.00
X020101	37	1.00
X020101	38	1.00
X020101	39	1.00
X020101	40	1.00
X020101	41	1.00
X020102	3	1.00
X020102	35	1.00

Figure 18 (cont'd).

X020102	36	1.00
X020102	37	1.00
X020102	38	1.00
X020102	39	1.00
X020102	40	1.00
X020102	41	1.00
X020103	4	1.00
X020103	36	1.00
X020103	37	1.00
X020103	38	1.00
X020103	39	1.00
X020103	40	1.00
X020103	41	1.00
X020104	5	1.00
X020104	37	1.00
X020104	38	1.00
X020104	39	1.00
X020104	40	1.00
X020104	41	1.00
X020105	6	1.00
X020105	38	1.00
X020105	39	1.00
X020105	40	1.00
X020105	41	1.00
X020106	7	1.00
X020106	39	1.00
X020106	40	1.00
X020106	41	1.00
X020107	8	1.00
X020107	40	1.00
X020107	41	1.00
X020108	9	1.00
X020108	41	1.00
X020201	10	1.00
X020201	34	1.00
X020201	35	1.00
X020201	36	1.00
X020201	37	1.00
X020201	38	1.00
X020201	39	1.00
X020201	40	1.00
X020201	41	1.00
X020202	11	1.00
X020202	35	1.00
X020202	36	1.00
X020202	37	1.00
X020202	38	1.00

Figure 18 (cont'd).

X020202	39	1.00
X020202	40	1.00
X020202	41	1.00
X020203	12	1.00
X020203	36	1.00
X020203	37	1.00
X020203	38	1.00
X020203	39	1.00
X020203	40	1.00
X020203	41	1.00
X020204	13	1.00
X020204	37	1.00
X020204	38	1.00
X020204	39	1.00
X020204	40	1.00
X020204	41	1.00
X020205	14	1.00
X020205	38	1.00
X020205	39	1.00
X020205	40	1.00
X020205	41	1.00
X020206	15	1.00
X020206	39	1.00
X020206	40	1.00
X020206	41	1.00
X020207	16	1.00
X020207	40	1.00
X020207	41	1.00
X020208	17	1.00
X020208	41	1.00
X020301	18	1.00
X020301	34	1.00
X020301	35	1.00
X020301	36	1.00
X020301	37	1.00
X020301	38	1.00
X020301	39	1.00
X020301	40	1.00
X020301	41	1.00
X020302	19	1.00
X020302	35	1.00
X020302	36	1.00
X020302	37	1.00
X020302	38	1.00
X020302	39	1.00
X020302	40	1.00
X020302	41	1.00

Figure 18 (cont'd).

X020303	20	1.00
X020303	36	1.00
X020303	37	1.00
X020303	38	1.00
X020303	39	1.00
X020303	40	1.00
X020303	41	1.00
X020304	21	1.00
X020304	37	1.00
X020304	38	1.00
X020304	39	1.00
X020304	40	1.00
X020304	41	1.00
X020305	22	1.00
X020305	38	1.00
X020305	39	1.00
X020305	40	1.00
X020305	41	1.00
X020306	23	1.00
X020306	39	1.00
X020306	40	1.00
X020306	41	1.00
X020307	24	1.00
X020307	40	1.00
X020307	41	1.00
X020308	25	1.00
X020308	41	1.00
X030101	2	1.00
X030101	42	1.00
X030101	43	1.00
X030101	44	1.00
X030101	45	1.00
X030101	46	1.00
X030101	47	1.00
X030101	48	1.00
X030101	49	1.00
X030101	54	1.00
X030102	3	1.00
X030102	43	1.00
X030102	44	1.00
X030102	45	1.00
X030102	46	1.00
X030102	47	1.00
X030102	48	1.00
X030102	49	1.00
X030102	55	1.00
X030103	4	1.00

Figure 18 (cont'd).

X030103	44	1.00
X030103	45	1.00
X030103	46	1.00
X030103	47	1.00
X030103	48	1.00
X030103	49	1.00
X030103	56	1.00
X030104	5	1.00
X030104	45	1.00
X030104	46	1.00
X030104	47	1.00
X030104	48	1.00
X030104	49	1.00
X030104	57	1.00
X030105	6	1.00
X030105	46	1.00
X030105	47	1.00
X030105	48	1.00
X030105	49	1.00
X030106	7	1.00
X030106	47	1.00
X030106	48	1.00
X030106	49	1.00
X030107	8	1.00
X030107	48	1.00
X030107	49	1.00
X030108	9	1.00
X030108	49	1.00
X030201	10	1.00
X030201	42	1.00
X030201	43	1.00
X030201	44	1.00
X030201	45	1.00
X030201	46	1.00
X030201	47	1.00
X030201	48	1.00
X030201	49	1.00
X030201	58	1.00
X030202	11	1.00
X030202	43	1.00
X030202	44	1.00
X030202	45	1.00
X030202	46	1.00
X030202	47	1.00
X030202	48	1.00
X030202	49	1.00
X030202	58	1.00

Figure 18 (cont'd).

X030203	12	1.00
X030203	44	1.00
X030203	45	1.00
X030203	46	1.00
X030203	47	1.00
X030203	48	1.00
X030203	49	1.00
X030203	58	1.00
X030204	13	1.00
X030204	45	1.00
X030204	46	1.00
X030204	47	1.00
X030204	48	1.00
X030204	49	1.00
X030204	58	1.00
X030205	14	1.00
X030205	46	1.00
X030205	47	1.00
X030205	48	1.00
X030205	49	1.00
X030205	59	1.00
X030206	15	1.00
X030206	47	1.00
X030206	48	1.00
X030206	49	1.00
X030206	59	1.00
X030207	16	1.00
X030207	48	1.00
X030207	49	1.00
X030207	59	1.00
X030208	17	1.00
X030208	49	1.00
X030208	59	1.00
X030301	18	1.00
X030301	42	1.00
X030301	43	1.00
X030301	44	1.00
X030301	45	1.00
X030301	46	1.00
X030301	47	1.00
X030301	48	1.00
X030301	49	1.00
X030301	60	1.00
X030302	19	1.00
X030302	43	1.00
X030302	44	1.00
X030302	45	1.00

Figure 18 (cont'd).

X030302	46	1.00
X030302	47	1.00
X030302	48	1.00
X030302	49	1.00
X030302	60	1.00
X030303	20	1.00
X030303	44	1.00
X030303	45	1.00
X030303	46	1.00
X030303	47	1.00
X030303	48	1.00
X030303	49	1.00
X030303	60	1.00
X030304	21	1.00
X030304	45	1.00
X030304	46	1.00
X030304	47	1.00
X030304	48	1.00
X030304	49	1.00
X030304	60	1.00
X030305	22	1.00
X030305	46	1.00
X030305	47	1.00
X030305	48	1.00
X030305	49	1.00
X030305	61	1.00
X030306	23	1.00
X030306	47	1.00
X030306	48	1.00
X030306	49	1.00
X030306	61	1.00
X030307	24	1.00
X030307	48	1.00
X030307	49	1.00
X030307	61	1.00
X030308	25	1.00
X030308	49	1.00
X030308	61	1.00
X040101	2	1.00
X040101	62	1.00
X040102	3	1.00
X040102	62	1.00
X040103	4	1.00
X040103	62	1.00
X040104	5	1.00
X040104	62	1.00
X040105	6	1.00

Figure 18 (cont'd).

	X040105	62	1.00
	X040106	7	1.00
	X040106	62	1.00
	X040107	8	1.00
	X040107	62	1.00
	X040108	9	1.00
	X040108	62	1.00
	X040201	10	1.00
	X040201	62	1.00
	X040202	11	1.00
	X040202	62	1.00
	X040203	12	1.00
	X040203	62	1.00
	X040204	13	1.00
	X040204	62	1.00
	X040205	14	1.00
	X040205	62	1.00
	X040206	15	1.00
	X040206	62	1.00
	X040207	16	1.00
	X040207	62	1.00
	X040208	17	1.00
	X040208	62	1.00
	X040301	18	1.00
	X040301	62	1.00
	X040302	19	1.00
	X040302	62	1.00
	X040303	20	1.00
	X040303	62	1.00
	X040304	21	1.00
	X040304	62	1.00
	X040305	22	1.00
	X040305	62	1.00
	X040306	23	1.00
	X040306	62	1.00
	X040307	24	1.00
	X040307	62	1.00
	X040308	25	1.00
	X040308	62	1.00
RHS			
	RHS	2	100.00
	RHS	3	200.00
	RHS	4	300.00
	RHS	5	200.00
	RHS	6	100.00
	RHS	7	200.00
	RHS	8	300.00

Figure 18 (cont'd).

RHS	9	200.00
RHS	10	0.00
RHS	11	0.00
RHS	12	33.00
RHS	13	0.00
RHS	14	0.00
RHS	15	0.00
RHS	16	33.00
RHS	17	0.00
RHS	18	55.00
RHS	19	88.00
RHS	20	75.00
RHS	21	63.00
RHS	22	99.00
RHS	23	79.00
RHS	24	38.00
RHS	25	79.00
RHS	26	69551.00
RHS	27	69551.00
RHS	28	69551.00
RHS	29	69551.00
RHS	30	139102.00
RHS	31	139102.00
RHS	32	139102.00
RHS	33	139102.00
RHS	34	0.00
RHS	35	0.00
RHS	36	9000.00
RHS	37	9000.00
RHS	38	9000.00
RHS	39	9000.00
RHS	40	18000.00
RHS	41	18000.00
RHS	42	38.00
RHS	43	76.00
RHS	44	114.00
RHS	45	152.00
RHS	46	190.00
RHS	47	228.00
RHS	48	266.00
RHS	49	304.00
RHS	50	50.00
RHS	51	60.00
RHS	52	70.00
RHS	53	80.00
RHS	54	100.00
RHS	55	100.00

Figure 18 (cont'd).

```
    RHS              56        100.00
    RHS              57        100.00
    RHS              58         76.00
    RHS              59        152.00
    RHS              60        141.00
    RHS              61        295.00
    RHS              62          0.00
BOUNDS
 UP BOUNDNAM  X010301       0.00
 UP BOUNDNAM  X010302       0.00
 UP BOUNDNAM  X010303       0.00
 UP BOUNDNAM  X010304       0.00
 UP BOUNDNAM  X010305       0.00
 UP BOUNDNAM  X010306       0.00
 UP BOUNDNAM  X010307       0.00
 UP BOUNDNAM  X010308       0.00
ENDATA
```

Figure 18 (cont'd).

```
11111111222222223333333344444444555555556666666677777777888888888
 7  SANDU GP MODEL
 2   2   2   2   4   4   2
D030103MD030103P
    3.00    3.00
D030101MD030101P
    1.00    1.00
D030102MD030102P
    2.00    2.00
D030104MD030104P
    4.00    4.00
E030201ME030201PE030202ME030202P
    1.00    1.00    2.00    2.00
F030301MF030301PF030302MF030302P
    1.00    1.00    2.00    2.00
GM      GP
    1.00    1.00
```

Figure 19. Achievement Function File for an Example GP Model

A complete printout of this example goal programming model is shown in Figure 20. As may be noted, the GP model consists of (1) an objective function, (2) system constraints, (3) rigid allocations, (4) goals constraints, and (5) variables with upper bound constraints.

4.8 SUMMARY

A generalized goal programming model was developed as a model component of the DSS to facilitate the allocation of funds from the sources to the uses while considering the goals and objectives of the university. In this chapter, the decision variables were defined and the various components of the general goal programming model were presented. These components include: (1) system constraints, (2) rigid allocations, and (3) goals constraints. The solution methodology involves invoking LINDO, a commercial linear programming package, and using the USER subroutine to solve the goal programming model as a series of linear programming problems.

Access to the goal programming model is provided by the decision support system. The DSS uses menus and screens to provide the dialog between the user and the model and facilitates the process of defining, solving, and evaluating the solution of the GP model. This process includes: defining the problem framework, calculating model parameters, formulating goals, establishing the priority structure, solving the model, and providing the solution in the form of reports.

SANDU GP MODEL

```
MIN      DUMMY +  D030101M +  D030101P + 2 D030102M + 2 D030102P
     + 3 D030103M + 3 D030103P + 4 D030104M + 4 D030104P +  E030201M
     +  E030201P + 2 E030202M + 2 E030202P +  F030301M +  F030301P
     + 2 F030302M + 2 F030302P +  GM +  GP

SUBJECT TO
   2)     X010101 +  X020101 +  X030101 +  X040101 =    100
   3)     X010102 +  X020102 +  X030102 +  X040102 =    200
   4)     X010103 +  X020103 +  X030103 +  X040103 =    300
   5)     X010104 +  X020104 +  X030104 +  X040104 =    200
   6)     X010105 +  X020105 +  X030105 +  X040105 =    100
   7)     X010106 +  X020106 +  X030106 +  X040106 =    200
   8)     X010107 +  X020107 +  X030107 +  X040107 =    300
   9)     X010108 +  X020108 +  X030108 +  X040108 =    200
  10)     X010201 +  X020201 +  X030201 +  X040201 =    0
  11)     X010202 +  X020202 +  X030202 +  X040202 =    0
  12)     X010203 +  X020203 +  X030203 +  X040203 =    33
  13)     X010204 +  X020204 +  X030204 +  X040204 =    0
  14)     X010205 +  X020205 +  X030205 +  X040205 =    0
  15)     X010206 +  X020206 +  X030206 +  X040206 =    0
  16)     X010207 +  X020207 +  X030207 +  X040207 =    33
  17)     X010208 +  X020208 +  X030208 +  X040208 =    0
  18)     X010301 +  X020301 +  X030301 +  X040301 =    55
  19)     X010302 +  X020302 +  X030302 +  X040302 =    88
  20)     X010303 +  X020303 +  X030303 +  X040303 =    75
  21)     X010304 +  X020304 +  X030304 +  X040304 =    63
  22)     X010305 +  X020305 +  X030305 +  X040305 =    99
  23)     X010306 +  X020306 +  X030306 +  X040306 =    79
  24)     X010307 +  X020307 +  X030307 +  X040307 =    38
  25)     X010308 +  X020308 +  X030308 +  X040308 =    79
  26)     X010101 +  X010201 +  X010301 <=   69551
  27)     X010101 +  X010102 +  X010201 +  X010202 +  X010301
     +  X010302 <=   69551
  28)     X010101 +  X010102 +  X010103 +  X010201 +  X010202
     +  X010203 +  X010301 +  X010302 +  X010303 <=   69551
  29)     X010101 +  X010102 +  X010103 +  X010104 +  X010201
     +  X010202 +  X010203 +  X010204 +  X010301 +  X010302
     +  X010303 +  X010304 <=   69551
```

Figure 20. Listing of an Example GP Model

```
30)     X010101 +  X010102 +  X010103 +  X010104 +  X010105
   +  X010201 +  X010202 +  X010203 +  X010204 +  X010205
   +  X010301 +  X010302 +  X010303 +  X010304 +  X010305
   <=   139102
31)     X010101 +  X010102 +  X010103 +  X010104 +  X010105
   +  X010106 +  X010201 +  X010202 +  X010203 +  X010204
   +  X010205 +  X010206 +  X010301 +  X010302 +  X010303
   +  X010304 +  X010305 +  X010306 <=   139102
32)     X010101 +  X010102 +  X010103 +  X010104 +  X010105
   +  X010106 +  X010107 +  X010201 +  X010202 +  X010203
   +  X010204 +  X010205 +  X010206 +  X010207 +  X010301
   +  X010302 +  X010303 +  X010304 +  X010305 +  X010306
   +  X010307 <=   139102
33)     X010101 +  X010102 +  X010103 +  X010104 +  X010105
   +  X010106 +  X010107 +  X010108 +  X010201 +  X010202
   +  X010203 +  X010204 +  X010205 +  X010206 +  X010207
   +  X010208 +  X010301 +  X010302 +  X010303 +  X010304
   +  X010305 +  X010306 +  X010307 +  X010308 <=   139102
34)     X020101 +  X020201 +  X020301 <=   0
35)     X020101 +  X020102 +  X020201 +  X020202 +  X020301
   +  X020302 <=   0
36)     X020101 +  X020102 +  X020103 +  X020201 +  X020202
   +  X020203 +  X020301 +  X020302 +  X020303 <=   9000
37)     X020101 +  X020102 +  X020103 +  X020104 +  X020201
   +  X020202 +  X020203 +  X020204 +  X020301 +  X020302
   +  X020303 +  X020304 <=   9000
38)     X020101 +  X020102 +  X020103 +  X020104 +  X020105
   +  X020201 +  X020202 +  X020203 +  X020204 +  X020205
   +  X020301 +  X020302 +  X020303 +  X020304 +  X020305
   <=   9000
39)     X020101 +  X020102 +  X020103 +  X020104 +  X020105
   +  X020106 +  X020201 +  X020202 +  X020203 +  X020204
   +  X020205 +  X020206 +  X020301 +  X020302 +  X020303
   +  X020304 +  X020305 +  X020306 <=   9000
40)     X020101 +  X020102 +  X020103 +  X020104 +  X020105
   +  X020106 +  X020107 +  X020201 +  X020202 +  X020203
   +  X020204 +  X020205 +  X020206 +  X020207 +  X020301
   +  X020302 +  X020303 +  X020304 +  X020305 +  X020306
   +  X020307 <=   18000
41)     X020101 +  X020102 +  X020103 +  X020104 +  X020105
   +  X020106 +  X020107 +  X020108 +  X020201 +  X020202
   +  X020203 +  X020204 +  X020205 +  X020206 +  X020207
   +  X020208 +  X020301 +  X020302 +  X020303 +  X020304
   +  X020305 +  X020306 +  X020307 +  X020308 <=   18000
42)     X030101 +  X030201 +  X030301 <=   38
43)     X030101 +  X030102 +  X030201 +  X030202 +  X030301
   +  X030302 <=   76
```

Figure 20 (cont'd).

```
44)     X030101 +  X030102 +  X030103 +  X030201 +  X030202
   +  X030203 +  X030301 +  X030302 +  X030303 <=   114
45)     X030101 +  X030102 +  X030103 +  X030104 +  X030201
   +  X030202 +  X030203 +  X030204 +  X030301 +  X030302
   +  X030303 +  X030304 <=   152
46)     X030101 +  X030102 +  X030103 +  X030104 +  X030105
   +  X030201 +  X030202 +  X030203 +  X030204 +  X030205
   +  X030301 +  X030302 +  X030303 +  X030304 +  X030305
   <=   190
47)     X030101 +  X030102 +  X030103 +  X030104 +  X030105
   +  X030106 +  X030201 +  X030202 +  X030203 +  X030204
   +  X030205 +  X030206 +  X030301 +  X030302 +  X030303
   +  X030304 +  X030305 +  X030306 <=   228
48)     X030101 +  X030102 +  X030103 +  X030104 +  X030105
   +  X030106 +  X030107 +  X030201 +  X030202 +  X030203
   +  X030204 +  X030205 +  X030206 +  X030207 +  X030301
   +  X030302 +  X030303 +  X030304 +  X030305 +  X030306
   +  X030307 <=   266
49)     X030101 +  X030102 +  X030103 +  X030104 +  X030105
   +  X030106 +  X030107 +  X030108 +  X030201 +  X030202
   +  X030203 +  X030204 +  X030205 +  X030206 +  X030207
   +  X030208 +  X030301 +  X030302 +  X030303 +  X030304
   +  X030305 +  X030306 +  X030307 +  X030308 <=   304
50)     X010101 =    50
51)     X010103 =    60
52)     X010105 =    70
53)     X010107 =    80
54)     D030101M -  D030101P +  X030101 =    100
55)     D030102M -  D030102P +  X030102 =    100
56)     D030103M -  D030103P +  X030103 =    100
57)     D030104M -  D030104P +  X030104 =    100
58)     E030201M -  E030201P +  X030201 +  X030202 +  X030203
   +  X030204 =    76
59)     E030202M -  E030202P +  X030205 +  X030206 +  X030207
   +  X030208 =    152
60)     F030301M -  F030301P +  X030301 +  X030302 +  X030303
   +  X030304 =    141
61)     F030302M -  F030302P +  X030305 +  X030306 +  X030307
   +  X030308 =    295
62)     GM -  GP +  X040101 +  X040102 +  X040103 +  X040104
   +  X040105 +  X040106 +  X040107 +  X040108 +  X040201
   +  X040202 +  X040203 +  X040204 +  X040205 +  X040206
   +  X040207 +  X040208 +  X040301 +  X040302 +  X040303
   +  X040304 +  X040305 +  X040306 +  X040307 +  X040308 =    0
END
```

Figure 20 (cont'd).

```
SUB  X010301        0.00
SUB  X010302        0.00
SUB  X010303        0.00
SUB  X010304        0.00
SUB  X010305        0.00
SUB  X010306        0.00
SUB  X010307        0.00
SUB  X010308        0.00
```

Figure 20 (cont'd).

5.0 SUMMARY AND CONCLUSIONS

The purpose of this research was to make use of the latest computer and software technology in conjunction with the most recent theoretical and conceptual developments concerning interface of the decision-maker with computer databases and mathematical models to aid senior university management in the planning and control of university funds. The following sections will summarize this research work, discuss conclusions, and recommend further possible research and development work.

5.1 OVERVIEW

The specific objective of this research was to use two techniques - computer modeling and multi-objective mathematical programming - to yield a decision support system to assist top university financial officers in assessing the current and projected status of funds sources and uses, in order to reach new decisions concerning funding of proposed projects and to allocate funds from sources to proposed uses on an aggregate basis according to a rational set of prescribed procedures.

The computerized system allows the Vice President to access information, via an on-line terminal, concerning the up-to-date status of all funds available to the university. The system provides a projection over time of all funding requirements or needs, and a projection over time of currently proposed allocations of available funds to specified needs. Thus, the system also provides up-to-date information concerning available (unallocated) funds by source and by time period available. This allows the Vice President to match up the schedule of available funds with the projected needs to determine if sufficient funds would be available at the times needed.

Since the system involves numerous possible sources and numerous possible uses, both over a quarterly planning horizon of several periods, the possible allocation of funds from various sources to various uses over several time periods becomes a quite complex set of decisions. Thus, the computerized system embeds a goal programming model within the computer model to make the allocations of funds from sources to uses, based on a set of goals, guidelines, and constraints prescribed by the Vice President (and by legal restrictions concerning the use of various sources of state funds). The model includes all the factors that are involved in the decision-making concerning funds allocations and can measure the effects of any changes in these factors. It incorporates the diversity and multiplicity of the university's goals and objectives and legal restrictions concerning funds use. The model is flexible enough to let the user decide which goals, and at what priority, are to be included.

The DSS provides the user access to the database for the purpose of selecting model parameters for the model. It is designed and developed to be 'user-friendly' so that the user does not have to be an expert in goal programming and computer programming to be able to model the funds allocation process.

Such a system provides the administrator with a means to analyze systematically the allocation process and to make policies and decisions, and provides a framework for testing and evaluating alternative policies and performing 'what-if' analyses. In summary, the computerized system provides on-line information on how funds are available and needed over a certain planning horizon

and how these funds are being channeled to the various uses according to predefined goals. As a result, the Vice President can immediately know which sources have unused funds and which therefore might be available to fund an upcoming project. It also indicates when funds are simply not available for a proposed project, or when the timing of funds is a problem requiring a re-scheduling of the project cash outlays.

5.2 CONCLUSIONS

This research demonstrates how computer database technology, management science mathematical modeling techniques, and the latest concepts concerning computer/user interfacing can be combined to provide senior university administrators with on-line up-to-date information and decision analysis concerning the funds cash flow system. The procedures employed for user interface with the database and model are the most sophisticated currently available. Also, the allocation procedure represents state-of-the-art with regard to multi-objective decision analysis. More specific conclusions on this research can be drawn in the context of the two techniques used to develop this decision support system - computer modeling and goal programming - and the overall decision support system itself.

5.2.1 Computer Modeling

A key purpose of the research was to develop a computerized data base for the cash flow system with easy access by the user. The decision support system provides on-line information concerning the sources and uses and their respective funds via interactive terminal using screens with menu commands. It also stores information on the planned and actual funds allocations from the sources to the uses which is readily available to the user.

This information is provided to the user in the form of reports, both on the terminal and printed copies. There are five such reports:

Funds Availability by Sources:	Describes, for each year in the planning horizon, the dollar amount of funds available from each source by quarter.
Funding Requirements by Uses:	Describes, for each year in the planning horizon, the dollar amount of funds needed for each use by quarter.
Source Expenditures:	Describes in detail how funds from a particular source are being channeled to various uses over time, as determined by the allocation model. A different report is generated for each source category.
Expenditure Sources:	Describes in detail how a particular use is being funded from various sources over time, as determined by the allocation model. A different report is generated for each use category.
Funds Use Through Time:	Describes how much funds are available from each source and how much of these have been allocated to various uses by quarter, as determined by the allocation model.

The main objective of establishing the database was to provide the administrator with immediate on-line information on the cash flow system. The user can appropriately update the database when new sources or uses are identified. It assists the administrator in various ways. For instance, it acts as a financial control system where the user can determine whether the actual allocations are taking place as planned. It also helps determine which sources have unused funds and may be used to fund an upcoming project.

5.2.2 Use of Goal Programming to Model Funds Allocation Process

One purpose of this research was to model the sources and uses cash flow system using a technique that would be amenable to solution. The technique of goal programming was selected because of its ability to consider multiple and incommensurable goals. As noted earlier, fairly extensive research efforts have been conducted to model university resource allocation problems using this technique; however, no research work has dealt with the specific area of cash flow systems. This research has adequately demonstrated the feasibility of using goal programming to model the allocation procedure in a sources and uses cash flow process.

Goal programming provides a scientific and systematic way to allocate funds from the sources to the uses over several time periods, subject to the goals and priorities of the university administration. It also provides a great deal of flexibility. The user decides the parameter values of the model, and determines which goals are to be included in the model and at what priority and weight.

Goal programming is an appropriate tool for modeling the sources and uses cash flow system because of its ability to handle multiple and conflicting goals. It provides a way for the administration to seek and find a compromise among its various competitive and often conflicting goals, some of which include: meeting restrictions placed on use of state funds, using multiple sources to fund projects, and depleting non-interest bearing funds prior to those bearing interest.

This research has also demonstrated the flexibility that goal programming offers. The user decides which goals are to be included in the model. In addition, goal programming provides the user a means for sensitivity analysis. The user can study the effect of changes in the values of different variables by simply modifying the goals and/or priority structure and analyzing the resulting funds allocation structure.

5.2.3 The Decision Support System

The decision support system was developed with the objective of making the database and the goal programming technique readily and easily accessible to the decision maker. It uses computer hardware and software to facilitate the user-model interaction by providing access to the database and model using menu commands and data entry via full screen editing techniques.

The DSS handles a number of tasks that include data handling and storage, formulating and solving the GP model, generating reports, and what-if analyses. Through the use of menus and panels, the user defines model parameters, goals, and the priority structure for the GP model. The DSS then automatically formulates the GP model and solves it using a commercial mathematical programming software package.

The DSS was developed so as to possess a number of features and characteristics; but most importantly, it had to be user-friendly and interactive. The system is user-friendly in the sense that it provides the user easy access to the database and facilitates the user-model interaction. The user does not have to be an expert in computer programming or goal programming to be able to use it.

The need for the decision support system to be interactive arose from the desire to provide: (1) on-line information on the cash flow system, and (2) immediate feedback on model results when modeling the cash flow system using goal programming. As has been mentioned on numerous previous occasions, one of the purposes of the system was to provide a framework for testing of alternative allocation policies. Immediate feedback, through reports, permits the user to test different goals and priority structures in the search for an acceptable allocation structure.

The decision support system was developed using the following programming languages and computer systems: EXEC 2, FORTRAN, LINDO, and DMS. The decision to use these computer languages and systems was not made at the beginning of the research, but instead took place over

a considerable period of time as it became apparent that a single computer programming language would not be sufficient to develop such a complex system.

Initially, consideration was given to developing the decision support system on a personal computer. It soon became apparent, however, that a personal computer would not be able to satisfy the tremendous core memory requirements for such a large computer package and database system. In addition, it was felt that to solve a goal programming model of the size needed to model the allocation process would require a large execution time, possibly as much as ten to fifteen minutes. This would have negated a key characteristic of the DSS, that it be interactive and capable of providing immediate feedback. After some deliberation, it was decided to develop the decision support system on the Virginia Polytechnic Institute's IBM 3090 mainframe computer system.

Having decided to build the DSS on the mainframe, the next step was to look for a suitable programming language. Keeping in mind the user-friendliness that such a system would demand, it was decided that the Display Management System (DMS) should be used to prepare panels or screens that could be used to display menus to perform input/output operations. Research on DMS revealed that it could be accessed from only a limited number of programming languages. These programming languages are: EXEC, EXEC 2, COBOL, PL/I, and Assembly Language. Out of these only EXEC and EXEC 2 were considered because the other three either required tremendous programming effort or lacked capability as a command language. In the end, EXEC 2 was selected because its a newer and extended version of EXEC. EXEC 2 possesses great capability as a command language and has the flexibility to be used as a programming language as well. Additionally, it offers considerable debugging facilities.

As the programming work began, it was soon discovered that EXEC 2 offers little by way of computational capabilities. It also does not possess any capability to write a record in a formatted mode. Consequently, the need for an additional programming language was felt. FORTRAN was the obvious choice because of its simplicity and quick execution time.

A computer code for solving the goal programming model was also needed. LINDO was selected not only because it can be used in an interactive mode, but also because it offers the USER subroutine that can be utilized to solve a goal programming model as a sequence of linear programming problems. In addition, LINDO can accept a problem code in the MPS format which is relatively easy to generate using FORTRAN programs, as is the case for this system.

The use of Display Management System (DMS) to prepare panels, or screens, for providing menus and for performing input/output operations was very well received. It went a long way toward making this decision support system user-friendly. The use of panels not only gives the system a 'professional look', but also offers a number of advantages that are explained in the following paragraphs.

One of the advantages of using DMS was evident when displaying menus. Instead of asking the user to select an option by writing the option number and hitting the return key, the user need only use the corresponding PF key. In effect, instead of having to perform two operations - typing the option number and hitting the return key - the user has to use only one key. This may not seem like a great advantage, but when using a very large computer system where a large number of options have to be specified during a typical session, this turns out to be a very significant advantage. Also, most of the top administrators use systems such as PROFS very frequently, and so are familiar with using PF keys.

Another advantage of using DMS is that output can be easily displayed on the terminal in a formatted mode, which is a relatively difficult task using, say, EXEC 2 or FORTRAN . In addition, specific titles and data fields may be highlighted, and this capability can be exploited to focus the user's attention on some important piece of instruction or information.

There is a significant advantage during data input operations as well. It is possible to specify certain data fields to take only numeric values. Consequently, when an entry is to be made in such a data field, the screen will not accept any non-numeric characters in that field. If, by mistake, the user

hits a character key while typing a number, the terminal will not accept that character and, instead, sounds a signal to alert the user to this effect.

The use of signals is not limited to this instance alone. The system makes use of signals to alert the user when an invalid selection is made, or when an inappropriate data entry is made. For instance, the user may select a PF key that does not correspond to any option, or, while making a rigid allocation, may try to allocate more funds than are needed or available. In such instances, the signal is sounded and an highlighted error message explaining the error is displayed at the bottom left corner of the screen.

In all, the use of DMS to create panels for menus and for performing input/output operations made a significant contribution towards providing the interaction between user and database, and between user and model. It went a long way towards making this a really user-friendly system.

5.3 RECOMMENDATIONS

Even though this decision support system is at present going to be used by the top officials of the university, its use should not be limited to strategic planning for the overall university financial system. It could be used at the college level or even the department level. Various research centers in the university could also find this system very useful.

In addition, the administration might consider selling this DSS to other state universities. To a large extent, the cash flow system at other state universities would have features very similar to those at the Virginia Polytechnic Institute and State University. One possible stumbling block might be the requirement that the funding be given by the quarter of each year, which may not be the case at some other institutions which may have a time unit of, say, a month or a half-year. However, as

noted in an earlier section, this could be overcome by breaking down or aggregating the funding requirements so that the resulting time unit is a quarter of a year.

It is highly advisable that this system be used for multi-year planning horizons. This may involve dealing with data that are only estimates, but such use would help detect any potential problems, such as funding shortages in the future. Early detection of such problems would give the administration sufficient time to develop a strategy to tackle those problems.

Additional experimentation should be done with the system by considering further different possible scenarios. This could provide further insight into how the allocation process is affected by changes in the objectives and priorities of the administration, and by changes in other variables that affect the allocation process.

As far as further development and research work is concerned, several ideas immediately come to mind. First, some additional types of goals may be included in the goal programming model. These additional goals could include: (1) exhaust all funds from a particular use, (2) funds from a particular source should go to a specified number of uses, and (3) funding for a use should come from a specified number of sources.

Another possible extension to the system would be to build in a forecasting model. The forecasting model, which could be a time series or a regression model, could be used to forecast the funding availability and requirements in the future years. The goal programming model could then be used on these predictions to evaluate possible allocation structures and to identify possible problem areas.

Further research should also be conducted into the possibility of extending the computer model to include performing a funds allocation for a particular source-use categories combination. That is, further develop this model so that after a funds allocation structure has been developed for certain categories of sources and uses, the same analysis can be performed at a more detailed level for

specific source and use categories by breaking down those categories into their respective components.

The administration should also consider integrating this system with other existing information/decision support systems like the tuition and fee model and the budget model, to develop a comprehensive financial information and control package. Also, any forthcoming financial systems should be developed with the intent of eventual integration into the overall system.

5.4 SUMMARY

In summary, this research demonstrates how computer hardware and software technology can be combined with management science techniques to develop a powerful tool to aid the university administration in managing a sources and uses of funds system and making sound and effective funds allocation decisions. The research also follows the premise that the purpose of a decision support system is not to replace a decision-maker by making decisions for him, but rather to increase the decision-maker's involvement in the decision-making process by providing him access to database and decision models, and by facilitating the interaction between database, model, and the user.

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Appendix A. LISTING OF EXEC 2 PROGRAMS

A.1 ACHVMNT

```
*********************************************************************
*
*        OPTION - DISPLAY GOAL ACHIEVEMENT REPORTS
*
*    THIS EXEC COMPUTES GOAL ACHIEVMENTS AND DISPLAYS THEM.
*
*********************************************************************

&TRACE OFF


FILEDEF * CLEAR

FILEDEF FT01F001 DISK GOAL1 DATA X
FILEDEF FT02F001 DISK GOAL2 DATA X
FILEDEF FT03F001 DISK GOAL3 DATA X
FILEDEF FT04F001 DISK RIGID DATA X
FILEDEF FT11F001 DISK G1    DATA X
FILEDEF FT12F001 DISK G2    DATA X
FILEDEF FT13F001 DISK G3    DATA X
FILEDEF FT14F001 DISK RIG   DATA X
FILEDEF FT17F001 DISK G0    DATA X
FILEDEF FT18F001 DISK NG    DATA X
FILEDEF FT19F001 DISK NR    DATA X
PREGLACH

COPYFILE NG DATA X (LRECL 80 RECFM F
COPYFILE NR DATA X (LRECL 80 RECFM F

EXECIO 1 DISKR NR DATA X 1 (FINIS
&READ VAR &NRC

ERASE RIGID DATA X
COPY RIG DATA X RIGID DATA X
ERASE RIG DATA X
COPYFILE RIGID DATA X (LRECL 100 RECFM F


EXECIO 1 DISKR NG DATA X 1 (FINIS
&READ VAR &CT1 &CT2 &CT3 &CT0

SET CMSTYPE HT
&IF &CT1 = 0 &SKIP 3
COPYFILE G1 DATA X (LRECL 80 RECFM F
&STACK 21 22 8 9
SORT G1 DATA X G11 DATA X

&IF &CT2 = 0 &SKIP 3
COPYFILE G2 DATA X (LRECL 80 RECFM F
&STACK 21 22 8 9
SORT G2 DATA X G21 DATA X

&IF &CT3 = 0 &SKIP 3
COPYFILE G3 DATA X (LRECL 80 RECFM F
&STACK 21 22 8 9
SORT G3 DATA X G31 DATA X

&IF &CT0 = 0 &SKIP 3
COPYFILE G0 DATA X (LRECL 80 RECFM F
&STACK 21 22 29 30 8 9
SORT G0 DATA X G01 DATA X

SET CMSTYPE RT

FILEDEF FT01F001 DISK INIT    DATA X
FILEDEF FT02F001 DISK SOURCED  DATA X
```

```
FILEDEF FT03F001 DISK USED    DATA X
FILEDEF FT04F001 DISK ALLOCATN DATA X
FILEDEF FT17F001 DISK G11     DATA X
FILEDEF FT18F001 DISK G21     DATA X
FILEDEF FT19F001 DISK G31     DATA X
FILEDEF FT11F001 DISK G12     DATA X (LRECL 100 BLKSIZE 100 RECFM F
FILEDEF FT12F001 DISK G22     DATA X (LRECL 100 BLKSIZE 100 RECFM F
FILEDEF FT13F001 DISK G32     DATA X (LRECL 100 BLKSIZE 100 RECFM F
FILEDEF FT14F001 DISK G02     DATA X (LRECL 100 BLKSIZE 100 RECFM F
GLACHMNT

COPYFILE G02 DATA X (LRECL 100 RECFM F
COPYFILE G12 DATA X (LRECL 100 RECFM F
COPYFILE G22 DATA X (LRECL 100 RECFM F
COPYFILE G32 DATA X (LRECL 100 RECFM F

FILEDEF FT01F001 DISK INIT    DATA X
FILEDEF FT02F001 DISK SOURCEN DATA X
FILEDEF FT03F001 DISK USEN    DATA X
FILEDEF FT04F001 DISK NG      DATA X
FILEDEF FT11F001 DISK G12     DATA X (LRECL 100 BLKSIZE 100 RECFM F
FILEDEF FT12F001 DISK G22     DATA X (LRECL 100 BLKSIZE 100 RECFM F
FILEDEF FT13F001 DISK G32     DATA X (LRECL 100 BLKSIZE 100 RECFM F
FILEDEF FT21F001 DISK G13     DATA X
FILEDEF FT22F001 DISK G23     DATA X
FILEDEF FT23F001 DISK G33     DATA X
FILEDEF FT27F001 DISK G03     DATA X
FILEDEF FT31F001 DISK FILE  FT31F001 X (LRECL 120 BLKSIZE 120 RECFM F
FILEDEF FT32F001 DISK FILE  FT32F001 X (LRECL 120 BLKSIZE 120 RECFM F
FILEDEF FT33F001 DISK FILE  FT33F001 X (LRECL 120 BLKSIZE 120 RECFM F
FILEDEF FT37F001 DISK FILE  FT37F001 X (LRECL 120 BLKSIZE 120 RECFM F
GAREPTS

&IF &CT1 = 0 &SKIP 1
COPYFILE G13 DATA X (LRECL 80 RECFM F
&IF &CT2 = 0 &SKIP 1
COPYFILE G23 DATA X (LRECL 80 RECFM F
&IF &CT3 = 0 &SKIP 1
COPYFILE G33 DATA X (LRECL 80 RECFM F
&IF &CT0 = 0 &SKIP 1
COPYFILE G03 DATA X (LRECL 80 RECFM F

ERASE G0 DATA X
ERASE G1 DATA X
ERASE G2 DATA X
ERASE G3 DATA X
ERASE G01 DATA X
ERASE G11 DATA X
ERASE G21 DATA X
ERASE G31 DATA X
ERASE G02 DATA X
ERASE GOAL1 DATA X
ERASE GOAL2 DATA X
ERASE GOAL3 DATA X
COPYFILE G12 DATA X GOAL1 DATA X
COPYFILE G22 DATA X GOAL2 DATA X
COPYFILE G32 DATA X GOAL3 DATA X
ERASE G12 DATA X
ERASE G22 DATA X
ERASE G32 DATA X

SET CMSTYPE HT
&STACK 26 27 1 2
SORT G03 DATA X G43 DATA X
ERASE G03 DATA X
SET CMSTYPE RT

FILEDEF FT01F001 DISK G43 DATA X
FILEDEF FT02F001 DISK G03 DATA X
ORDGARPT
```

```
ERASE G43 DATA X
COPYFILE G03 DATA X (LRECL 80 RECFM F

*********************************************************************
* DISPLAY MENU FOR GOAL ACHIEVEMENT REPORTS
*********************************************************************

EUDEXEC2
&PRESUME &SUBCOMMAND DISPLAY

&COMMAND EXECIO 1 DISKR NG DATA X 1 (FINIS
&READ VAR &C2 &C3 &C4 &C0

-MAIN

USE PANEL10
MAP DATA 1 ECODE                    (LOAD UNLOAD PREVIEW
-ERRDIS
DISPLAY
&IF &RSTATUS = PF1 &GOTO -OPN1
&IF &RSTATUS = PF2 &GOTO -OPN2
&IF &RSTATUS = PF3 &GOTO -OPN3
&IF &RSTATUS = PF4 &GOTO -OPN4
&IF &RSTATUS = PF5 &GOTO -OPN5
&IF &RSTATUS = PF10 &GOTO -QUIT
&ECODE = &STRING OF UNDEFINED PF KEY!
SIGNAL
&GOTO -ERRDIS


*********************************************************************
* OPTION 1 - GOAL I ACHIEVEMENTS
*********************************************************************

-OPN1

&CALL -OPT1
&GOTO -MAIN


*********************************************************************
* OPTION 2 - GOAL II ACHIEVEMENTS
*********************************************************************

-OPN2

&CALL -OPT2
&GOTO -MAIN


*********************************************************************
* OPTION 3 - GOAL III ACHIEVEMENTS
*********************************************************************

-OPN3

&CALL -OPT3
&GOTO -MAIN


*********************************************************************
* OPTION 4 - ALL GOALS' ACHIEVEMENTS
*********************************************************************

-OPN4

&CALL -OPT4
&GOTO -MAIN
```

```
*********************************************************************
* OPTION 5 - PRINT ALL GOAL ACHIEVEMENT REPORTS
*********************************************************************

-OPN5

&CALL -OPT5

USE PANEL10
MAP DATA 1 ECODE                    (LOAD UNLOAD PREVIEW
&ECODE = &STRING OF REPORTS SENT TO PRINTER
SIGNAL
&GOTO -ERRDIS


-OPT1

&IF &C2 = 0 &SKIP 1
&COMMAND EXECIO &C2 DISKR G13 DATA X 1 (FINIS

&N = 0
&LOOP 3 &C2
&N = &N + 1
&NAME = &CONCAT OF X3 &N
&READ STRING &&NAME

USE PANEL101
MAP DATA 1 Y1 2 Y2 3 Y3 4 Y4 5 Y5          (LOAD UNLOAD PREVIEW
MAP DATA 6 Y6 7 Y7 8 Y8 9 Y9 10 Y10         (LOAD UNLOAD PREVIEW
MAP DATA 11 Y11 12 Y12 13 Y13 14 Y14 15 Y15    (LOAD UNLOAD PREVIEW
MAP DATA 16 Y16 17 Y17 18 Y18 19 ECODE        (LOAD UNLOAD PREVIEW

&SL = 0

-CONT3
&LN = &SL
&N = 0
&LOOP -RS3 18
&N = &N + 1
&NAME1 = &CONCAT OF Y &N
&&NAME1 = &BLANK
&IF &LN EQ &C2 &GOTO -RS3
&LN = &LN + 1
&NAME2 = &CONCAT OF X3 &LN
&&NAME1 = &&NAME2
-RS3

-DISP3

-ED3
DISPLAY
&ECODE = &BLANK
&IF &RSTATUS = PF7 &SKIP 6
&IF &RSTATUS = PF8 &SKIP 5
&IF &RSTATUS = PF10 &RETURN
&ECODE = &STRING OF IMPROPER PFKEY!
-GERR3
SIGNAL
&GOTO -ED3

&IF &RSTATUS = PF8 &SKIP 5
&IF &SL NE 0 &SKIP 2
&ECODE = &STRING OF NO PREVIOUS GOALS!
&GOTO -GERR3
&SL = &SL - 18
&GOTO -CONT3
&IF &LN NE &C2 &SKIP 2
&ECODE = &STRING OF NO MORE GOALS!
&GOTO -GERR3
&SL = &SL + 18
&GOTO -CONT3
```

```
-OPT2

&IF &C3 = 0 &SKIP 1
&COMMAND EXECIO &C3 DISKR G23 DATA X 1 (FINIS

&N = 0
&LOOP 3 &C3
&N = &N + 1
&NAME = &CONCAT OF X4 &N
&READ STRING &&NAME

USE PANEL102
MAP DATA 1 Y1 2 Y2 3 Y3 4 Y4 5 Y5            (LOAD UNLOAD PREVIEW
MAP DATA 6 Y6 7 Y7 8 Y8 9 Y9 10 Y10          (LOAD UNLOAD PREVIEW
MAP DATA 11 Y11 12 Y12 13 Y13 14 Y14 15 Y15    (LOAD UNLOAD PREVIEW
MAP DATA 16 Y16 17 Y17 18 Y18 19 ECODE        (LOAD UNLOAD PREVIEW

&SL = 0

-CONT4
&LN = &SL
&N = 0
&LOOP -RS4 18
&N = &N + 1
&NAME1 = &CONCAT OF Y &N
&&NAME1 = &BLANK
&IF &LN EQ &C3 &GOTO -RS4
&LN = &LN + 1
&NAME2 = &CONCAT OF X4 &LN
&&NAME1 = &&NAME2
-RS4

-DISP4

-ED4
DISPLAY
&ECODE = &BLANK
&IF &RSTATUS = PF7 &SKIP 6
&IF &RSTATUS = PF8 &SKIP 5
&IF &RSTATUS = PF10 &RETURN
&ECODE = &STRING OF IMPROPER PFKEY!
-GERR4
SIGNAL
&GOTO -ED4

&IF &RSTATUS = PF8 &SKIP 5
&IF &SL NE 0 &SKIP 2
&ECODE = &STRING OF NO PREVIOUS GOALS!
&GOTO -GERR4
&SL = &SL - 18
&GOTO -CONT4
&IF &LN NE &C3 &SKIP 2
&ECODE = &STRING OF NO MORE GOALS!
&GOTO -GERR4
&SL = &SL + 18
&GOTO -CONT4

-OPT3

&IF &C4 = 0 &SKIP 1
&COMMAND EXECIO &C4 DISKR G33 DATA X 1 (FINIS

&N = 0
&LOOP 3 &C4
&N = &N + 1
&NAME = &CONCAT OF X5 &N
&READ STRING &&NAME

USE PANEL103
MAP DATA 1 Y1 2 Y2 3 Y3 4 Y4 5 Y5            (LOAD UNLOAD PREVIEW
```

```
MAP DATA 6 Y6 7 Y7 8 Y8 9 Y9 10 Y10          (LOAD UNLOAD PREVIEW
MAP DATA 11 Y11 12 Y12 13 Y13 14 Y14 15 Y15   (LOAD UNLOAD PREVIEW
MAP DATA 16 Y16 17 Y17 18 Y18 19 ECODE       (LOAD UNLOAD PREVIEW

&SL = 0

-CONT5
&LN = &SL
&N = 0
&LOOP -RS5 18
&N = &N + 1
&NAME1 = &CONCAT OF Y &N
&&NAME1 = &BLANK
&IF &LN EQ &C4 &GOTO -RS5
&LN = &LN + 1
&NAME2 = &CONCAT OF X5 &LN
&&NAME1 = &&NAME2
-RS5

-DISP5

-ED5
DISPLAY
&ECODE = &BLANK
&IF &RSTATUS = PF7 &SKIP 6
&IF &RSTATUS = PF8 &SKIP 5
&IF &RSTATUS = PF10 &RETURN
&ECODE = &STRING OF IMPROPER PFKEY!
-GERR5
SIGNAL
&GOTO -ED5

&IF &RSTATUS = PF8 &SKIP 5
&IF &SL NE 0 &SKIP 2
&ECODE = &STRING OF NO PREVIOUS GOALS!
&GOTO -GERR5
&SL = &SL - 18
&GOTO -CONT5
&IF &LN NE &C4 &SKIP 2
&ECODE = &STRING OF NO MORE GOALS!
&GOTO -GERR5
&SL = &SL + 18
&GOTO -CONT5


-OPT4

&IF &C0 = 0 &SKIP 1
&COMMAND EXECIO &C0 DISKR G03 DATA X 1 (FINIS

&N = 0
&LOOP 3 &C0
&N = &N + 1
&NAME = &CONCAT OF X5 &N
&READ STRING &&NAME

USE PANEL104
MAP DATA 1 Y1 2 Y2 3 Y3 4 Y4 5 Y5          (LOAD UNLOAD PREVIEW
MAP DATA 6 Y6 7 Y7 8 Y8 9 Y9 10 Y10          (LOAD UNLOAD PREVIEW
MAP DATA 11 Y11 12 Y12 13 Y13 14 Y14 15 Y15   (LOAD UNLOAD PREVIEW
MAP DATA 16 Y16 17 Y17 18 Y18 19 ECODE       (LOAD UNLOAD PREVIEW

&SL = 0

-CONT6
&LN = &SL
&N = 0
&LOOP -RS6 18
&N = &N + 1
&NAME1 = &CONCAT OF Y &N
&&NAME1 = &BLANK
&IF &LN EQ &C0 &GOTO -RS6
```

```
&LN = &LN + 1
&NAME2 = &CONCAT OF X5 &LN
&&NAME1 = &&NAME2
-RS6

-DISP6

-ED6
DISPLAY
&ECODE = &BLANK
&IF &RSTATUS = PF7 &SKIP 6
&IF &RSTATUS = PF8 &SKIP 5
&IF &RSTATUS = PF10 &RETURN
&ECODE = &STRING OF IMPROPER PFKEY!
-GERR6
SIGNAL
&GOTO -ED6

&IF &RSTATUS = PF8 &SKIP 5
&IF &SL NE 0 &SKIP 2
&ECODE = &STRING OF NO PREVIOUS GOALS!
&GOTO -GERR6
&SL = &SL - 18
&GOTO -CONT6
&IF &LN NE &C0 &SKIP 2
&ECODE = &STRING OF NO MORE GOALS!
&GOTO -GERR6
&SL = &SL + 18
&GOTO -CONT6


-OPT5

&PRESUME &COMMAND

&IF &CT1 = 0 &SKIP 1
COPYFILE FILE FT31F001 X (LRECL 120 RECFM F
&IF &CT2 = 0 &SKIP 1
COPYFILE FILE FT32F001 X (LRECL 120 RECFM F
&IF &CT3 = 0 &SKIP 1
COPYFILE FILE FT33F001 X (LRECL 120 RECFM F
COPYFILE FILE FT37F001 X (LRECL 120 RECFM F

SET CMSTYPE HT
&STACK 56 57 1 2
SORT FILE FT37F001 X TEMP FT37F001 X
SET CMSTYPE RT
ERASE   FILE FT37F001 X
COPY TEMP FT37F001 X FILE FT37F001 X
ERASE   TEMP FT37F001 X

FILEDEF FT01F001 DISK NG      DATA   X
FILEDEF FT31F001 DISK FILE FT31F001 X (LRECL 120 BLKSIZE 120 RECFM F
FILEDEF FT32F001 DISK FILE FT32F001 X (LRECL 120 BLKSIZE 120 RECFM F
FILEDEF FT33F001 DISK FILE FT33F001 X (LRECL 120 BLKSIZE 120 RECFM F
FILEDEF FT37F001 DISK FILE FT37F001 X (LRECL 120 BLKSIZE 120 RECFM F
FILEDEF FT11F001 DISK GLACHMNT LISTING X (LRECL 132 BLKSIZE 132 RECFM F
PRNTGARP

PRINT GLACHMNT LISTING X
ERASE GLACHMNT LISTING X

EUDEXEC2
&PRESUME &SUBCOMMAND DISPLAY

&RETURN

-QUIT

&PRESUME &COMMAND
ERASE R11   DATA  X
```

```
ERASE R21   DATA  X
ERASE G03   DATA  X
ERASE G13   DATA  X
ERASE G23   DATA  X
ERASE G33   DATA  X
ERASE NG    DATA  X
ERASE NR    DATA  X

ERASE FILE FT31F001 X
ERASE FILE FT32F001 X
ERASE FILE FT33F001 X
ERASE FILE FT37F001 X

&EXIT
```

A.2 NEWMODEL

```
*************************************************************************
*
*                CREATE A DUMMY DATABASE
*
*************************************************************************
&TRACE OFF

EUDEXEC2
&PRESUME &SUBCOMMAND DISPLAY


USE NEWMODL
MAP DATA 1 ECODE                    (LOAD UNLOAD PREVIEW
-ERRQUIT
DISPLAY
&IF &RSTATUS = PF1 &GOTO -NEW
&IF &RSTATUS = PF10 &GOTO -QUIT
&ECODE = &STRING OF UNDEFINED PF KEY
SIGNAL
&GOTO -ERRQUIT

-NEW

&PRESUME &COMMAND

ERASE SOURCED  PERM A
ERASE SOURCEN  PERM A
ERASE USED     PERM A
ERASE USEN     PERM A
ERASE YEAR     PERM A
ERASE INIT     PERM A
ERASE CONST    PERM A
ERASE ALLOCATN PERM A
ERASE RIGID    PERM A
ERASE GOAL1    PERM A
ERASE GOAL2    PERM A
ERASE GOAL3    PERM A
ERASE GOALS    PERM A
COPY SOURCED  DUMMY Z SOURCED  PERM A
COPY SOURCEN  DUMMY Z SOURCEN  PERM A
COPY USED     DUMMY Z USED     PERM A
COPY USEN     DUMMY Z USEN     PERM A
COPY YEAR     DUMMY Z YEAR     PERM A
COPY INIT     DUMMY Z INIT     PERM A
COPY CONST    DUMMY Z CONST    PERM A
COPY ALLOCATN DUMMY Z ALLOCATN PERM A
COPY GOALS    DUMMY Z GOALS    PERM A
COPY GOAL1    DUMMY Z GOAL1    PERM A
COPY GOAL2    DUMMY Z GOAL2    PERM A
COPY GOAL3    DUMMY Z GOAL3    PERM A
COPY RIGID    DUMMY Z RIGID    PERM A

&EXIT

-QUIT
&PRESUME &COMMAND

&EXIT
```

A.3 PERMCHNG

```
*************************************************************************
*
*          OPTION 2 - MAKE TEMPORARY CHANGES TO DATA
*
*************************************************************************

&TRACE OFF


ERASE SOURCED TEMP X
ERASE SOURCEN TEMP X
ERASE USED   TEMP X
ERASE USEN   TEMP X
ERASE YEAR   TEMP X
ERASE INIT   TEMP X
ERASE CONST  TEMP X
ERASE GOALS  TEMP X
ERASE GOAL1  TEMP X
ERASE GOAL2  TEMP X
ERASE GOAL3  TEMP X
ERASE RIGID  TEMP X
COPY SOURCED DATA X SOURCED TEMP X
COPY SOURCEN DATA X SOURCEN TEMP X
COPY USED   DATA X USED   TEMP X
COPY USEN   DATA X USEN   TEMP X
COPY YEAR   DATA X YEAR   TEMP X
COPY INIT   DATA X INIT   TEMP X
COPY CONST  DATA X CONST  TEMP X
COPY GOALS  DATA X GOALS  TEMP X
COPY GOAL1  DATA X GOAL1  TEMP X
COPY GOAL2  DATA X GOAL2  TEMP X
COPY GOAL3  DATA X GOAL3  TEMP X
COPY RIGID  DATA X RIGID  TEMP X
ERASE SOURCED DATA X
ERASE SOURCEN DATA X
ERASE USED   DATA X
ERASE USEN   DATA X
ERASE YEAR   DATA X
ERASE INIT   DATA X
ERASE CONST  DATA X
ERASE GOALS  DATA X
ERASE GOAL1  DATA X
ERASE GOAL2  DATA X
ERASE GOAL3  DATA X
ERASE RIGID  DATA X
COPY SOURCED PERM A SOURCED DATA X
COPY SOURCEN PERM A SOURCEN DATA X
COPY USED   PERM A USED   DATA X
COPY USEN   PERM A USEN   DATA X
COPY YEAR   PERM A YEAR   DATA X
COPY INIT   PERM A INIT   DATA X
COPY CONST  PERM A CONST  DATA X
COPY GOALS  PERM A GOALS  DATA X
COPY GOAL1  PERM A GOAL1  DATA X
COPY GOAL2  PERM A GOAL2  DATA X
COPY GOAL3  PERM A GOAL3  DATA X
COPY RIGID  PERM A RIGID  DATA X


*************************************************************************
*  DECIDE ON PLANNING HORIZON
*************************************************************************

EXEC PERMHRZN
```

```
EUDEXEC2
&PRESUME &SUBCOMMAND DISPLAY

*********************************************************************
*  DISPLAY MAIN MENU
*********************************************************************


-MAIN

USE PERMMAIN
-ERRORMAIN

DISPLAY
MAP DATA 1 ECODE (LOAD UNLOAD PREVIEW
&IF &RSTATUS = PF1 &GOTO -OPTION1
&IF &RSTATUS = PF2 &GOTO -OPTION2
&IF &RSTATUS = PF10 &GOTO -SAVECHNG
&ECODE = &STRING OF UNDEFINED PF KEY!
SIGNAL
&GOTO -ERRORMAIN


*********************************************************************
*  OPTION1 - MAKE CHANGES TO SOURCES
*********************************************************************


-OPTION1


*********************************************************************
*  DISPLAY SOURCE CHANGE MENU
*********************************************************************


-SRCEMENU

USE PSRCOPTN
MAP DATA 1 ECODE                    (LOAD UNLOAD PREVIEW
-ERRSRCEOPN
DISPLAY
&IF &RSTATUS = PF1 &GOTO -SRCEOPT1
&IF &RSTATUS = PF2 &GOTO -SRCEOPT2
&IF &RSTATUS = PF3 &GOTO -SRCEOPT3
&IF &RSTATUS = PF4 &GOTO -SRCEOPT4
&IF &RSTATUS = PF10 &GOTO -MAIN
&ECODE = &STRING OF UNDEFINED PF KEY!
SIGNAL
&GOTO -ERRSRCEOPN


*********************************************************************
*  MODIFY X SOURCE
*  SELECT SOURCE
*********************************************************************


-SRCEOPT1

USE PMTSRCEM
MAP DATA  1 SN1  2 SN2  3 SN3  4 SN4  5 SN5    (LOAD UNLOAD PREVIEW
MAP DATA  6 SN6  7 SN7  8 SN8  9 SN9  10 SN10   (LOAD UNLOAD PREVIEW
MAP DATA 11 SN11 12 SN12 13 SN13 14 SN14 15 SN15   (LOAD UNLOAD PREVIEW
MAP DATA 16 SN16 17 ECODE                  (LOAD UNLOAD PREVIEW

&COMMAND EXECIO 1 DISKR INIT DATA X 1 (FINIS
&READ VAR &NS &NU &NY &STYR &STYRNO

&COMMAND EXECIO &NU DISKR USEN DATA X 1 (FINIS
&N = 0
```

```
&LOOP 3 &NU
&N = &N + 1
&NAME = &CONCAT OF U &N
&READ STRING &&NAME

&COMMAND EXECIO &NS DISKR SOURCEN DATA X 1 (FINIS
&N = 0
&LOOP 6 &NS
&N = &N + 1
&NAME = &CONCAT OF S &N
&READ STRING &&NAME
&NAME1 = &CONCAT OF SN &N
&&NAME1 = &CONCAT OF &BLANK &N . &BLANK &&NAME
&IF &N LT 10 &&NAME1 = &CONCAT OF &BLANK &&NAME1

&N = &N + 1
&IF &N GT 16 &SKIP 3
&TEMP = &CONCAT OF SN &N
SET &TEMP (PRO
&SKIP -4

&SN = 0

-ERRSRCOPT1

DISPLAY

&IF &RSTATUS = PF10 &GOTO -SRCEMENU
&IF &RCURSOR = SN1 &SN = 1
&IF &RCURSOR = SN2 &SN = 2
&IF &RCURSOR = SN3 &SN = 3
&IF &RCURSOR = SN4 &SN = 4
&IF &RCURSOR = SN5 &SN = 5
&IF &RCURSOR = SN6 &SN = 6
&IF &RCURSOR = SN7 &SN = 7
&IF &RCURSOR = SN8 &SN = 8
&IF &RCURSOR = SN9 &SN = 9
&IF &RCURSOR = SN10 &SN = 10
&IF &RCURSOR = SN11 &SN = 11
&IF &RCURSOR = SN12 &SN = 12
&IF &RCURSOR = SN13 &SN = 13
&IF &RCURSOR = SN14 &SN = 14
&IF &RCURSOR = SN15 &SN = 15
&IF &RCURSOR = SN16 &SN = 16
&IF &RSTATUS EQ ENTER &GOTO -MODSOU
&ECODE = &STRING OF UNDEFINED PF KEY!
SIGNAL
&GOTO -ERRSRCOPT1

-MODSOU

&STACK &NS &NU &SN &NY
&COMMAND EXECIO 1 DISKW SRCE DATA X 1 F 80 (FINIS

&PRESUME &COMMAND

FILEDEF FT01F001 DISK SRCE    DATA X
FILEDEF FT02F001 DISK SOURCED DATA X
FILEDEF FT03F001 DISK CONST   DATA X
FILEDEF FT07F001 DISK RETSRCE DATA X
FILEDEF FT08F001 DISK RETCONT DATA X
RETSRCE
COPYFILE RETSRCE DATA X (LRECL 80 RECFM F
COPYFILE RETCONT DATA X (LRECL 80 RECFM F

EUDEXEC2
&PRESUME &SUBCOMMAND DISPLAY


*********************************************************************
*  MODIFY INITIAL BALANCE
*********************************************************************
```

```
USE PMSRCBAL
MAP DATA 1 SNAME 2 CIBAL 3 IBAL 4 ECODE          (LOAD UNLOAD PREVIEW

&NAME = &CONCAT OF S &SN
&SNAME = &&NAME
&COMMAND EXECIO 1 DISKR RETSRCE DATA X 1 (FINIS
&READ VAR &CIBAL

DISPLAY

&IF .&IBAL NE .&BLANK &SKIP 3
&IF .&IBAL = .&BLANK &IBAL = &CIBAL

DISPLAY

&STACK &IBAL
&COMMAND EXECIO 1 DISKW MODSRCE DATA X 1 F 80 (FINIS


*********************************************************************
*  MODIFY QUARTERLY FUNDS
*********************************************************************


USE PMSRCQTR
MAP DATA 1 SNAME 2 YEAR                    (LOAD UNLOAD PREVIEW
MAP DATA 3 QTRO1 4 QTRN1 5 QTRO2 6 QTRN2       (LOAD UNLOAD PREVIEW
MAP DATA 7 QTRO3 8 QTRN3 9 QTRO4 10 QTRN4      (LOAD UNLOAD PREVIEW
MAP DATA 11 ECODE                          (LOAD UNLOAD PREVIEW

&N = 0
&LOOP -MSRCQTR &NY
&N = &N + 1
&M = &N + 1
&QTRN1 = &BLANK
&QTRN2 = &BLANK
&QTRN3 = &BLANK
&QTRN4 = &BLANK

&NAME = &CONCAT OF S &SN
&SNAME = &&NAME

&COMMAND EXECIO 1 DISKR YEAR DATA X &N (FINIS
&READ VAR &YEAR

&COMMAND EXECIO 1 DISKR RETSRCE DATA X &M (FINIS
&READ VAR &QTRO1 &QTRO2 &QTRO3 &QTRO4

&NB = 0
DISPLAY

&IF .&QTRN1 EQ .&BLANK &NB = 1
&IF .&QTRN2 EQ .&BLANK &NB = 1
&IF .&QTRN3 EQ .&BLANK &NB = 1
&IF .&QTRN4 EQ .&BLANK &NB = 1
&IF .&QTRN1 EQ .&BLANK &QTRN1 = &QTRO1
&IF .&QTRN2 EQ .&BLANK &QTRN2 = &QTRO2
&IF .&QTRN3 EQ .&BLANK &QTRN3 = &QTRO3
&IF .&QTRN4 EQ .&BLANK &QTRN4 = &QTRO4

&IF &NB = 0 &SKIP 2

DISPLAY

&STACK &QTRN1 &QTRN2 &QTRN3 &QTRN4
&COMMAND EXECIO 1 DISKW MODSRCE DATA X &M F 80 (FINIS

-MSRCQTR
```

```
USE PSRCLIST
MAP DATA 1 SNAME 2 REPLY 3 ECODE              (LOAD UNLOAD PREVIEW

&NAME = &CONCAT OF S &SN
&SNAME = &&NAME
&REPLY = N

DISPLAY

&IF &REPLY = N &GOTO -NMSRCELIG
&IF &REPLY = Y &GOTO -MSRCELIG
&ECODE = &STRING OF ENTER 'Y' OR 'N'
SIGNAL
&SKIP -6

-MSRCELIG

USE PMCKSRC
MAP DATA 1 SNAME                          (LOAD UNLOAD PREVIEW
MAP DATA  2 UN1  3 E1  4 UN2  5 E2  6 UN3  7 E3    (LOAD UNLOAD PREVIEW
MAP DATA  8 UN4  9 E4 10 UN5 11 E5 12 UN6 13 E6    (LOAD UNLOAD PREVIEW
MAP DATA 14 UN7 15 E7 16 UN8 17 E8 18 UN9 19 E9    (LOAD UNLOAD PREVIEW
MAP DATA 20 UN10 21 E10 22 UN11 23 E11          (LOAD UNLOAD PREVIEW
MAP DATA 24 UN12 25 E12 26 UN13 27 E13          (LOAD UNLOAD PREVIEW
MAP DATA 28 UN14 29 E14 30 UN15 31 E15          (LOAD UNLOAD PREVIEW
MAP DATA 32 UN16 33 E16 34 ECODE               (LOAD UNLOAD PREVIEW

&NAME = &CONCAT OF S &SN
&SNAME = &&NAME

&COMMAND EXECIO &NU DISKR RETCONT DATA X 1 (FINIS
&N = 0
&LOOP 6 &NU
&N = &N + 1
&NAME = &CONCAT OF E &N
&READ VAR &&NAME
&NAME = &CONCAT OF UN &N
&NAME1 = &CONCAT OF U &N
&&NAME = &&NAME1

&IF &N GE 16 &SKIP 4
&N = &N + 1
&NAME = &CONCAT OF E &N
SET &NAME (PRO
&SKIP -4

-MSRCLERR

DISPLAY

&N = 0
&LOOP -MSRCCONT &NU
&N = &N + 1
&NAME = &CONCAT OF E &N
&IF .&&NAME EQ .Y &GOTO -MSRCCONT
&IF .&&NAME EQ .N &GOTO -MSRCCONT
&ECODE = &STRING OF ENTER 'Y' OR 'N'
SIGNAL
&GOTO -MSRCLERR

-MSRCCONT

&N = 0
&LOOP 3 &NU
&N = &N + 1
&NAME = &CONCAT OF E &N
&STACK &&NAME
&COMMAND EXECIO &NU DISKW MODCONT DATA X 1 F 80 (FINIS
&GOTO -MSDONE

-NMSRCELIG
&COMMAND COPY RETCONT DATA X MODCONT DATA X
```

```
-MSDONE
&PRESUME &COMMAND
FILEDEF FT01F001 DISK SRCE    DATA X
FILEDEF FT02F001 DISK SOURCED DATA X
FILEDEF FT03F001 DISK CONST   DATA X
FILEDEF FT08F001 DISK MODSRCE DATA X
FILEDEF FT09F001 DISK MODCONT DATA X
FILEDEF FT10F001 DISK NEWSRCE DATA X
FILEDEF FT11F001 DISK NEWCONT DATA X
FILEDEF FT21F001 DISK RIGID    DATA X
FILEDEF FT22F001 DISK GOAL1    DATA X
FILEDEF FT23F001 DISK GOAL2    DATA X
FILEDEF FT24F001 DISK GOAL3    DATA X
FILEDEF FT31F001 DISK RIGID    DATA1 X
FILEDEF FT32F001 DISK GOAL1    DATA1 X
FILEDEF FT33F001 DISK GOAL2    DATA1 X
FILEDEF FT34F001 DISK GOAL3    DATA1 X
FILEDEF FT35F001 DISK GOALS    DATA1 X
MODSRCE
COPYFILE NEWSRCE DATA X (LRECL 80 RECFM F
COPYFILE NEWCONT DATA X (LRECL 80 RECFM F
ERASE SOURCED DATA X
ERASE CONST  DATA X
COPY NEWSRCE DATA X SOURCED DATA X
COPY NEWCONT DATA X CONST  DATA X
ERASE NEWSRCE DATA X
ERASE NEWCONT DATA X
ERASE SRCE DATA X
ERASE MODSRCE DATA X
ERASE RETSRCE DATA X
ERASE MODCONT DATA X
ERASE RETCONT DATA X

ERASE RIGID DATA X
ERASE GOAL1 DATA X
ERASE GOAL2 DATA X
ERASE GOAL3 DATA X
ERASE GOALS DATA X

COPY RIGID DATA1 X RIGID DATA X (LRECL 100 RECFM F
COPY GOAL1 DATA1 X GOAL1 DATA X (LRECL 100 RECFM F
COPY GOAL2 DATA1 X GOAL2 DATA X (LRECL 100 RECFM F
COPY GOAL3 DATA1 X GOAL3 DATA X (LRECL 100 RECFM F
COPY GOALS DATA1 X GOALS DATA X (LRECL 100 RECFM F

ERASE RIGID DATA1 X
ERASE GOAL1 DATA1 X
ERASE GOAL2 DATA1 X
ERASE GOAL3 DATA1 X
ERASE GOALS DATA1 X


EUDEXEC2
&PRESUME &SUBCOMMAND DISPLAY
&GOTO -SRCEMENU


*************************************************************************
*  DELETE X SOURCE
*  SELECT SOURCE
*************************************************************************


-SRCEOPT2

USE PMTSRCED
MAP DATA  1 SN1   2 SN2   3 SN3   4 SN4   5 SN5     (LOAD UNLOAD PREVIEW
MAP DATA  6 SN6   7 SN7   8 SN8   9 SN9  10 SN10    (LOAD UNLOAD PREVIEW
MAP DATA 11 SN11 12 SN12 13 SN13 14 SN14 15 SN15    (LOAD UNLOAD PREVIEW
MAP DATA 16 SN16 17 ECODE                           (LOAD UNLOAD PREVIEW
```

```
&COMMAND EXECIO 1 DISKR INIT DATA X 1 (FINIS
&READ VAR &NS &NU &NY &STYR &STYRNO

&COMMAND EXECIO &NU DISKR USEN DATA X 1 (FINIS
&N = 0
&LOOP 3 &NU
&N = &N + 1
&NAME = &CONCAT OF U &N
&READ STRING &&NAME

&COMMAND EXECIO &NS DISKR SOURCEN DATA X 1 (FINIS
&N = 0
&LOOP 6 &NS
&N = &N + 1
&NAME = &CONCAT OF S &N
&READ STRING &&NAME
&NAME1 = &CONCAT OF SN &N
&&NAME1 = &CONCAT OF &BLANK &N . &BLANK &&NAME
&IF &N LT 10 &&NAME1 = &CONCAT OF &BLANK &&NAME1

&N = &N + 1
&IF &N GT 16 &SKIP 3
&TEMP = &CONCAT OF SN &N
SET &TEMP (PRO
&SKIP -4

&SN = 0

-ERRSRCOPT2

DISPLAY

&IF &RSTATUS = PF10 &GOTO -SRCEMENU
&IF &RCURSOR = SN1 &SN = 1
&IF &RCURSOR = SN2 &SN = 2
&IF &RCURSOR = SN3 &SN = 3
&IF &RCURSOR = SN4 &SN = 4
&IF &RCURSOR = SN5 &SN = 5
&IF &RCURSOR = SN6 &SN = 6
&IF &RCURSOR = SN7 &SN = 7
&IF &RCURSOR = SN8 &SN = 8
&IF &RCURSOR = SN9 &SN = 9
&IF &RCURSOR = SN10 &SN = 10
&IF &RCURSOR = SN11 &SN = 11
&IF &RCURSOR = SN12 &SN = 12
&IF &RCURSOR = SN13 &SN = 13
&IF &RCURSOR = SN14 &SN = 14
&IF &RCURSOR = SN15 &SN = 15
&IF &RCURSOR = SN16 &SN = 16
&IF &RSTATUS EQ ENTER &GOTO -DELSOU
&ECODE = &STRING OF UNDEFINED PF KEY!
SIGNAL
&GOTO -ERRSRCOPT2

-DELSOU

USE PSRCDCK
MAP DATA 1 SNAME 2 REPLY 3 ECODE            (LOAD UNLOAD PREVIEW
-SRCDCHKE
&NAME = &CONCAT OF S &SN
&SNAME = &&NAME
&REPLY = &BLANK
DISPLAY
&IF &REPLY = Y &GOTO -SRCDYES
&IF &REPLY = N &GOTO -SRCEMENU
&ECODE = &STRING OF ENTER 'Y' OR 'N'
SIGNAL
&GOTO -SRCDCHKE

*********************************************************************
*  DELETE X SOURCE
```

```
*  UPDATE FILES
*********************************************************************

-SRCDYES

&LN = &NS - 1
&N = 0
&LOOP 5 &NS
&N = &N + 1
&IF &N = &SN &SKIP 2
&NAME = &CONCAT OF S &N
&STACK &&NAME


&COMMAND ERASE SOURCEN DATA X
&COMMAND EXECIO &LN DISKW SOURCEN DATA X 1 F 80 (FINIS
&STACK &NS &SN &NY
&COMMAND EXECIO 1 DISKW SRCE DATA X 1 F 80 (FINIS
&PRESUME &COMMAND
FILEDEF FT01F001 DISK SRCE DATA X
FILEDEF FT02F001 DISK SOURCED DATA X
FILEDEF FT03F001 DISK CONST  DATA X
FILEDEF FT07F001 DISK NEWSRCE DATA X
FILEDEF FT08F001 DISK NEWCONT  DATA X
FILEDEF FT11F001 DISK RIGID    DATA X
FILEDEF FT12F001 DISK GOAL1    DATA X
FILEDEF FT13F001 DISK GOAL2    DATA X
FILEDEF FT14F001 DISK GOAL3    DATA X
FILEDEF FT21F001 DISK RIGID    DATA1 X
FILEDEF FT22F001 DISK GOAL1    DATA1 X
FILEDEF FT23F001 DISK GOAL2    DATA1 X
FILEDEF FT24F001 DISK GOAL3    DATA1 X
FILEDEF FT25F001 DISK GOALS    DATA1 X
DELSRCE
COPYFILE NEWSRCE DATA X (LRECL 80 RECFM F
COPYFILE NEWCONT  DATA X (LRECL 80 RECFM F
ERASE SOURCED DATA X
ERASE CONST  DATA X
COPY NEWSRCE DATA X SOURCED DATA X
COPY NEWCONT  DATA X CONST  DATA X
ERASE NEWSRCE DATA X
ERASE NEWCONT  DATA X
ERASE SRCE DATA X

ERASE RIGID DATA X
ERASE GOAL1 DATA X
ERASE GOAL2 DATA X
ERASE GOAL3 DATA X
ERASE GOALS DATA X

COPY RIGID DATA1 X RIGID DATA X (LRECL 100 RECFM F
COPY GOAL1 DATA1 X GOAL1 DATA X (LRECL 100 RECFM F
COPY GOAL2 DATA1 X GOAL2 DATA X (LRECL 100 RECFM F
COPY GOAL3 DATA1 X GOAL3 DATA X (LRECL 100 RECFM F
COPY GOALS DATA1 X GOALS DATA X (LRECL 100 RECFM F

ERASE RIGID DATA1 X
ERASE GOAL1 DATA1 X
ERASE GOAL2 DATA1 X
ERASE GOAL3 DATA1 X
ERASE GOALS DATA1 X

&NS = &NS - 1
&STACK &NS &NU &NY &STYR &STYRNO
&COMMAND EXECIO 1 DISKW INIT DATA X 1 (FINIS

EUDEXEC2
&PRESUME &SUBCOMMAND DISPLAY
USE PMTSRCDL
MAP DATA  1 SNAM                        (LOAD UNLOAD PREVIEW
MAP DATA  2 SN1   3 SN2   4 SN3   5 SN4   6 SN5    (LOAD UNLOAD PREVIEW
```

```
MAP DATA  7 SN6   8 SN7   9 SN8  10 SN9  11 SN10   (LOAD UNLOAD PREVIEW
MAP DATA 12 SN11 13 SN12 14 SN13 15 SN14 16 SN15   (LOAD UNLOAD PREVIEW
MAP DATA 17 SN16                                   (LOAD UNLOAD PREVIEW

&NAME = &CONCAT OF S &SN
&SNAM = &&NAME

&COMMAND EXECIO &NS DISKR SOURCEN DATA X 1 (FINIS
&N = 0
&LOOP 5 &NS
&N = &N + 1
&NAME = &CONCAT OF SN &N
&READ STRING &&NAME
&&NAME = &CONCAT OF &BLANK &N . &BLANK &&NAME
&IF &N LT 10 &&NAME = &CONCAT OF &BLANK &&NAME

DISPLAY

&GOTO -SRCEMENU


*********************************************************************
*  ADD X NEW SOURCE
*  GET SOURCE NAME
*********************************************************************


-SRCEOPT3

USE PNSRCBAL
MAP DATA 1 SNAM  2 IBAL 3 ECODE                (LOAD UNLOAD PREVIEW

-NSRCNAMER
DISPLAY

&IF .&SNAM NE .&BLANK &SKIP 3
&ECODE = &STRING OF ENTER SOURCE NAME
SIGNAL
&GOTO -NSRCNAMER
&IF .&IBAL NE .&BLANK &SKIP 2
&IF .&IBAL = .&BLANK &IBAL = 0
DISPLAY

&COMMAND EXECIO 1 DISKR INIT DATA X 1 (FINIS
&READ VAR &NS &NU &NY &STYR &STYRNO

&COMMAND EXECIO &NU DISKR USEN DATA X 1 (FINIS
&N = 0
&LOOP 3 &NU
&N = &N + 1
&NAME = &CONCAT OF U &N
&READ STRING &&NAME

&COMMAND EXECIO &NS DISKR SOURCEN DATA X 1 (FINIS
&N = 0
&LOOP 3 &NS
&N = &N + 1
&NAME = &CONCAT OF S &N
&READ STRING &&NAME

&N = &NS + 1
&STACK &SNAM
&COMMAND EXECIO 1 DISKW SOURCEN DATA X &N F 80 (FINIS
&STACK &IBAL
&COMMAND EXECIO 1 DISKW NSRCE DATA X 1 F 80 (FINIS


*********************************************************************
*  READ QUARTERLY FUNDS
*********************************************************************
```

```
USE PNSRCQTR
MAP DATA 1 SNAME 2 YEAR                    (LOAD UNLOAD PREVIEW
MAP DATA 3 QTR1 4 QTR2 5 QTR3 6 QTR4 7 ECODE   (LOAD UNLOAD PREVIEW

&N = 0
&LOOP -NSRCQTR &NY
&N = &N + 1
&M = &N + 1
&QTR1 = &BLANK
&QTR2 = &BLANK
&QTR3 = &BLANK
&QTR4 = &BLANK
&COMMAND EXECIO 1 DISKR YEAR DATA X &N (FINIS
&READ VAR &YEAR
&SNAME = &SNAM
&NB = 0

DISPLAY

&IF .&QTR1 EQ .&BLANK &NB = 1
&IF .&QTR2 EQ .&BLANK &NB = 1
&IF .&QTR3 EQ .&BLANK &NB = 1
&IF .&QTR4 EQ .&BLANK &NB = 1
&IF .&QTR1 EQ .&BLANK &QTR1 = 0
&IF .&QTR2 EQ .&BLANK &QTR2 = 0
&IF .&QTR3 EQ .&BLANK &QTR3 = 0
&IF .&QTR4 EQ .&BLANK &QTR4 = 0
&IF &NB = 0 &SKIP 2

DISPLAY

&STACK &QTR1 &QTR2 &QTR3 &QTR4
&COMMAND EXECIO 1 DISKW NSRCE DATA X &M F 80 (FINIS


-NSRCQTR

USE PNCKSRC
MAP DATA 1 SNAME                          (LOAD UNLOAD PREVIEW
MAP DATA  2 UN1  3 E1  4 UN2  5 E2  6 UN3  7 E3   (LOAD UNLOAD PREVIEW
MAP DATA  8 UN4  9 E4 10 UN5 11 E5 12 UN6 13 E6   (LOAD UNLOAD PREVIEW
MAP DATA 14 UN7 15 E7 16 UN8 17 E8 18 UN9 19 E9   (LOAD UNLOAD PREVIEW
MAP DATA 20 UN10 21 E10 22 UN11 23 E11          (LOAD UNLOAD PREVIEW
MAP DATA 24 UN12 25 E12 26 UN13 27 E13          (LOAD UNLOAD PREVIEW
MAP DATA 28 UN14 29 E14 30 UN15 31 E15          (LOAD UNLOAD PREVIEW
MAP DATA 32 UN16 33 E16 34 ECODE               (LOAD UNLOAD PREVIEW

&SNAME = &SNAM

&N = 0
&LOOP 4 &NU
&N = &N + 1
&NAME = &CONCAT OF UN &N
&NAME1 = &CONCAT OF U &N
&&NAME = &&NAME1

&IF &N GE 16 &SKIP 4
&N = &N + 1
&NAME = &CONCAT OF E &N
SET &NAME (PRO
&SKIP -4

-NSRCLERR

DISPLAY

&N = 0
&LOOP -NSRCCONT &NU
&N = &N + 1
&NAME = &CONCAT OF E &N
&IF .&&NAME EQ .Y &GOTO -NSRCCONT
&IF .&&NAME EQ .N &GOTO -NSRCCONT
```

```
&ECODE = &STRING OF ENTER 'Y' OR 'N'
SIGNAL
&GOTO -NSRCLERR

-NSRCCONT

&N = 0
&LOOP 3 &NU
&N = &N + 1
&NAME = &CONCAT OF E &N
&STACK &&NAME
&COMMAND EXECIO &NU DISKW NCONT DATA X 1 F 80 (FINIS

&STACK &NS &NU &NY
&COMMAND EXECIO 1 DISKW SRCE DATA X 1 (FINIS

-NSDONE

&PRESUME &COMMAND

FILEDEF FT01F001 DISK SRCE    DATA X
FILEDEF FT02F001 DISK SOURCED DATA X
FILEDEF FT03F001 DISK CONST   DATA X
FILEDEF FT08F001 DISK NSRCE   DATA X
FILEDEF FT09F001 DISK NCONT   DATA X
FILEDEF FT10F001 DISK NEWSRCE DATA X
FILEDEF FT11F001 DISK NEWCONT DATA X
ADDSRCE
COPYFILE NEWSRCE DATA X (LRECL 80 RECFM F
COPYFILE NEWCONT DATA X (LRECL 80 RECFM F
ERASE SOURCED DATA X
ERASE CONST  DATA X
COPY NEWSRCE DATA X SOURCED DATA X
COPY NEWCONT DATA X CONST  DATA X
ERASE NEWSRCE DATA X
ERASE NEWCONT DATA X
ERASE SRCE DATA X
ERASE NSRCE DATA X
ERASE NCONT DATA X

&NS = &NS + 1
&STACK &NS &NU &NY &STYR &STYRNO
&COMMAND EXECIO 1 DISKW INIT DATA X 1 (FINIS

EUDEXEC2
&PRESUME &SUBCOMMAND DISPLAY

USE PMTSRCNL
MAP DATA  1 SNAME                          (LOAD UNLOAD PREVIEW
MAP DATA  2 SN1   3 SN2   4 SN3   5 SN4   6 SN5    (LOAD UNLOAD PREVIEW
MAP DATA  7 SN6   8 SN7   9 SN8  10 SN9  11 SN10   (LOAD UNLOAD PREVIEW
MAP DATA 12 SN11 13 SN12 14 SN13 15 SN14 16 SN15   (LOAD UNLOAD PREVIEW
MAP DATA 17 SN16                           (LOAD UNLOAD PREVIEW

&SNAME = &SNAM

&COMMAND EXECIO &NS DISKR SOURCEN DATA X 1 (FINIS
&N = 0
&LOOP 5 &NS
&N = &N + 1
&NAME = &CONCAT OF SN &N
&READ STRING &&NAME
&&NAME = &CONCAT OF &BLANK &N . &BLANK &&NAME
&IF &N LT 10 &&NAME = &CONCAT OF &BLANK &&NAME


DISPLAY

&GOTO -SRCEMENU
```

```
*********************************************************************
*  SORT SOURCES
*********************************************************************

-SRCEOPT4

&PRESUME &COMMAND
EXEC  PMTSRTSR
EUDEXEC2
&PRESUME &SUBCOMMAND DISPLAY

&GOTO -SRCEMENU

*********************************************************************
*  DISPLAY USE CHANGE MENU
*********************************************************************


-OPTION2


-USEMENU

USE PUSEOPTN
MAP DATA 1 ECODE                          (LOAD UNLOAD PREVIEW
-ERRUSEOPN
DISPLAY
&IF &RSTATUS = PF1 &GOTO -USEOPT1
&IF &RSTATUS = PF2 &GOTO -USEOPT2
&IF &RSTATUS = PF3 &GOTO -USEOPT3
&IF &RSTATUS = PF4 &GOTO -USEOPT4
&IF &RSTATUS = PF10 &GOTO -MAIN
&ECODE = &STRING OF UNDEFINED PF KEY!
SIGNAL
&GOTO -ERRUSEOPN


*********************************************************************
*  MODIFY X USE
*  SELECT USE
*********************************************************************


-USEOPT1

USE PMTUSEM
MAP DATA  1 UN1   2 UN2   3 UN3   4 UN4   5 UN5    (LOAD UNLOAD PREVIEW
MAP DATA  6 UN6   7 UN7   8 UN8   9 UN9  10 UN10   (LOAD UNLOAD PREVIEW
MAP DATA 11 UN11 12 UN12 13 UN13 14 UN14 15 UN15   (LOAD UNLOAD PREVIEW
MAP DATA 16 UN16 17 ECODE                          (LOAD UNLOAD PREVIEW

&COMMAND EXECIO 1 DISKR INIT DATA X 1 (FINIS
&READ VAR &NS &NU &NY &STYR &STYRNO

&COMMAND EXECIO &NU DISKR USEN DATA X 1 (FINIS
&N = 0
&LOOP 6 &NU
&N = &N + 1
&NAME = &CONCAT OF U &N
&READ STRING &&NAME
&NAME1 = &CONCAT OF UN &N
&&NAME1 = &CONCAT OF &BLANK &N . &BLANK &&NAME
&IF &N LT 10 &&NAME1 = &CONCAT OF &BLANK &&NAME1

&COMMAND EXECIO &NS DISKR SOURCEN DATA X 1 (FINIS
&N = 0
&LOOP 3 &NS
&N = &N + 1
&NAME = &CONCAT OF S &N
&READ STRING &&NAME
```

```
&N = &NU
&N = &N + 1
&IF &N GT 16 &SKIP 3
&TEMP = &CONCAT OF UN &N
SET &TEMP (PRO
&SKIP -4

&UN = 0

-ERRUSEOPT1

DISPLAY

&IF &RSTATUS = PF10 &GOTO -USEMENU
&IF &RCURSOR = UN1 &UN = 1
&IF &RCURSOR = UN2 &UN = 2
&IF &RCURSOR = UN3 &UN = 3
&IF &RCURSOR = UN4 &UN = 4
&IF &RCURSOR = UN5 &UN = 5
&IF &RCURSOR = UN6 &UN = 6
&IF &RCURSOR = UN7 &UN = 7
&IF &RCURSOR = UN8 &UN = 8
&IF &RCURSOR = UN9 &UN = 9
&IF &RCURSOR = UN10 &UN = 10
&IF &RCURSOR = UN11 &UN = 11
&IF &RCURSOR = UN12 &UN = 12
&IF &RCURSOR = UN13 &UN = 13
&IF &RCURSOR = UN14 &UN = 14
&IF &RCURSOR = UN15 &UN = 15
&IF &RCURSOR = UN16 &UN = 16
&IF &RSTATUS EQ ENTER &GOTO -MODUSE
&ECODE = &STRING OF UNDEFINED PF KEY!
SIGNAL
&GOTO -ERRUSEOPT1

-MODUSE

&STACK &NS &NU &UN &NY
&COMMAND EXECIO 1 DISKW USE DATA X 1 F 80 (FINIS

&PRESUME &COMMAND

FILEDEF FT01F001 DISK USE     DATA X
FILEDEF FT02F001 DISK USED    DATA X
FILEDEF FT03F001 DISK CONST   DATA X
FILEDEF FT07F001 DISK RETUSE  DATA X
FILEDEF FT08F001 DISK RETCONT DATA X
RETUSE
COPYFILE RETUSE  DATA X (LRECL 80 RECFM F
COPYFILE RETCONT DATA X (LRECL 80 RECFM F

EUDEXEC2
&PRESUME &SUBCOMMAND DISPLAY


*************************************************************************
*  MODIFY QUARTERLY FUNDS
*************************************************************************


USE PMUSEQTR
MAP DATA 1 UNAME 2 YEAR                    (LOAD UNLOAD PREVIEW
MAP DATA 3 QTRO1 4 QTRN1 5 QTRO2 6 QTRN2       (LOAD UNLOAD PREVIEW
MAP DATA 7 QTRO3 8 QTRN3 9 QTRO4 10 QTRN4      (LOAD UNLOAD PREVIEW
MAP DATA 11 ECODE                          (LOAD UNLOAD PREVIEW

&N = 0
&LOOP -MUSEQTR &NY
&N = &N + 1
&QTRN1 = &BLANK
&QTRN2 = &BLANK
```

```
&QTRN3 = &BLANK
&QTRN4 = &BLANK

&NAME = &CONCAT OF U &UN
&UNAME = &&NAME

&COMMAND EXECIO 1 DISKR YEAR DATA X &N (FINIS
&READ VAR &YEAR

&COMMAND EXECIO 1 DISKR RETUSE  DATA X &N (FINIS
&READ VAR &QTRO1 &QTRO2 &QTRO3 &QTRO4

&NB = 0
DISPLAY

&IF .&QTRN1 EQ .&BLANK &NB = 1
&IF .&QTRN2 EQ .&BLANK &NB = 1
&IF .&QTRN3 EQ .&BLANK &NB = 1
&IF .&QTRN4 EQ .&BLANK &NB = 1
&IF .&QTRN1 EQ .&BLANK &QTRN1 = &QTRO1
&IF .&QTRN2 EQ .&BLANK &QTRN2 = &QTRO2
&IF .&QTRN3 EQ .&BLANK &QTRN3 = &QTRO3
&IF .&QTRN4 EQ .&BLANK &QTRN4 = &QTRO4

&IF &NB = 0 &SKIP 2

DISPLAY

&STACK &QTRN1 &QTRN2 &QTRN3 &QTRN4
&COMMAND EXECIO 1 DISKW MODUSE  DATA X &N F 80 (FINIS

-MUSEQTR

USE PUSELIST
MAP DATA 1 UNAME 2 REPLY 3 ECODE              (LOAD UNLOAD PREVIEW

&NAME = &CONCAT OF U &UN
&UNAME = &&NAME
&REPLY = N

DISPLAY

&IF &REPLY = N &GOTO -NMUSEELIG
&IF &REPLY = Y &GOTO -MUSEELIG
&ECODE = &STRING OF ENTER 'Y' OR 'N'
SIGNAL
&SKIP -6

-MUSEELIG

USE PMCKUSE
MAP DATA 1 UNAME                          (LOAD UNLOAD PREVIEW
MAP DATA  2 SN1  3 E1  4 SN2  5 E2  6 SN3  7 E3   (LOAD UNLOAD PREVIEW
MAP DATA  8 SN4  9 E4 10 SN5 11 E5 12 SN6 13 E6   (LOAD UNLOAD PREVIEW
MAP DATA 14 SN7 15 E7 16 SN8 17 E8 18 SN9 19 E9   (LOAD UNLOAD PREVIEW
MAP DATA 20 SN10 21 E10 22 SN11 23 E11          (LOAD UNLOAD PREVIEW
MAP DATA 24 SN12 25 E12 26 SN13 27 E13          (LOAD UNLOAD PREVIEW
MAP DATA 28 SN14 29 E14 30 SN15 31 E15          (LOAD UNLOAD PREVIEW
MAP DATA 32 SN16 33 E16 34 ECODE                (LOAD UNLOAD PREVIEW

&NAME = &CONCAT OF U &UN
&UNAME = &&NAME

&COMMAND EXECIO &NS DISKR RETCONT DATA X 1 (FINIS
&N = 0
&LOOP 6 &NS
&N = &N + 1
&NAME = &CONCAT OF E &N
&READ VAR &&NAME
&NAME = &CONCAT OF SN &N
&NAME1 = &CONCAT OF S &N
&&NAME = &&NAME1
```

```
&IF &N GE 16 &SKIP 4
&N = &N + 1
&NAME = &CONCAT OF E &N
SET &NAME (PRO
&SKIP -4

-MUSELERR

DISPLAY

&N = 0
&LOOP -MUSECONT &NS
&N = &N + 1
&NAME = &CONCAT OF E &N
&IF .&&NAME EQ .Y &GOTO -MUSECONT
&IF .&&NAME EQ .N &GOTO -MUSECONT
&ECODE = &STRING OF ENTER 'Y' OR 'N'
SIGNAL
&GOTO -MUSELERR

-MUSECONT

&N = 0
&LOOP 3 &NS
&N = &N + 1
&NAME = &CONCAT OF E &N
&STACK &&NAME
&COMMAND EXECIO &NS DISKW MODCONT DATA X 1 F 80 (FINIS
&GOTO -MUDONE

-NMUSEELIG
&COMMAND COPY RETCONT DATA X MODCONT DATA X

-MUDONE
&PRESUME &COMMAND
FILEDEF FT01F001 DISK USE    DATA X
FILEDEF FT02F001 DISK USED   DATA X
FILEDEF FT03F001 DISK CONST  DATA X
FILEDEF FT08F001 DISK MODUSE DATA X
FILEDEF FT09F001 DISK MODCONT DATA X
FILEDEF FT10F001 DISK NEWUSE DATA X
FILEDEF FT11F001 DISK NEWCONT DATA X
FILEDEF FT21F001 DISK RIGID  DATA X
FILEDEF FT22F001 DISK GOAL1  DATA X
FILEDEF FT23F001 DISK GOAL2  DATA X
FILEDEF FT24F001 DISK GOAL3  DATA X
FILEDEF FT31F001 DISK RIGID  DATA1 X
FILEDEF FT32F001 DISK GOAL1  DATA1 X
FILEDEF FT33F001 DISK GOAL2  DATA1 X
FILEDEF FT34F001 DISK GOAL3  DATA1 X
FILEDEF FT35F001 DISK GOALS  DATA1 X
MODUSE
COPYFILE NEWUSE DATA X (LRECL 80 RECFM F
COPYFILE NEWCONT DATA X (LRECL 80 RECFM F
ERASE USED   DATA X
ERASE CONST  DATA X
COPY NEWUSE DATA X USED   DATA X
COPY NEWCONT DATA X CONST DATA X
ERASE NEWUSE DATA X
ERASE NEWCONT DATA X
ERASE USE DATA X
ERASE MODUSE DATA X
ERASE RETUSE DATA X
ERASE MODCONT DATA X
ERASE RETCONT DATA X

ERASE RIGID DATA X
ERASE GOAL1 DATA X
ERASE GOAL2 DATA X
ERASE GOAL3 DATA X
ERASE GOALS DATA X
```

```
COPY RIGID DATA1 X RIGID DATA X (LRECL 100 RECFM F
COPY GOAL1 DATA1 X GOAL1 DATA X (LRECL 100 RECFM F
COPY GOAL2 DATA1 X GOAL2 DATA X (LRECL 100 RECFM F
COPY GOAL3 DATA1 X GOAL3 DATA X (LRECL 100 RECFM F
COPY GOALS DATA1 X GOALS DATA X (LRECL 100 RECFM F

ERASE RIGID DATA1 X
ERASE GOAL1 DATA1 X
ERASE GOAL2 DATA1 X
ERASE GOAL3 DATA1 X
ERASE GOALS DATA1 X

EUDEXEC2
&PRESUME &SUBCOMMAND DISPLAY
&GOTO -USEMENU


*********************************************************************
*  DELETE X USE
*  SELECT USE
*********************************************************************


-USEOPT2

USE PMTUSED
MAP DATA  1 UN1   2 UN2   3 UN3   4 UN4   5 UN5     (LOAD UNLOAD PREVIEW
MAP DATA  6 UN6   7 UN7   8 UN8   9 UN9  10 UN10    (LOAD UNLOAD PREVIEW
MAP DATA 11 UN11 12 UN12 13 UN13 14 UN14 15 UN15    (LOAD UNLOAD PREVIEW
MAP DATA 16 UN16 17 ECODE                           (LOAD UNLOAD PREVIEW

&COMMAND EXECIO 1 DISKR INIT DATA X 1 (FINIS
&READ VAR &NS &NU &NY &STYR &STYRNO

&COMMAND EXECIO &NU DISKR USEN DATA X 1 (FINIS
&N = 0
&LOOP 6 &NU
&N = &N + 1
&NAME = &CONCAT OF U &N
&READ STRING &&NAME
&NAME1 = &CONCAT OF UN &N
&&NAME1 = &CONCAT OF &BLANK &N . &BLANK &&NAME
&IF &N LT 10 &&NAME1 = &CONCAT OF &BLANK &&NAME1

&COMMAND EXECIO &NS DISKR SOURCEN DATA X 1 (FINIS
&N = 0
&LOOP 3 &NS
&N = &N + 1
&NAME = &CONCAT OF S &N
&READ STRING &&NAME

&N = &NU
&N = &N + 1
&IF &N GT 16 &SKIP 3
&TEMP = &CONCAT OF UN &N
SET &TEMP (PRO
&SKIP -4

&UN = 0

-ERRUSEOPT2

DISPLAY

&IF &RSTATUS = PF10 &GOTO -USEMENU
&IF &RCURSOR = UN1 &UN = 1
&IF &RCURSOR = UN2 &UN = 2
&IF &RCURSOR = UN3 &UN = 3
&IF &RCURSOR = UN4 &UN = 4
&IF &RCURSOR = UN5 &UN = 5
&IF &RCURSOR = UN6 &UN = 6
```

```
&IF &RCURSOR = UN7 &UN = 7
&IF &RCURSOR = UN8 &UN = 8
&IF &RCURSOR = UN9 &UN = 9
&IF &RCURSOR = UN10 &UN = 10
&IF &RCURSOR = UN11 &UN = 11
&IF &RCURSOR = UN12 &UN = 12
&IF &RCURSOR = UN13 &UN = 13
&IF &RCURSOR = UN14 &UN = 14
&IF &RCURSOR = UN15 &UN = 15
&IF &RCURSOR = UN16 &UN = 16
&IF &RSTATUS EQ ENTER &GOTO -DELUSE
&ECODE = &STRING OF UNDEFINED PF KEY!
SIGNAL
&GOTO -ERRUSEOPT2

-DELUSE

USE PUSEDCK
MAP DATA 1 UNAME 2 REPLY 3 ECODE              (LOAD UNLOAD PREVIEW
-USEDCHKE
&NAME = &CONCAT OF U &UN
&UNAME = &&NAME
&REPLY = &BLANK
DISPLAY
&IF &REPLY = Y &GOTO -USEDYES
&IF &REPLY = N &GOTO -USEMENU
&ECODE = &STRING OF ENTER 'Y' OR 'N'
SIGNAL
&GOTO -USEDCHKE


*********************************************************************
*  DELETE X USE
*  UPDATE FILES
*********************************************************************


-USEDYES

&LN = &NU - 1
&N = 0
&LOOP 5 &NU
&N = &N + 1
&IF &N = &UN &SKIP 2
&NAME = &CONCAT OF U &N
&STACK &&NAME


&COMMAND ERASE USEN    DATA X
&COMMAND EXECIO &LN DISKW USEN    DATA X 1 F 80 (FINIS
&STACK &NS &NU &UN &NY
&COMMAND EXECIO 1 DISKW USE DATA X 1 F 80 (FINIS
&PRESUME &COMMAND
FILEDEF FT01F001 DISK USE DATA X
FILEDEF FT02F001 DISK USED    DATA X
FILEDEF FT03F001 DISK CONST  DATA X
FILEDEF FT07F001 DISK NEWUSE  DATA X
FILEDEF FT08F001 DISK NEWCONT  DATA X
FILEDEF FT11F001 DISK RIGID    DATA X
FILEDEF FT12F001 DISK GOAL1    DATA X
FILEDEF FT13F001 DISK GOAL2    DATA X
FILEDEF FT14F001 DISK GOAL3    DATA X
FILEDEF FT21F001 DISK RIGID    DATA1 X
FILEDEF FT22F001 DISK GOAL1    DATA1 X
FILEDEF FT23F001 DISK GOAL2    DATA1 X
FILEDEF FT24F001 DISK GOAL3    DATA1 X
FILEDEF FT25F001 DISK GOALS    DATA1 X
DELUSE
COPYFILE NEWUSE  DATA X (LRECL 80 RECFM F
COPYFILE NEWCONT  DATA X (LRECL 80 RECFM F
ERASE USED    DATA X
ERASE CONST  DATA X
```

```
COPY NEWUSE  DATA X USED    DATA X
COPY NEWCONT  DATA X CONST  DATA X
ERASE NEWUSE  DATA X
ERASE NEWCONT  DATA X
ERASE USE DATA X

ERASE RIGID DATA X
ERASE GOAL1 DATA X
ERASE GOAL2 DATA X
ERASE GOAL3 DATA X
ERASE GOALS DATA X

COPY RIGID DATA1 X RIGID DATA X (LRECL 100 RECFM F
COPY GOAL1 DATA1 X GOAL1 DATA X (LRECL 100 RECFM F
COPY GOAL2 DATA1 X GOAL2 DATA X (LRECL 100 RECFM F
COPY GOAL3 DATA1 X GOAL3 DATA X (LRECL 100 RECFM F
COPY GOALS DATA1 X GOALS DATA X (LRECL 100 RECFM F

ERASE RIGID DATA1 X
ERASE GOAL1 DATA1 X
ERASE GOAL2 DATA1 X
ERASE GOAL3 DATA1 X
ERASE GOALS DATA1 X

&NU = &NU - 1
&STACK &NS &NU &NY &STYR &STYRNO
&COMMAND EXECIO 1 DISKW INIT DATA X 1 (FINIS

EUDEXEC2
&PRESUME &SUBCOMMAND DISPLAY

USE PMTUSEDL
MAP DATA  1 UNAM                          (LOAD UNLOAD PREVIEW
MAP DATA  2 UN1   3 UN2   4 UN3   5 UN4   6 UN5    (LOAD UNLOAD PREVIEW
MAP DATA  7 UN6   8 UN7   9 UN8  10 UN9  11 UN10   (LOAD UNLOAD PREVIEW
MAP DATA 12 UN11 13 UN12 14 UN13 15 UN14 16 UN15   (LOAD UNLOAD PREVIEW
MAP DATA 17 UN16                          (LOAD UNLOAD PREVIEW

&NAME = &CONCAT OF U &UN
&UNAM = &&NAME

&COMMAND EXECIO &NU DISKR USEN DATA X 1 (FINIS
&N = 0
&LOOP 5 &NU
&N = &N + 1
&NAME = &CONCAT OF UN &N
&READ STRING &&NAME
&&NAME = &CONCAT OF &BLANK &N . &BLANK &&NAME
&IF &N LT 10 &&NAME = &CONCAT OF &BLANK &&NAME


DISPLAY

&GOTO -USEMENU

*********************************************************************
*  ADD X NEW USE
*  GET USE NAME
*********************************************************************


-USEOPT3

USE PNUSEBAL
MAP DATA 1 UNAM  2 ECODE                  (LOAD UNLOAD PREVIEW

-NUSENAMER
DISPLAY

&IF .&UNAM NE .&BLANK &SKIP 3
&ECODE = &STRING OF ENTER USE NAME
```

```
SIGNAL
&GOTO -NUSENAMER

&COMMAND EXECIO 1 DISKR INIT DATA X 1 (FINIS
&READ VAR &NS &NU &NY &STYR &STYRNO

&COMMAND EXECIO &NU DISKR USEN DATA X 1 (FINIS
&N = 0
&LOOP 3 &NU
&N = &N + 1
&NAME = &CONCAT OF U &N
&READ STRING &&NAME

&COMMAND EXECIO &NS DISKR SOURCEN DATA X 1 (FINIS
&N = 0
&LOOP 3 &NS
&N = &N + 1
&NAME = &CONCAT OF S &N
&READ STRING &&NAME

&N = &NU + 1
&STACK &UNAM
&COMMAND EXECIO 1 DISKW USEN    DATA X &N F 80 (FINIS


************************************************************************
*  READ QUARTERLY FUNDS
************************************************************************


USE PNUSEQTR
MAP DATA 1 UNAME 2 YEAR                    (LOAD UNLOAD PREVIEW
MAP DATA 3 QTR1 4 QTR2 5 QTR3 6 QTR4 7 ECODE   (LOAD UNLOAD PREVIEW

&N = 0
&LOOP -NUSEQTR &NY
&N = &N + 1
&QTR1 = &BLANK
&QTR2 = &BLANK
&QTR3 = &BLANK
&QTR4 = &BLANK
&COMMAND EXECIO 1 DISKR YEAR DATA X &N (FINIS
&READ VAR &YEAR
&UNAME = &UNAM
&NB = 0

DISPLAY

&IF .&QTR1 EQ .&BLANK &NB = 1
&IF .&QTR2 EQ .&BLANK &NB = 1
&IF .&QTR3 EQ .&BLANK &NB = 1
&IF .&QTR4 EQ .&BLANK &NB = 1
&IF .&QTR1 EQ .&BLANK &QTR1 = 0
&IF .&QTR2 EQ .&BLANK &QTR2 = 0
&IF .&QTR3 EQ .&BLANK &QTR3 = 0
&IF .&QTR4 EQ .&BLANK &QTR4 = 0
&IF &NB = 0 &SKIP 2

DISPLAY

&STACK &QTR1 &QTR2 &QTR3 &QTR4
&COMMAND EXECIO 1 DISKW NUSE  DATA X &N F 80 (FINIS


-NUSEQTR

USE PNCKUSE
MAP DATA 1 UNAME                           (LOAD UNLOAD PREVIEW
MAP DATA  2 SN1  3 E1  4 SN2  5 E2  6 SN3  7 E3   (LOAD UNLOAD PREVIEW
MAP DATA  8 SN4  9 E4 10 SN5 11 E5 12 SN6 13 E6   (LOAD UNLOAD PREVIEW
MAP DATA 14 SN7 15 E7 16 SN8 17 E8 18 SN9 19 E9   (LOAD UNLOAD PREVIEW
MAP DATA 20 SN10 21 E10 22 SN11 23 E11          (LOAD UNLOAD PREVIEW
```

```
MAP DATA 24 SN12 25 E12 26 SN13 27 E13          (LOAD UNLOAD PREVIEW
MAP DATA 28 SN14 29 E14 30 SN15 31 E15          (LOAD UNLOAD PREVIEW
MAP DATA 32 SN16 33 E16 34 ECODE                (LOAD UNLOAD PREVIEW

&UNAME = &UNAM

&N = 0
&LOOP 4 &NS
&N = &N + 1
&NAME = &CONCAT OF SN &N
&NAME1 = &CONCAT OF S &N
&&NAME = &&NAME1

&IF &N GE 16 &SKIP 4
&N = &N + 1
&NAME = &CONCAT OF E &N
SET &NAME (PRO
&SKIP -4

-NUSELERR

DISPLAY

&N = 0
&LOOP -NUSECONT &NS
&N = &N + 1
&NAME = &CONCAT OF E &N
&IF .&&NAME EQ .Y &GOTO -NUSECONT
&IF .&&NAME EQ .N &GOTO -NUSECONT
&ECODE = &STRING OF ENTER 'Y' OR 'N'
SIGNAL
&GOTO -NUSELERR

-NUSECONT

&N = 0
&LOOP 3 &NS
&N = &N + 1
&NAME = &CONCAT OF E &N
&STACK &&NAME
&COMMAND EXECIO &NS DISKW NCONT DATA X 1 F 80 (FINIS

&STACK &NS &NU &NY
&COMMAND EXECIO 1 DISKW USE DATA X 1 (FINIS

-NSDONE

&PRESUME &COMMAND

FILEDEF FT01F001 DISK USE     DATA X
FILEDEF FT02F001 DISK USED    DATA X
FILEDEF FT03F001 DISK CONST   DATA X
FILEDEF FT08F001 DISK NUSE    DATA X
FILEDEF FT09F001 DISK NCONT   DATA X
FILEDEF FT10F001 DISK NEWUSE  DATA X
FILEDEF FT11F001 DISK NEWCONT DATA X
ADDUSE
COPYFILE NEWUSE  DATA X (LRECL 80 RECFM F
COPYFILE NEWCONT DATA X (LRECL 80 RECFM F
ERASE USED    DATA X
ERASE CONST  DATA X
COPY NEWUSE  DATA X USED    DATA X
COPY NEWCONT DATA X CONST  DATA X
ERASE NEWUSE  DATA X
ERASE NEWCONT DATA X
ERASE USE DATA X
ERASE NUSE  DATA X
ERASE NCONT DATA X

&NU = &NU + 1
&STACK &NS &NU &NY &STYR &STYRNO
&COMMAND EXECIO 1 DISKW INIT DATA X 1 (FINIS
```

```
EUDEXEC2
&PRESUME &SUBCOMMAND DISPLAY

USE PMTUSENL
MAP DATA 1 UNAME                          (LOAD UNLOAD PREVIEW
MAP DATA 2 UN1  3 UN2  4 UN3  5 UN4  6 UN5   (LOAD UNLOAD PREVIEW
MAP DATA 7 UN6  8 UN7  9 UN8  10 UN9  11 UN10   (LOAD UNLOAD PREVIEW
MAP DATA 12 UN11 13 UN12 14 UN13 15 UN14 16 UN15   (LOAD UNLOAD PREVIEW
MAP DATA 17 UN16                          (LOAD UNLOAD PREVIEW

&UNAME = &UNAM

&COMMAND EXECIO &NU DISKR USEN DATA X 1 (FINIS
&N = 0
&LOOP 5 &NU
&N = &N + 1
&NAME = &CONCAT OF UN &N
&READ STRING &&NAME
&&NAME = &CONCAT OF &BLANK &N . &BLANK &&NAME
&IF &N LT 10 &&NAME = &CONCAT OF &BLANK &&NAME


DISPLAY

&GOTO -USEMENU


*********************************************************************
*  SORT SOURCES
*********************************************************************

-USEOPT4

&PRESUME &COMMAND
EXEC  PMTSRTUS
EUDEXEC2
&PRESUME &SUBCOMMAND DISPLAY

&GOTO -USEMENU


-SAVECHNG


USE MAKESURE
MAP DATA 1 ECODE                          (LOAD UNLOAD PREVIEW
-ERRQUIT
DISPLAY
&IF &RSTATUS = PF1 &GOTO -SAVE
&IF &RSTATUS = PF10 &GOTO -DONTSAVE
&ECODE = &STRING OF UNDEFINED PF KEY
SIGNAL
&GOTO -ERRQUIT


-SAVE

&PRESUME &COMMAND
ERASE SOURCED PERM A
ERASE SOURCEN PERM A
ERASE USED    PERM A
ERASE USEN    PERM A
ERASE YEAR    PERM A
ERASE INIT    PERM A
ERASE CONST   PERM A
ERASE GOALS   PERM A
ERASE GOAL1   PERM A
ERASE GOAL2   PERM A
ERASE GOAL3   PERM A
ERASE RIGID   PERM A
COPY SOURCED DATA X SOURCED PERM A
```

```
COPY SOURCEN DATA X SOURCEN PERM A
COPY USED    DATA X USED    PERM A
COPY USEN    DATA X USEN    PERM A
COPY YEAR    DATA X YEAR    PERM A
COPY INIT    DATA X INIT    PERM A
COPY CONST   DATA X CONST   PERM A
COPY GOALS   DATA X GOALS   PERM A
COPY GOAL1   DATA X GOAL1   PERM A
COPY GOAL2   DATA X GOAL2   PERM A
COPY GOAL3   DATA X GOAL3   PERM A
COPY RIGID   DATA X RIGID   PERM A

ERASE SOURCED DATA X
ERASE SOURCEN DATA X
ERASE USED    DATA X
ERASE USEN    DATA X
ERASE YEAR    DATA X
ERASE INIT    DATA X
ERASE CONST   DATA X
ERASE GOALS   DATA X
ERASE GOAL1   DATA X
ERASE GOAL2   DATA X
ERASE GOAL3   DATA X
ERASE RIGID   DATA X
COPY SOURCED TEMP X SOURCED DATA X
COPY SOURCEN TEMP X SOURCEN DATA X
COPY USED    TEMP X USED    DATA X
COPY USEN    TEMP X USEN    DATA X
COPY YEAR    TEMP X YEAR    DATA X
COPY INIT    TEMP X INIT    DATA X
COPY CONST   TEMP X CONST   DATA X
COPY GOALS   TEMP X GOALS   DATA X
COPY GOAL1   TEMP X GOAL1   DATA X
COPY GOAL2   TEMP X GOAL2   DATA X
COPY GOAL3   TEMP X GOAL3   DATA X
COPY RIGID   TEMP X RIGID   DATA X
ERASE SOURCED TEMP X
ERASE SOURCEN TEMP X
ERASE USED    TEMP X
ERASE USEN    TEMP X
ERASE YEAR    TEMP X
ERASE INIT    TEMP X
ERASE CONST   TEMP X
ERASE GOALS   TEMP X
ERASE GOAL1   TEMP X
ERASE GOAL2   TEMP X
ERASE GOAL3   TEMP X
ERASE RIGID   TEMP X

&GOTO -END

-DONTSAVE

&PRESUME &COMMAND
ERASE SOURCED DATA X
ERASE SOURCEN DATA X
ERASE USED    DATA X
ERASE USEN    DATA X
ERASE YEAR    DATA X
ERASE INIT    DATA X
ERASE CONST   DATA X
ERASE GOALS   DATA X
ERASE GOAL1   DATA X
ERASE GOAL2   DATA X
ERASE GOAL3   DATA X
ERASE RIGID   DATA X
COPY SOURCED TEMP X SOURCED DATA X
COPY SOURCEN TEMP X SOURCEN DATA X
COPY USED    TEMP X USED    DATA X
COPY USEN    TEMP X USEN    DATA X
COPY YEAR    TEMP X YEAR    DATA X
```

```
COPY INIT    TEMP X INIT    DATA X
COPY CONST   TEMP X CONST   DATA X
COPY GOALS   TEMP X GOALS   DATA X
COPY GOAL1   TEMP X GOAL1   DATA X
COPY GOAL2   TEMP X GOAL2   DATA X
COPY GOAL3   TEMP X GOAL3   DATA X
COPY RIGID   TEMP X RIGID   DATA X
ERASE SOURCED TEMP X
ERASE SOURCEN TEMP X
ERASE USED    TEMP X
ERASE USEN    TEMP X
ERASE YEAR    TEMP X
ERASE INIT    TEMP X
ERASE CONST   TEMP X
ERASE GOALS   TEMP X
ERASE GOAL1   TEMP X
ERASE GOAL2   TEMP X
ERASE GOAL3   TEMP X
ERASE RIGID   TEMP X

-END

EUDEXEC2
&PRESUME &SUBCOMMAND DISPLAY

&EXIT
```

A.4 PERMHRZN

```
*********************************************************************
*
*     OPTION - PERMANENTLY CHANGE PLANNING HORIZON
*
* THIS EXEC PERMITS USER TO CHANGE NUMBER OF YEARS IN PLANNING HORIZON
* AND/OR STARTING YEAR OF THE PLANNING HORIZON
*
*********************************************************************

&TRACE OFF


*********************************************************************
* DISPLAY CURRENT SETTINGS FOR PLANNING HORIZON
*********************************************************************

EUDEXEC2
&PRESUME &SUBCOMMAND DISPLAY


-TOP


&COMMAND EXECIO 1 DISKR INIT DATA X   1 (FINIS
&READ VARS &NS &NU &NY &STYR &STYRNO


USE PERMPLAN
MAP DATA 1 VOID 2 YEARS 3 STYEAR 4 ECODE          (LOAD UNLOAD PREVIEW
&YEARS = &NY
&STYEAR = &STYR

-ERRPLNTIME
DISPLAY


*********************************************************************
* CHECK IF USER HAS CHANGED PLANNING HORIZON
*********************************************************************

&IF &STYEAR NE &STYR &GOTO -CHSTYR
&IF &YEARS NE &NY &GOTO -CHNOYR
&GOTO -NOCHANGE


*********************************************************************
* CHANGE IN STARTING YEAR
*********************************************************************

-CHSTYR

&N = 1

-REFYRCT

&COMMAND EXECIO 1 DISKR REFYEAR DATA Z &N (FINIS
&READ VAR &NRFYR
&IF &NRFYR = &STYEAR &GOTO -CHYRCONT
&N = &N + 1
&IF &N LE 19 &GOTO -REFYRCT
&ECODE = &STRING OF INCORRECT STARTING YEAR!
SIGNAL
&GOTO -ERRPLNTIME
```

```
*************************************************************************
* CHANGE IN NUMBER OF YEARS
*************************************************************************

-CHNOYR
&N = &STYRNO

-CHYRCONT
&OL = &STYRNO
&OU = &OL + &NY - 1
&TL = &N
&TU = &TL + &YEARS - 1

&X = 0
&IF &TL LT &OL &X = &X + &OL - &TL
&IF &TU GT &OU &X = &X + &TU - &OU
&IF &TL GT &OU &X = &YEARS
&IF &TU LT &OL &X = &YEARS

&IF &X LE 0 &GOTO -CHREFYR


*************************************************************************
* WARN USER ABOUT NUMBER OF DATA ENTRIES THAT WILL BE NEEDED
*************************************************************************

USE PCHPLYR
MAP DATA 1 ENTRIES 2 ECODE                    (LOAD UNLOAD PREVIEW
&ENTRIES = &NS + &NU
&ENTRIES = &MULT OF &ENTRIES 4
&ENTRIES = &MULT OF &ENTRIES &X
&FLAG = 0
&IF &X = &YEARS &FLAG = 1
&IF &TL NE &OL &FLAG = 1
&IF &FLAG = 1 &ENTRIES = &ENTRIES + &NS

-CHKPYERR
DISPLAY
&IF &RSTATUS = PF1 &GOTO -CHREFYR
&IF &RSTATUS = PF10 &GOTO -NOCHANGE
&ECODE = &STRING OF UNDEFINED PF KEY!
SIGNAL
&GOTO -CHKPYERR


*************************************************************************
* READ ADDITIONAL DATA THAT IS NEEDED FOR NEW PLANNING HORIZON
*************************************************************************


-CHREFYR

&M = 1
&YN = &N
&COMMAND ERASE YEAR DATA X

-CREFYRCT
&COMMAND EXECIO 1 DISKR REFYEAR DATA Z &YN (FINIS
&READ VAR &YEARREAD
&STACK &YEARREAD
&COMMAND EXECIO 1 DISKW YEAR DATA X &M F 80 (FINIS
&M = &M + 1
&YN = &YN + 1
&IF &M LE &YEARS &GOTO -CREFYRCT


-DATAFILES
&STACK &NS &NU &YEARS &STYEAR &N
&COMMAND EXECIO 1 DISKW INIT DATA X 1 F 80 (FINIS
```

```
&M = 0
&Y = &NY + 1
&LOOP -SRCPLCH UNTIL &M = &NS
&L = &MULT OF &M &Y
&M = &M + 1
&COMMAND EXECIO 1 DISKR SOURCEN  DATA X &M (FINIS
&READ STRING &SNAME

&LINE = &L + 1
&IF &FLAG = 1 &GOTO -NEWSTBAL

USE PSRCBALO
MAP DATA 1 SN 2 IBAL 3 ECODE                (LOAD UNLOAD PREVIEW
&COMMAND EXECIO 1 DISKR SOURCED  DATA X &LINE (FINIS
&READ VAR &IBAL
&SN = &SNAME
DISPLAY
&IF &RSTATUS = PF10 &GOTO -QUIT
&GOTO -WRBAL

-NEWSTBAL
USE PSRCBALN
MAP DATA 1 SN 2 IBAL 3 ECODE                (LOAD UNLOAD PREVIEW
&SN = &SNAME
DISPLAY
&IF &RSTATUS = PF10 &GOTO -QUIT
&IF .&IBAL NE .&BLANK &SKIP 2
&IF .&IBAL = .&BLANK &IBAL = 0
DISPLAY
&IF &RSTATUS = PF10 &GOTO -QUIT

-WRBAL

&STACK &IBAL
&COMMAND EXECIO 1 DISKW SRCE DATA X

&I = -1
&LOOP -SRCEDATA &YEARS
&I = &I + 1
&J = &TL + &I
&IF &J GE &OL &SKIP 2
&CALL -NSRCQTR
&GOTO -SRCEDATA
&IF &J LE &OU &SKIP 2
&CALL -NSRCQTR
&GOTO -SRCEDATA
&CALL -OSRCQTR
-SRCEDATA

&COMMAND FINIS YEAR DATA X

-SRCPLCH

&COMMAND FINIS SRCE DATA X

&M = 0
&Y = &NY
&LOOP -USEPLCH UNTIL &M = &NU
&L = &MULT OF &M &Y
&LINE = &L
&M = &M + 1
&COMMAND EXECIO 1 DISKR USEN    DATA X &M (FINIS
&READ STRING &UNAME


&I = -1
&LOOP -USEDATA &YEARS
&I = &I + 1
&J = &TL + &I
&IF &J GE &OL &SKIP 2
&CALL -NUSEQTR
&GOTO -USEDATA
```

```
&IF &J LE &OU &SKIP 2
&CALL -NUSEQTR
&GOTO -USEDATA
&CALL -OUSEQTR
-USEDATA

&COMMAND FINIS YEAR DATA X

-USEPLCH

&COMMAND FINIS USE DATA X

&GOTO -UPDATE

-OSRCQTR
&LINE = &LINE + 1

USE PSRCQTRO
MAP DATA 1 SNAM 2 YEAR                    (LOAD UNLOAD PREVIEW
MAP DATA 3 QTR1 4 QTR2 5 QTR3 6 QTR4 7 ECODE   (LOAD UNLOAD PREVIEW

&COMMAND EXECIO 1 DISKR SOURCED  DATA X &LINE (FINIS
&READ VARS &QTR1 &QTR2 &QTR3 &QTR4
&COMMAND EXECIO 1 DISKR YEAR DATA X
&READ VAR &YEAR
&SNAM = &SNAME
&NB = 0
DISPLAY
&IF &RSTATUS = PF10 &GOTO -QUIT
&STACK &QTR1 &QTR2 &QTR3 &QTR4
&COMMAND EXECIO 1 DISKW SRCE DATA X
&RETURN

-NSRCQTR

USE PSRCQTRN
MAP DATA 1 SNAM 2 YEAR                    (LOAD UNLOAD PREVIEW
MAP DATA 3 QTR1 4 QTR2 5 QTR3 6 QTR4 7 ECODE   (LOAD UNLOAD PREVIEW

&QTR1 = &BLANK
&QTR2 = &BLANK
&QTR3 = &BLANK
&QTR4 = &BLANK
&COMMAND EXECIO 1 DISKR YEAR DATA X
&READ VAR &YEAR
&SNAM = &SNAME
&NB = 0
DISPLAY
&IF &RSTATUS = PF10 &GOTO -QUIT
&IF .&QTR1 EQ .&BLANK &NB = 1
&IF .&QTR2 EQ .&BLANK &NB = 1
&IF .&QTR3 EQ .&BLANK &NB = 1
&IF .&QTR4 EQ .&BLANK &NB = 1
&IF .&QTR1 EQ .&BLANK &QTR1 = 0
&IF .&QTR2 EQ .&BLANK &QTR2 = 0
&IF .&QTR3 EQ .&BLANK &QTR3 = 0
&IF .&QTR4 EQ .&BLANK &QTR4 = 0
&IF &NB = 0 &SKIP 1
DISPLAY
&IF &RSTATUS = PF10 &GOTO -QUIT
&STACK &QTR1 &QTR2 &QTR3 &QTR4
&COMMAND EXECIO 1 DISKW SRCE DATA X

&RETURN

-OUSEQTR

&LINE = &LINE + 1

USE PUSEQTRO
MAP DATA 1 UNAM 2 YEAR                    (LOAD UNLOAD PREVIEW
MAP DATA 3 QTR1 4 QTR2 5 QTR3 6 QTR4 7 ECODE   (LOAD UNLOAD PREVIEW
```

```
&COMMAND EXECIO 1 DISKR USED  DATA X &LINE (FINIS
&READ VARS &QTR1 &QTR2 &QTR3 &QTR4
&COMMAND EXECIO 1 DISKR YEAR DATA X
&READ VAR &YEAR
&UNAM = &UNAME
DISPLAY
&IF &RSTATUS = PF10 &GOTO -QUIT
&STACK &QTR1 &QTR2 &QTR3 &QTR4
&COMMAND EXECIO 1 DISKW USE DATA X

&RETURN

-NUSEQTR

USE PUSEQTRN
MAP DATA 1 UNAM 2 YEAR                    (LOAD UNLOAD PREVIEW
MAP DATA 3 QTR1 4 QTR2 5 QTR3 6 QTR4 7 ECODE   (LOAD UNLOAD PREVIEW

&QTR1 = &BLANK
&QTR2 = &BLANK
&QTR3 = &BLANK
&QTR4 = &BLANK
&COMMAND EXECIO 1 DISKR YEAR DATA X
&READ VAR &YEAR
&UNAM = &UNAME
&NB = 0
DISPLAY
&IF &RSTATUS = PF10 &GOTO -QUIT
&IF .&QTR1 EQ .&BLANK &NB = 1
&IF .&QTR2 EQ .&BLANK &NB = 1
&IF .&QTR3 EQ .&BLANK &NB = 1
&IF .&QTR4 EQ .&BLANK &NB = 1
&IF .&QTR1 EQ .&BLANK &QTR1 = 0
&IF .&QTR2 EQ .&BLANK &QTR2 = 0
&IF .&QTR3 EQ .&BLANK &QTR3 = 0
&IF .&QTR4 EQ .&BLANK &QTR4 = 0
&IF &NB = 0 &SKIP 1
DISPLAY
&IF &RSTATUS = PF10 &GOTO -QUIT
&STACK &QTR1 &QTR2 &QTR3 &QTR4
&COMMAND EXECIO 1 DISKW USE  DATA X

&RETURN

*********************************************************************
*  UPDATE DATA FILES
*********************************************************************

-UPDATE

&PRESUME &COMMAND

COPYFILE YEAR DATA X (LRECL 80 RECFM F
COPYFILE SRCE DATA X (LRECL 80 RECFM F
COPYFILE USE  DATA X (LRECL 80 RECFM F

ERASE SOURCED DATA X
ERASE USED    DATA X


&STACK &NS &NU &YEARS
EXECIO 1 DISKW TMPPLYR DATA X (FINIS
COPYFILE TMPPLYR DATA X (LRECL 80 RECFM F
FILEDEF FT01F001 DISK TMPPLYR DATA X
FILEDEF FT02F001 DISK SRCE    DATA X
FILEDEF FT03F001 DISK USE     DATA X
FILEDEF FT08F001 DISK SOURCED    DATA X
FILEDEF FT09F001 DISK USED    DATA X
PLANYEAR
COPYFILE SOURCED DATA X (LRECL 80 RECFM F
```

```
COPYFILE USED    DATA X (LRECL 80 RECFM F
ERASE TMPPLYR DATA X
ERASE SRCE    DATA X
ERASE USE     DATA X

ERASE RIGID DATA X
ERASE GOALS DATA X
ERASE GOAL1 DATA X
ERASE GOAL2 DATA X
ERASE GOAL3 DATA X
&STACK
EXECIO 1 DISKW RIGID DATA X 1 F 80 (FINIS
&STACK
EXECIO 1 DISKW GOAL1 DATA X 1 F 80 (FINIS
&STACK
EXECIO 1 DISKW GOAL2 DATA X 1 F 80 (FINIS
&STACK
EXECIO 1 DISKW GOAL3 DATA X 1 F 80 (FINIS
&STACK 1 1 1 1
EXECIO 1 DISKW GOALS DATA X 1 F 80 (FINIS

&EXIT


*********************************************************************
*  DON'T MAKE ANY CHANGES
*********************************************************************

-NOCHANGE
&PRESUME &COMMAND

&EXIT

-QUIT

&PRESUME &COMMAND

ERASE INIT DATA X
ERASE YEAR DATA X
COPY INIT PERM A INIT DATA X
COPY YEAR PERM A YEAR DATA X

ERASE TMPPLYR DATA X
ERASE SRCE    DATA X
ERASE USE     DATA X

EUDEXEC2
&PRESUME &SUBCOMMAND DISPLAY

&GOTO -TOP
```

A.5 PMTSRTSR

```
*****************************************************************
*    SORTING (PERMANENT) OPTIONS FOR SOURCES
*****************************************************************

&TRACE OFF

EXECIO 1 DISKR INIT DATA X 1 (FINIS
&READ VAR &NS &NU &NY

EUDEXEC2
&PRESUME &SUBCOMMAND DISPLAY


-RANKSRC

USE PRANKSRC
MAP DATA 1 ECODE                    (LOAD UNLOAD PREVIEW
-ERANKSRC
DISPLAY
&IF &RSTATUS = PF1 &GOTO -RSRCOPT1
&IF &RSTATUS = PF2 &GOTO -RSRCOPT3
&IF &RSTATUS = PF3 &GOTO -RSRCOPT4
&IF &RSTATUS = PF4 &GOTO -RSRCOPT5
&IF &RSTATUS = PF5 &GOTO -RSRCOPT2
&IF &RSTATUS = PF10 &GOTO -QUIT
&ECODE = &STRING OF UNDEFINED PF KEY!
SIGNAL
&GOTO -ERANKSRC

-RSRCOPT1

&SO = 1
&GOTO -RANKSOURCE

-RSRCOPT2

USE PUSRTSRC
MAP DATA  1 SN1  2 R1  3 SN2  4 R2  5 SN3  6 R3    (LOAD UNLOAD PREVIEW
MAP DATA  7 SN4  8 R4  9 SN5 10 R5 11 SN6 12 R6    (LOAD UNLOAD PREVIEW
MAP DATA 13 SN7 14 R7 15 SN8 16 R8 17 SN9 18 R9    (LOAD UNLOAD PREVIEW
MAP DATA 19 SN10 20 R10 21 SN11 22 R11 23 SN12 24 R12 (LOAD UNLOAD PREVIEW
MAP DATA 25 SN13 26 R13 27 SN14 28 R14 29 SN15 30 R15 (LOAD UNLOAD PREVIEW
MAP DATA 31 SN16 32 R16 33 ECODE                   (LOAD UNLOAD PREVIEW

&COMMAND EXECIO &NS DISKR SOURCEN DATA X 1 (FINIS
&N = 0
&LOOP 5 &NS
&N = &N + 1
&NAME = &CONCAT OF SN &N
&READ STRING &&NAME
&&NAME = &CONCAT OF &BLANK &N . &BLANK &&NAME
&IF &N LT 10 &&NAME = &CONCAT OF &BLANK &&NAME

&N = &N + 1
&IF &N GT 16 &SKIP 3
&TEMP = &CONCAT OF R &N
SET &TEMP (PRO
&SKIP -4

-EOPT2SRCE
DISPLAY

&SUM1 = 0
&SUM2 = 0
&N = 0
&LOOP 11 &NS
&N = &N + 1
```

```
&NAME = &CONCAT OF R &N
&NAME1 = &LEFT OF &&NAME 1
&IF .&NAME1 = .&BLANK &&NAME = &RIGHT OF &&NAME 1
&IF .&&NAME NE .&BLANK &SKIP 3
&ECODE = &STRING OF BLANK ENTRY!
SIGNAL
&GOTO -EOPT2SRCE
&&NAME = &TRIM OF &&NAME
&SUM1 = &SUM1 + &N
&SUM2 = &SUM2 + &&NAME

&IF &SUM1 = &SUM2 &SKIP 3
&ECODE = &STRING OF IMPROPER ORDERING!
SIGNAL
&GOTO -EOPT2SRCE

&N = 0
&LOOP 4 &NS
&N = &N + 1
&NAME = &CONCAT OF R &N
&IF &&NAME LT 10 &&NAME = &CONCAT OF &BLANK &&NAME
&STACK &&NAME
&COMMAND EXECIO &NS DISKW SRC1 DATA X 1 (FINIS
&COMMAND COPYFILE SRC1 DATA X (LRECL 80 RECFM F

&N = 0
&LOOP 2 &NS
&N = &N + 1
&STACK &N
&COMMAND EXECIO &NS DISKW SRC2 DATA X 1 (FINIS
&COMMAND COPYFILE SRC2 DATA X (LRECL 80 RECFM F

&COMMAND SET CMSTYPE HT
&STACK 1-50 51
&COMMAND COPYFILE SRC2 DATA X SRC1 DATA X (SPECS NOPROMPT OVLY LRECL 80 RECFM F

&STACK 1 3
&COMMAND SORT SRC1 DATA X SRC DATA X

&STACK 51-52 1
&COMMAND COPYFILE SRC DATA X SRCE DATA X (SPECS NOPROMPT LRECL 80 RECFM F
&COMMAND SET CMSTYPE RT

&COMMAND ERASE SRC DATA X
&COMMAND ERASE SRC1 DATA X
&COMMAND ERASE SRC2 DATA X

&SO = 2

&GOTO -RANKSOURCE

-RSRCOPT3

&COMMAND COPYFILE SOURCEN DATA X SRC1 DATA X
&N = 0
&LOOP 2 &NS
&N = &N + 1
&STACK &N
&COMMAND EXECIO &NS DISKW SRC2 DATA X 1 (FINIS
&COMMAND COPYFILE SRC2 DATA X (LRECL 80 RECFM F

&COMMAND SET CMSTYPE HT
&STACK 1-50 51
&COMMAND COPYFILE SRC2 DATA X SRC1 DATA X (SPECS NOPROMPT OVLY LRECL 80 RECFM F

&STACK 1 20
&COMMAND SORT SRC1 DATA X SRC DATA X

&STACK 51-52 1
&COMMAND COPYFILE SRC DATA X SRCE DATA X (SPECS NOPROMPT LRECL 80 RECFM F
&COMMAND SET CMSTYPE RT
```

```
&COMMAND ERASE SRC DATA X
&COMMAND ERASE SRC1 DATA X
&COMMAND ERASE SRC2 DATA X

&SO = 3

&GOTO -RANKSOURCE

-RSRCOPT4

&SO = 4

&GOTO -RANKSOURCE

-RSRCOPT5

&SO = 5

-RANKSOURCE

&PRESUME &COMMAND

&IF &SO = 1 &GOTO -DISPSRC
&IF &SO = 2 &GOTO -RUNSRCSORT
&IF &SO = 3 &GOTO -RUNSRCSORT

&STACK &SO
&STACK &NS &NU &NY
EXECIO 2 DISKW SRC DATA X 1 (FINIS
COPYFILE SRC DATA X (LRECL 80 RECFM F

FILEDEF FT01F001 DISK SRC DATA X
FILEDEF FT02F001 DISK SOURCED DATA X
FILEDEF FT11F001 DISK SRCE   DATA X
SRCAMT
COPYFILE SRCE DATA X (LRECL 80 RECFM F

ERASE SRC  DATA X

-RUNSRCSORT

FILEDEF FT01F001 DISK INIT    DATA X
FILEDEF FT02F001 DISK SRCE    DATA X
FILEDEF FT03F001 DISK SOURCEN DATA X
FILEDEF FT04F001 DISK SOURCED DATA X
FILEDEF FT08F001 DISK CONST   DATA X
FILEDEF FT21F001 DISK RIGID   DATA X
FILEDEF FT22F001 DISK GOAL1   DATA X
FILEDEF FT23F001 DISK GOAL2   DATA X
FILEDEF FT24F001 DISK GOAL3   DATA X
FILEDEF FT11F001 DISK SN      DATA X
FILEDEF FT12F001 DISK SD      DATA X
FILEDEF FT13F001 DISK CONS    DATA X
FILEDEF FT31F001 DISK RIGID   DATA1 X
FILEDEF FT32F001 DISK GOAL1   DATA1 X
FILEDEF FT33F001 DISK GOAL2   DATA1 X
FILEDEF FT34F001 DISK GOAL3   DATA1 X
SRCSORT

ERASE SRCE    DATA X
ERASE SOURCEN DATA X
ERASE SOURCED DATA X
ERASE CONST   DATA X
COPYFILE SN   DATA X SOURCEN DATA X (LRECL 80 RECFM F
COPYFILE SD   DATA X SOURCED DATA X (LRECL 80 RECFM F
COPYFILE CONS DATA X CONST   DATA X (LRECL 80 RECFM F
ERASE SN   DATA X
ERASE SD   DATA X
ERASE CONS DATA X
ERASE RIGID   DATA X
ERASE GOAL1   DATA X
ERASE GOAL2   DATA X
```

```
ERASE GOAL3   DATA X
COPYFILE RIGID DATA1 X RIGID DATA X (LRECL 100 RECFM F
COPYFILE GOAL1 DATA1 X GOAL1 DATA X (LRECL 100 RECFM F
COPYFILE GOAL2 DATA1 X GOAL2 DATA X (LRECL 100 RECFM F
COPYFILE GOAL3 DATA1 X GOAL3 DATA X (LRECL 100 RECFM F
ERASE RIGID   DATA1 X
ERASE GOAL1   DATA1 X
ERASE GOAL2   DATA1 X
ERASE GOAL3   DATA1 X

*****************************************************************
*    DISPLAY LIST OF SORTED SOURCES
*****************************************************************


-DISPSRC

EUDEXEC2
&PRESUME &SUBCOMMAND DISPLAY

USE PSRTDSRC
MAP DATA  1 SCHEME                          (LOAD UNLOAD PREVIEW
MAP DATA  2 SN1   3 SN2   4 SN3   5 SN4   6 SN5    (LOAD UNLOAD PREVIEW
MAP DATA  7 SN6   8 SN7   9 SN8  10 SN9  11 SN10   (LOAD UNLOAD PREVIEW
MAP DATA 12 SN11 13 SN12 14 SN13 15 SN14 16 SN15   (LOAD UNLOAD PREVIEW
MAP DATA 17 SN16                            (LOAD UNLOAD PREVIEW

&IF &SO = 1 &SCHEME = &STRING OF CURRENT ORDERING
&IF &SO = 2 &SCHEME = &STRING OF USER SPECIFIED
&IF &SO = 3 &SCHEME = &STRING OF ALPHABETICAL
&IF &SO = 4 &SCHEME = &STRING OF DECREASING FUNDS
&IF &SO = 5 &SCHEME = &STRING OF INCREASING FUNDS

&COMMAND EXECIO &NS DISKR SOURCEN DATA X 1 (FINIS
&N = 0
&LOOP 5 &NS
&N = &N + 1
&NAME = &CONCAT OF SN &N
&READ STRING &&NAME
&&NAME = &CONCAT OF &BLANK &N . &BLANK &&NAME
&IF &N LT 10 &&NAME = &CONCAT OF &BLANK &&NAME

DISPLAY

&GOTO -RANKSRC

-QUIT

&PRESUME &COMMAND

&EXIT
```

A.6 PMTSRTUS

```
*****************************************************************
*    SORTING (PERMANENT) OPTIONS FOR USES
*****************************************************************

&TRACE OFF

EXECIO 1 DISKR INIT DATA X 1 (FINIS
&READ VAR &NS &NU &NY

EUDEXEC2
&PRESUME &SUBCOMMAND DISPLAY


-RANKUSE

USE PRANKUSE
MAP DATA 1 ECODE                    (LOAD UNLOAD PREVIEW
-ERANKUSE
DISPLAY
&IF &RSTATUS = PF1 &GOTO -RUSEOPT1
&IF &RSTATUS = PF2 &GOTO -RUSEOPT3
&IF &RSTATUS = PF3 &GOTO -RUSEOPT4
&IF &RSTATUS = PF4 &GOTO -RUSEOPT5
&IF &RSTATUS = PF5 &GOTO -RUSEOPT2
&IF &RSTATUS = PF10 &GOTO -QUIT
&ECODE = &STRING OF UNDEFINED PF KEY!
SIGNAL
&GOTO -ERANKUSE

-RUSEOPT1

&UO = 1
&GOTO -RANKPROJ

-RUSEOPT2

USE PUSRTUSE
MAP DATA  1 UN1  2 R1  3 UN2  4 R2  5 UN3  6 R3    (LOAD UNLOAD PREVIEW
MAP DATA  7 UN4  8 R4  9 UN5 10 R5 11 UN6 12 R6    (LOAD UNLOAD PREVIEW
MAP DATA 13 UN7 14 R7 15 UN8 16 R8 17 UN9 18 R9    (LOAD UNLOAD PREVIEW
MAP DATA 19 UN10 20 R10 21 UN11 22 R11 23 UN12 24 R12 (LOAD UNLOAD PREVIEW
MAP DATA 25 UN13 26 R13 27 UN14 28 R14 29 UN15 30 R15 (LOAD UNLOAD PREVIEW
MAP DATA 31 UN16 32 R16 33 ECODE                   (LOAD UNLOAD PREVIEW

&COMMAND EXECIO &NU DISKR USEN    DATA X 1 (FINIS
&N = 0
&LOOP 5 &NU
&N = &N + 1
&NAME = &CONCAT OF UN &N
&READ STRING &&NAME
&&NAME = &CONCAT OF &BLANK &N . &BLANK &&NAME
&IF &N LT 10 &&NAME = &CONCAT OF &BLANK &&NAME

&N = &N + 1
&IF &N GT 16 &SKIP 3
&TEMP = &CONCAT OF R &N
SET &TEMP (PRO
&SKIP -4

-EOPT2USE
DISPLAY

&SUM1 = 0
&SUM2 = 0
&N = 0
&LOOP 11 &NU
&N = &N + 1
```

```
&NAME = &CONCAT OF R &N
&NAME1 = &LEFT OF &&NAME 1
&IF .&NAME1 = .&BLANK &&NAME = &RIGHT OF &&NAME 1
&IF .&&NAME NE .&BLANK &SKIP 3
&ECODE = &STRING OF BLANK ENTRY!
SIGNAL
&GOTO -EOPT2USE
&&NAME = &TRIM OF &&NAME
&SUM1 = &SUM1 + &N
&SUM2 = &SUM2 + &&NAME

&IF &SUM1 = &SUM2 &SKIP 3
&ECODE = &STRING OF IMPROPER ORDERING!
SIGNAL
&GOTO -EOPT2USE

&N = 0
&LOOP 4 &NU
&N = &N + 1
&NAME = &CONCAT OF R &N
&IF &&NAME LT 10 &&NAME = &CONCAT OF &BLANK &&NAME
&STACK &&NAME
&COMMAND EXECIO &NU DISKW USE1 DATA X 1 (FINIS
&COMMAND COPYFILE USE1 DATA X (LRECL 80 RECFM F

&N = 0
&LOOP 2 &NU
&N = &N + 1
&STACK &N
&COMMAND EXECIO &NU DISKW USE2 DATA X 1 (FINIS
&COMMAND COPYFILE USE2 DATA X (LRECL 80 RECFM F

&COMMAND SET CMSTYPE HT
&STACK 1-50 51
&COMMAND COPYFILE USE2 DATA X USE1 DATA X (SPECS NOPROMPT OVLY LRECL 80 RECFM F

&STACK 1 3
&COMMAND SORT USE1 DATA X USE DATA X

&STACK 51-52 1
&COMMAND COPYFILE USE DATA X USEE DATA X (SPECS NOPROMPT LRECL 80 RECFM F
&COMMAND SET CMSTYPE RT

&COMMAND ERASE USE DATA X
&COMMAND ERASE USE1 DATA X
&COMMAND ERASE USE2 DATA X

&UO = 2

&GOTO -RANKPROJ

-RUSEOPT3

&COMMAND COPYFILE USEN    DATA X USE1 DATA X
&N = 0
&LOOP 2 &NU
&N = &N + 1
&STACK &N
&COMMAND EXECIO &NU DISKW USE2 DATA X 1 (FINIS
&COMMAND COPYFILE USE2 DATA X (LRECL 80 RECFM F

&COMMAND SET CMSTYPE HT
&STACK 1-50 51
&COMMAND COPYFILE USE2 DATA X USE1 DATA X (SPECS NOPROMPT OVLY LRECL 80 RECFM F

&STACK 1 20
&COMMAND SORT USE1 DATA X USE DATA X

&STACK 51-52 1
&COMMAND COPYFILE USE DATA X USEE DATA X (SPECS NOPROMPT LRECL 80 RECFM F
&COMMAND SET CMSTYPE RT
```

```
&COMMAND ERASE USE DATA X
&COMMAND ERASE USE1 DATA X
&COMMAND ERASE USE2 DATA X

&UO = 3

&GOTO -RANKPROJ

-RUSEOPT4

&UO = 4

&GOTO -RANKPROJ

-RUSEOPT5

&UO = 5

-RANKPROJ

&PRESUME &COMMAND

&IF &UO = 1 &GOTO -DISPUSE
&IF &UO = 2 &GOTO -RUNUSESORT
&IF &UO = 3 &GOTO -RUNUSESORT

&STACK &UO
&STACK &NS &NU &NY
EXECIO 2 DISKW USE DATA X 1 (FINIS
COPYFILE USE DATA X (LRECL 80 RECFM F

FILEDEF FT01F001 DISK USE DATA X
FILEDEF FT02F001 DISK USED   DATA X
FILEDEF FT11F001 DISK USEE   DATA X
USEAMT
COPYFILE USEE DATA X (LRECL 80 RECFM F

ERASE USE  DATA X

-RUNUSESORT

FILEDEF FT01F001 DISK INIT   DATA X
FILEDEF FT02F001 DISK USEE   DATA X
FILEDEF FT03F001 DISK USEN   DATA X
FILEDEF FT04F001 DISK USED   DATA X
FILEDEF FT08F001 DISK CONST  DATA X
FILEDEF FT21F001 DISK RIGID  DATA X
FILEDEF FT22F001 DISK GOAL1  DATA X
FILEDEF FT23F001 DISK GOAL2  DATA X
FILEDEF FT24F001 DISK GOAL3  DATA X
FILEDEF FT11F001 DISK UN     DATA X
FILEDEF FT12F001 DISK UD     DATA X
FILEDEF FT13F001 DISK CONS   DATA X
FILEDEF FT31F001 DISK RIGID  DATA1 X
FILEDEF FT32F001 DISK GOAL1  DATA1 X
FILEDEF FT33F001 DISK GOAL2  DATA1 X
FILEDEF FT34F001 DISK GOAL3  DATA1 X
USESORT

ERASE USEE   DATA X
ERASE USEN   DATA X
ERASE USED   DATA X
ERASE CONST  DATA X
COPYFILE UN  DATA X USEN   DATA X (LRECL 80 RECFM F
COPYFILE UD  DATA X USED   DATA X (LRECL 80 RECFM F
COPYFILE CONS DATA X CONST  DATA X (LRECL 80 RECFM F
ERASE UN  DATA X
ERASE UD  DATA X
ERASE CONS DATA X
ERASE RIGID  DATA X
ERASE GOAL1  DATA X
ERASE GOAL2  DATA X
```

```
ERASE GOAL3   DATA X
COPYFILE RIGID DATA1 X RIGID DATA X (LRECL 100 RECFM F
COPYFILE GOAL1 DATA1 X GOAL1 DATA X (LRECL 100 RECFM F
COPYFILE GOAL2 DATA1 X GOAL2 DATA X (LRECL 100 RECFM F
COPYFILE GOAL3 DATA1 X GOAL3 DATA X (LRECL 100 RECFM F
ERASE RIGID   DATA1 X
ERASE GOAL1   DATA1 X
ERASE GOAL2   DATA1 X
ERASE GOAL3   DATA1 X

*****************************************************************
*    DISPLAY LIST OF SORTED USES
*****************************************************************


-DISPUSE

EUDEXEC2
&PRESUME &SUBCOMMAND DISPLAY

USE PSRTDUSE
MAP DATA  1 SCHEME                          (LOAD UNLOAD PREVIEW
MAP DATA  2 UN1   3 UN2   4 UN3   5 UN4   6 UN5    (LOAD UNLOAD PREVIEW
MAP DATA  7 UN6   8 UN7   9 UN8  10 UN9  11 UN10   (LOAD UNLOAD PREVIEW
MAP DATA 12 UN11 13 UN12 14 UN13 15 UN14 16 UN15   (LOAD UNLOAD PREVIEW
MAP DATA 17 UN16                            (LOAD UNLOAD PREVIEW

&IF &UO = 1 &SCHEME = &STRING OF CURRENT ORDERING
&IF &UO = 2 &SCHEME = &STRING OF USER SPECIFIED
&IF &UO = 3 &SCHEME = &STRING OF ALPHABETICAL
&IF &UO = 4 &SCHEME = &STRING OF DECREASING FUNDS
&IF &UO = 5 &SCHEME = &STRING OF INCREASING FUNDS

&COMMAND EXECIO &NU DISKR USEN    DATA X 1 (FINIS
&N = 0
&LOOP 5 &NU
&N = &N + 1
&NAME = &CONCAT OF UN &N
&READ STRING &&NAME
&&NAME = &CONCAT OF &BLANK &N . &BLANK &&NAME
&IF &N LT 10 &&NAME = &CONCAT OF &BLANK &&NAME

DISPLAY

&GOTO -RANKUSE

-QUIT

&PRESUME &COMMAND

&EXIT
```

A.7 RESULTS

```
*********************************************************************
*          OPTION 1 - VIEW RESULTS OF GP MODEL
*
* THIS EXEC GENERATES RESULTS OF THE GP MODEL IN THE FORM OF REPORTS
*
*********************************************************************

&TRACE OFF

FILEDEF * CLEAR

*********************************************************************
* RUN THE REPORTS FORTRAN PROGRAM
*********************************************************************


FILEDEF FT01F001 DISK INIT    TEMP X
FILEDEF FT02F001 DISK SOURCED  TEMP X
FILEDEF FT03F001 DISK USED    TEMP X
FILEDEF FT04F001 DISK CONST   TEMP X
FILEDEF FT11F001 DISK OPTION1  DATA X
FILEDEF FT12F001 DISK OPTION2  DATA X
FILEDEF FT13F001 DISK OPTION3  DATA X
FILEDEF FT14F001 DISK OPTION4  DATA X
FILEDEF FT18F001 DISK OPTION5  DATA X
FILEDEF FT20F001 DISK ALLOCATN TEMP X
REPORTS
COPY OPTION1 DATA X (LRECL 80 RECFM F
COPY OPTION2 DATA X (LRECL 80 RECFM F
COPY OPTION3 DATA X (LRECL 80 RECFM F
COPY OPTION4 DATA X (LRECL 80 RECFM F
COPY OPTION5 DATA X (LRECL 80 RECFM F
-START


*********************************************************************
*  SETUP DMS ENVIRONMENT
*********************************************************************


EUDEXEC2
&PRESUME &SUBCOMMAND DISPLAY


*********************************************************************
*   DISPLAY OUTPUT PANEL
*********************************************************************


-MENU
USE SELOUT
MAP DATA 1 ECODE (LOAD UNLOAD PREVIEW
-ERRMAIN
DISPLAY
&IF &RSTATUS = PF1 &GOTO -OPTION1
&IF &RSTATUS = PF2 &GOTO -OPTION2
&IF &RSTATUS = PF3 &GOTO -OPTION3
&IF &RSTATUS = PF4 &GOTO -OPTION4
&IF &RSTATUS = PF5 &GOTO -OPTION5
&IF &RSTATUS = PF6 &GOTO -OPTION6
&IF &RSTATUS = PF7 &GOTO -OPTION7
&IF &RSTATUS = PF10 &GOTO -END
&ECODE = &STRING OF UNDEFINED PF KEY!
SIGNAL
&GOTO -ERRMAIN
```

```
*********************************************************************
*   OPTION 1 - FUND AVAILABILITY BY SOURCE
*********************************************************************


-OPTION1

&CALL -OPT1
&GOTO -MENU

-OPT1

* FIRST YEAR

USE FUNSRC1
MAP DATA 1 YEAR (LOAD UNLOAD PREVIEW
MAP DATA  2  SN1  3 SF11  4 SF12  5 SF13  (LOAD UNLOAD PREVIEW
MAP DATA  6 SF14  7 SF15  8 SF16  9 SF17  (LOAD UNLOAD PREVIEW
MAP DATA 10  SN2 11 SF21 12 SF22 13 SF23  (LOAD UNLOAD PREVIEW
MAP DATA 14 SF24 15 SF25 16 SF26 17 SF27  (LOAD UNLOAD PREVIEW
MAP DATA 18  SN3 19 SF31 20 SF32 21 SF33  (LOAD UNLOAD PREVIEW
MAP DATA 22 SF34 23 SF35 24 SF36 25 SF37  (LOAD UNLOAD PREVIEW
MAP DATA 26  SN4 27 SF41 28 SF42 29 SF43  (LOAD UNLOAD PREVIEW
MAP DATA 30 SF44 31 SF45 32 SF46 33 SF47  (LOAD UNLOAD PREVIEW
MAP DATA 34  SN5 35 SF51 36 SF52 37 SF53  (LOAD UNLOAD PREVIEW
MAP DATA 38 SF54 39 SF55 40 SF56 41 SF57  (LOAD UNLOAD PREVIEW
MAP DATA 42  SN6 43 SF61 44 SF62 45 SF63  (LOAD UNLOAD PREVIEW
MAP DATA 46 SF64 47 SF65 48 SF66 49 SF67  (LOAD UNLOAD PREVIEW
MAP DATA 50  SN7 51 SF71 52 SF72 53 SF73  (LOAD UNLOAD PREVIEW
MAP DATA 54 SF74 55 SF75 56 SF76 57 SF77  (LOAD UNLOAD PREVIEW
MAP DATA 58  SN8 59 SF81 60 SF82 61 SF83  (LOAD UNLOAD PREVIEW
MAP DATA 62 SF84 63 SF85 64 SF86 65 SF87  (LOAD UNLOAD PREVIEW
MAP DATA 66  SN9 67 SF91 68 SF92 69 SF93  (LOAD UNLOAD PREVIEW
MAP DATA 70 SF94 71 SF95 72 SF96 73 SF97  (LOAD UNLOAD PREVIEW
MAP DATA 74 SN10 75 SF101 76 SF102 77 SF103  (LOAD UNLOAD PREVIEW
MAP DATA 78 SF104 79 SF105 80 SF106 81 SF107  (LOAD UNLOAD PREVIEW
MAP DATA 82 SN11 83 SF111 84 SF112 85 SF113  (LOAD UNLOAD PREVIEW
MAP DATA 86 SF114 87 SF115 88 SF116 89 SF117  (LOAD UNLOAD PREVIEW
MAP DATA 90 SN12 91 SF121 92 SF122 93 SF123  (LOAD UNLOAD PREVIEW
MAP DATA 94 SF124 95 SF125 96 SF126 97 SF127  (LOAD UNLOAD PREVIEW
MAP DATA 98 SN13 99 SF131 100 SF132 101 SF133  (LOAD UNLOAD PREVIEW
MAP DATA 102 SF134 103 SF135 104 SF136 105 SF137  (LOAD UNLOAD PREVIEW
MAP DATA 106 SN14 107 SF141 108 SF142 109 SF143  (LOAD UNLOAD PREVIEW
MAP DATA 110 SF144 111 SF145 112 SF146 113 SF147  (LOAD UNLOAD PREVIEW
MAP DATA 114 SN15 115 SF151 116 SF152 117 SF153  (LOAD UNLOAD PREVIEW
MAP DATA 118 SF154 119 SF155 120 SF156 121 SF157  (LOAD UNLOAD PREVIEW
MAP DATA 122 SN16 123 SF161 124 SF162 125 SF163  (LOAD UNLOAD PREVIEW
MAP DATA 126 SF164 127 SF165 128 SF166 129 SF167  (LOAD UNLOAD PREVIEW
MAP DATA 130 SN17 131 SF171 132 SF172 133 SF173  (LOAD UNLOAD PREVIEW
MAP DATA 134 SF174 135 SF175 136 SF176 137 SF177  (LOAD UNLOAD PREVIEW
MAP DATA 138 SN18 139 SF181 140 SF182 141 SF183  (LOAD UNLOAD PREVIEW
MAP DATA 142 SF184 143 SF185 144 SF186 145 SF187  (LOAD UNLOAD PREVIEW
MAP DATA 146 SN19 147 SF191 148 SF192 149 SF193  (LOAD UNLOAD PREVIEW
MAP DATA 150 SF194 151 SF195 152 SF196 153 SF197  (LOAD UNLOAD PREVIEW
MAP DATA 154 SN20 155 SF201 156 SF202 157 SF203  (LOAD UNLOAD PREVIEW
MAP DATA 158 SF204 159 SF205 160 SF206 161 SF207  (LOAD UNLOAD PREVIEW

&COMMAND EXECIO 1 DISKR INIT TEMP X 1 (FINIS
&READ VAR &NS &NU &NY
&COMMAND EXECIO &NS DISKR SOURCEN TEMP X 1 (FINIS
&M = 0
&LOOP 3 &NS
&M = &M + 1
&NAME = &CONCAT OF SN &M
&READ STRING &&NAME

&NSRC = &NS + 1
&NAME = &CONCAT OF SN &NSRC
&&NAME = DEFICIT
```

```
&COMMAND EXECIO 1 DISKR YEAR TEMP X 1 (FINIS
&READ STRING &YEAR

&NL = &NS + 2
&COMMAND EXECIO &NL DISKR OPTION1 DATA X 1 (FINIS
&M = 0
&LOOP -OPT1YR1 &NSRC
&M = &M + 1
&V1 = &CONCAT OF SF &M 1
&V2 = &CONCAT OF SF &M 2
&V3 = &CONCAT OF SF &M 3
&V4 = &CONCAT OF SF &M 4
&V5 = &CONCAT OF SF &M 5
&V6 = &CONCAT OF SF &M 6
&V7 = &CONCAT OF SF &M 7
&READ VAR &&V1 &&V2 &&V3 &&V4 &&V5 &&V6 &&V7
&&V1 = &RIGHT OF &&V1 6
&&V2 = &RIGHT OF &&V2 6
&&V3 = &RIGHT OF &&V3 6
&&V4 = &RIGHT OF &&V4 6
&&V5 = &RIGHT OF &&V5 6
&&V6 = &RIGHT OF &&V6 6
&&V7 = &RIGHT OF &&V7 6
-OPT1YR1

&M = &NS + 2
&V1 = &CONCAT OF SF &M 1
&V2 = &CONCAT OF SF &M 2
&V3 = &CONCAT OF SF &M 3
&V4 = &CONCAT OF SF &M 4
&V5 = &CONCAT OF SF &M 5
&V6 = &CONCAT OF SF &M 6
&V7 = &CONCAT OF SF &M 7
&&V1 = _____
&&V2 = _____
&&V3 = _____
&&V4 = _____
&&V5 = _____
&&V6 = _____
&&V7 = _____

&M = &NS + 3
&V1 = &CONCAT OF SF &M 1
&V2 = &CONCAT OF SF &M 2
&V3 = &CONCAT OF SF &M 3
&V4 = &CONCAT OF SF &M 4
&V5 = &CONCAT OF SF &M 5
&V6 = &CONCAT OF SF &M 6
&V7 = &CONCAT OF SF &M 7
&READ VAR &&V1 &&V2 &&V3 &&V4 &&V5 &&V6 &&V7
&&V1 = &RIGHT OF &&V1 6
&&V2 = &RIGHT OF &&V2 6
&&V3 = &RIGHT OF &&V3 6
&&V4 = &RIGHT OF &&V4 6
&&V5 = &RIGHT OF &&V5 6
&&V6 = &RIGHT OF &&V6 6
&&V7 = &RIGHT OF &&V7 6
&NAME = &CONCAT OF SN &M
&&NAME = TOTAL
DISPLAY


* SUCCEEDING YEARS


USE FUNSRC2
MAP DATA 1 YEAR 2 YRNO (LOAD UNLOAD PREVIEW
MAP DATA 3 SN1 4 SF11 5 SF12 6 SF13 (LOAD UNLOAD PREVIEW
MAP DATA 7 SF14 8 SF15 9 SF16 10 SF17 (LOAD UNLOAD PREVIEW
MAP DATA 11 SN2 12 SF21 13 SF22 14 SF23 (LOAD UNLOAD PREVIEW
MAP DATA 15 SF24 16 SF25 17 SF26 18 SF27 (LOAD UNLOAD PREVIEW
MAP DATA 19 SN3 20 SF31 21 SF32 22 SF33 (LOAD UNLOAD PREVIEW
```

```
MAP DATA 23 SF34 24 SF35 25 SF36 26 SF37 (LOAD UNLOAD PREVIEW
MAP DATA 27 SN4 28 SF41 29 SF42 30 SF43 (LOAD UNLOAD PREVIEW
MAP DATA 31 SF44 32 SF45 33 SF46 34 SF47 (LOAD UNLOAD PREVIEW
MAP DATA 35 SN5 36 SF51 37 SF52 38 SF53 (LOAD UNLOAD PREVIEW
MAP DATA 39 SF54 40 SF55 41 SF56 42 SF57 (LOAD UNLOAD PREVIEW
MAP DATA 43 SN6 44 SF61 45 SF62 46 SF63 (LOAD UNLOAD PREVIEW
MAP DATA 47 SF64 48 SF65 49 SF66 50 SF67 (LOAD UNLOAD PREVIEW
MAP DATA 51 SN7 52 SF71 53 SF72 54 SF73 (LOAD UNLOAD PREVIEW
MAP DATA 55 SF74 56 SF75 57 SF76 58 SF77 (LOAD UNLOAD PREVIEW
MAP DATA 59 SN8 60 SF81 61 SF82 62 SF83 (LOAD UNLOAD PREVIEW
MAP DATA 63 SF84 64 SF85 65 SF86 66 SF87 (LOAD UNLOAD PREVIEW
MAP DATA 67 SN9 68 SF91 69 SF92 70 SF93 (LOAD UNLOAD PREVIEW
MAP DATA 71 SF94 72 SF95 73 SF96 74 SF97 (LOAD UNLOAD PREVIEW
MAP DATA 75 SN10 76 SF101 77 SF102 78 SF103 (LOAD UNLOAD PREVIEW
MAP DATA 79 SF104 80 SF105 81 SF106 82 SF107 (LOAD UNLOAD PREVIEW
MAP DATA 83 SN11 84 SF111 85 SF112 86 SF113 (LOAD UNLOAD PREVIEW
MAP DATA 87 SF114 88 SF115 89 SF116 90 SF117 (LOAD UNLOAD PREVIEW
MAP DATA 91 SN12 92 SF121 93 SF122 94 SF123 (LOAD UNLOAD PREVIEW
MAP DATA 95 SF124 96 SF125 97 SF126 98 SF127 (LOAD UNLOAD PREVIEW
MAP DATA 99 SN13 100 SF131 101 SF132 102 SF133 (LOAD UNLOAD PREVIEW
MAP DATA 103 SF134 104 SF135 105 SF136 106 SF137 (LOAD UNLOAD PREVIEW
MAP DATA 107 SN14 108 SF141 109 SF142 110 SF143 (LOAD UNLOAD PREVIEW
MAP DATA 111 SF144 112 SF145 113 SF146 114 SF147 (LOAD UNLOAD PREVIEW
MAP DATA 115 SN15 116 SF151 117 SF152 118 SF153 (LOAD UNLOAD PREVIEW
MAP DATA 119 SF154 120 SF155 121 SF156 122 SF157 (LOAD UNLOAD PREVIEW
MAP DATA 123 SN16 124 SF161 125 SF162 126 SF163 (LOAD UNLOAD PREVIEW
MAP DATA 127 SF164 128 SF165 129 SF166 130 SF167 (LOAD UNLOAD PREVIEW
MAP DATA 131 SN17 132 SF171 133 SF172 134 SF173 (LOAD UNLOAD PREVIEW
MAP DATA 135 SF174 136 SF175 137 SF176 138 SF177 (LOAD UNLOAD PREVIEW
MAP DATA 139 SN18 140 SF181 141 SF182 142 SF183 (LOAD UNLOAD PREVIEW
MAP DATA 143 SF184 144 SF185 145 SF186 146 SF187 (LOAD UNLOAD PREVIEW
MAP DATA 147 SN19 148 SF191 149 SF192 150 SF193 (LOAD UNLOAD PREVIEW
MAP DATA 151 SF194 152 SF195 153 SF196 154 SF197 (LOAD UNLOAD PREVIEW
MAP DATA 155 SN20 156 SF201 157 SF202 158 SF203 (LOAD UNLOAD PREVIEW
MAP DATA 159 SF204 160 SF205 161 SF206 162 SF207 (LOAD UNLOAD PREVIEW

&COMMAND EXECIO &NS DISKR SOURCEN TEMP X 1 (FINIS
&M = 0
&LOOP 3 &NS
&M = &M + 1
&NAME = &CONCAT OF SN &M
&READ STRING &&NAME

&NSRC = &NS + 1
&NAME = &CONCAT OF SN &NSRC
&&NAME = DEFICIT


&N = 1
&NYLEFT = &NY - 1
&LOOP -OPT1YRS &NYLEFT
&N = &N + 1

&COMMAND EXECIO 1 DISKR YEAR TEMP X &N (FINIS
&READ STRING &YEAR

&YRNO = &N
&YRNO = &CONCAT OF &YRNO YR

&M = &N - 1
&NL = &NS + 2
&LN = &MULT OF &NL &M
&LN = &LN + 1
&COMMAND EXECIO &NL DISKR OPTION1 DATA X &LN (FINIS
&M = 0
&LOOP -OPT1YR2 &NSRC
&M = &M + 1
&V1 = &CONCAT OF SF &M 1
&V2 = &CONCAT OF SF &M 2
&V3 = &CONCAT OF SF &M 3
&V4 = &CONCAT OF SF &M 4
&V5 = &CONCAT OF SF &M 5
```

```
&V6 = &CONCAT OF SF &M 6
&V7 = &CONCAT OF SF &M 7
&READ VAR &&V1 &&V2 &&V3 &&V4 &&V5 &&V6 &&V7
&&V1 = &RIGHT OF &&V1 6
&&V2 = &RIGHT OF &&V2 6
&&V3 = &RIGHT OF &&V3 6
&&V4 = &RIGHT OF &&V4 6
&&V5 = &RIGHT OF &&V5 6
&&V6 = &RIGHT OF &&V6 6
&&V7 = &RIGHT OF &&V7 6
-OPT1YR2

&M = &NS + 2
&V1 = &CONCAT OF SF &M 1
&V2 = &CONCAT OF SF &M 2
&V3 = &CONCAT OF SF &M 3
&V4 = &CONCAT OF SF &M 4
&V5 = &CONCAT OF SF &M 5
&V6 = &CONCAT OF SF &M 6
&V7 = &CONCAT OF SF &M 7
&&V1 = _____
&&V2 = _____
&&V3 = _____
&&V4 = _____
&&V5 = _____
&&V6 = _____
&&V7 = _____

&M = &NS + 3
&V1 = &CONCAT OF SF &M 1
&V2 = &CONCAT OF SF &M 2
&V3 = &CONCAT OF SF &M 3
&V4 = &CONCAT OF SF &M 4
&V5 = &CONCAT OF SF &M 5
&V6 = &CONCAT OF SF &M 6
&V7 = &CONCAT OF SF &M 7
&READ VAR &&V1 &&V2 &&V3 &&V4 &&V5 &&V6 &&V7
&&V1 = &RIGHT OF &&V1 6
&&V2 = &RIGHT OF &&V2 6
&&V3 = &RIGHT OF &&V3 6
&&V4 = &RIGHT OF &&V4 6
&&V5 = &RIGHT OF &&V5 6
&&V6 = &RIGHT OF &&V6 6
&&V7 = &RIGHT OF &&V7 6
&NAME = &CONCAT OF SN &M
&&NAME = TOTAL
DISPLAY
-OPT1YRS

&RETURN

*********************************************************************
*   OPTION 2 - FUND REQUIREMENT BY USE
*********************************************************************


-OPTION2

&CALL -OPT2
&GOTO -MENU

-OPT2

* FIRST YEAR

USE FUNUSE1
MAP DATA 1 YEAR  (LOAD UNLOAD PREVIEW
MAP DATA  2  UN1  3  UF11  4  UF12  5  UF13  (LOAD UNLOAD PREVIEW
MAP DATA  6  UF14  7  UF15  8  UF16          (LOAD UNLOAD PREVIEW
MAP DATA  9  UN2  10  UF21  11  UF22  12  UF23  (LOAD UNLOAD PREVIEW
MAP DATA  13  UF24  14  UF25  15  UF26          (LOAD UNLOAD PREVIEW
```

```
MAP DATA 16  UN3 17 UF31 18 UF32 19 UF33  (LOAD UNLOAD PREVIEW
MAP DATA 20 UF34 21 UF35 22 UF36          (LOAD UNLOAD PREVIEW
MAP DATA 23  UN4 24 UF41 25 UF42 26 UF43  (LOAD UNLOAD PREVIEW
MAP DATA 27 UF44 28 UF45 29 UF46          (LOAD UNLOAD PREVIEW
MAP DATA 30  UN5 31 UF51 32 UF52 33 UF53  (LOAD UNLOAD PREVIEW
MAP DATA 34 UF54 35 UF55 36 UF56          (LOAD UNLOAD PREVIEW
MAP DATA 37  UN6 38 UF61 39 UF62 40 UF63  (LOAD UNLOAD PREVIEW
MAP DATA 41 UF64 42 UF65 43 UF66          (LOAD UNLOAD PREVIEW
MAP DATA 44  UN7 45 UF71 46 UF72 47 UF73  (LOAD UNLOAD PREVIEW
MAP DATA 48 UF74 49 UF75 50 UF76          (LOAD UNLOAD PREVIEW
MAP DATA 51  UN8 52 UF81 53 UF82 54 UF83  (LOAD UNLOAD PREVIEW
MAP DATA 55 UF84 56 UF85 57 UF86          (LOAD UNLOAD PREVIEW
MAP DATA 58  UN9 59 UF91 60 UF92 61 UF93  (LOAD UNLOAD PREVIEW
MAP DATA 62 UF94 63 UF95 64 UF96          (LOAD UNLOAD PREVIEW
MAP DATA 65 UN10 66 UF101 67 UF102 68 UF103  (LOAD UNLOAD PREVIEW
MAP DATA 69 UF104 70 UF105 71 UF106          (LOAD UNLOAD PREVIEW
MAP DATA 72 UN11 73 UF111 74 UF112 75 UF113  (LOAD UNLOAD PREVIEW
MAP DATA 76 UF114 77 UF115 78 UF116          (LOAD UNLOAD PREVIEW
MAP DATA 79 UN12 80 UF121 81 UF122 82 UF123  (LOAD UNLOAD PREVIEW
MAP DATA 83 UF124 84 UF125 85 UF126          (LOAD UNLOAD PREVIEW
MAP DATA 86 UN13 87 UF131 88 UF132 89 UF133  (LOAD UNLOAD PREVIEW
MAP DATA 90 UF134 91 UF135 92 UF136          (LOAD UNLOAD PREVIEW
MAP DATA 93 UN14 94 UF141 95 UF142 96 UF143  (LOAD UNLOAD PREVIEW
MAP DATA 97 UF144 98 UF145 99 UF146          (LOAD UNLOAD PREVIEW
MAP DATA 100 UN15 101 UF151 102 UF152 103 UF153  (LOAD UNLOAD PREVIEW
MAP DATA 104 UF154 105 UF155 106 UF156           (LOAD UNLOAD PREVIEW
MAP DATA 107 UN16 108 UF161 109 UF162 110 UF163  (LOAD UNLOAD PREVIEW
MAP DATA 111 UF164 112 UF165 113 UF166           (LOAD UNLOAD PREVIEW
MAP DATA 114 UN17 115 UF171 116 UF172 117 UF173  (LOAD UNLOAD PREVIEW
MAP DATA 118 UF174 119 UF175 120 UF176           (LOAD UNLOAD PREVIEW
MAP DATA 121 UN18 122 UF181 123 UF182 124 UF183  (LOAD UNLOAD PREVIEW
MAP DATA 125 UF184 126 UF185 127 UF186           (LOAD UNLOAD PREVIEW
MAP DATA 128 UN19 129 UF191 130 UF192 131 UF193  (LOAD UNLOAD PREVIEW
MAP DATA 132 UF194 133 UF195 134 UF196           (LOAD UNLOAD PREVIEW
MAP DATA 135 UN20 136 UF201 137 UF202 138 UF203  (LOAD UNLOAD PREVIEW
MAP DATA 139 UF204 140 UF205 141 UF206           (LOAD UNLOAD PREVIEW

&COMMAND EXECIO 1 DISKR INIT TEMP X 1 (FINIS
&READ VAR &NU &NU &NY
&COMMAND EXECIO &NU DISKR USEN TEMP X 1 (FINIS
&M = 0
&LOOP 3 &NU
&M = &M + 1
&NAME = &CONCAT OF UN &M
&READ STRING &&NAME

&COMMAND EXECIO 1 DISKR YEAR TEMP X 1 (FINIS
&READ STRING &YEAR

&NL = &NU + 1
&COMMAND EXECIO &NL DISKR OPTION2 DATA X 1 (FINIS
&M = 0
&LOOP -OPT2YR1 &NU
&M = &M + 1
&V1 = &CONCAT OF UF &M 1
&V2 = &CONCAT OF UF &M 2
&V3 = &CONCAT OF UF &M 3
&V4 = &CONCAT OF UF &M 4
&V5 = &CONCAT OF UF &M 5
&V6 = &CONCAT OF UF &M 6
&READ VAR &&V1 &&V2 &&V3 &&V4 &&V5 &&V6
&&V1 = &RIGHT OF &&V1 6
&&V2 = &RIGHT OF &&V2 6
&&V3 = &RIGHT OF &&V3 6
&&V4 = &RIGHT OF &&V4 6
&&V5 = &RIGHT OF &&V5 6
&&V6 = &RIGHT OF &&V6 6
-OPT2YR1

&M = &NU + 1
&V1 = &CONCAT OF UF &M 1
&V2 = &CONCAT OF UF &M 2
```

```
&V3 = &CONCAT OF UF &M 3
&V4 = &CONCAT OF UF &M 4
&V5 = &CONCAT OF UF &M 5
&V6 = &CONCAT OF UF &M 6
&&V1 = _____
&&V2 = _____
&&V3 = _____
&&V4 = _____
&&V5 = _____
&&V6 = _____

&M = &NU + 2
&V1 = &CONCAT OF UF &M 1
&V2 = &CONCAT OF UF &M 2
&V3 = &CONCAT OF UF &M 3
&V4 = &CONCAT OF UF &M 4
&V5 = &CONCAT OF UF &M 5
&V6 = &CONCAT OF UF &M 6
&READ VAR &&V1 &&V2 &&V3 &&V4 &&V5 &&V6
&&V1 = &RIGHT OF &&V1 6
&&V2 = &RIGHT OF &&V2 6
&&V3 = &RIGHT OF &&V3 6
&&V4 = &RIGHT OF &&V4 6
&&V5 = &RIGHT OF &&V5 6
&&V6 = &RIGHT OF &&V6 6
&NAME = &CONCAT OF UN &M
&&NAME = TOTAL
DISPLAY

* SUCCEEDING YEARS

USE FUNUSE2
MAP DATA 1 YEAR 2 YRNO (LOAD UNLOAD PREVIEW
MAP DATA 3 UN1 4 UF11 5 UF12 6 UF13 (LOAD UNLOAD PREVIEW
MAP DATA 7 UF14 8 UF15 9 UF16 10 UF17 (LOAD UNLOAD PREVIEW
MAP DATA 11 UN2 12 UF21 13 UF22 14 UF23 (LOAD UNLOAD PREVIEW
MAP DATA 15 UF24 16 UF25 17 UF26 18 UF27 (LOAD UNLOAD PREVIEW
MAP DATA 19 UN3 20 UF31 21 UF32 22 UF33 (LOAD UNLOAD PREVIEW
MAP DATA 23 UF34 24 UF35 25 UF36 26 UF37 (LOAD UNLOAD PREVIEW
MAP DATA 27 UN4 28 UF41 29 UF42 30 UF43 (LOAD UNLOAD PREVIEW
MAP DATA 31 UF44 32 UF45 33 UF46 34 UF47 (LOAD UNLOAD PREVIEW
MAP DATA 35 UN5 36 UF51 37 UF52 38 UF53 (LOAD UNLOAD PREVIEW
MAP DATA 39 UF54 40 UF55 41 UF56 42 UF57 (LOAD UNLOAD PREVIEW
MAP DATA 43 UN6 44 UF61 45 UF62 46 UF63 (LOAD UNLOAD PREVIEW
MAP DATA 47 UF64 48 UF65 49 UF66 50 UF67 (LOAD UNLOAD PREVIEW
MAP DATA 51 UN7 52 UF71 53 UF72 54 UF73 (LOAD UNLOAD PREVIEW
MAP DATA 55 UF74 56 UF75 57 UF76 58 UF77 (LOAD UNLOAD PREVIEW
MAP DATA 59 UN8 60 UF81 61 UF82 62 UF83 (LOAD UNLOAD PREVIEW
MAP DATA 63 UF84 64 UF85 65 UF86 66 UF87 (LOAD UNLOAD PREVIEW
MAP DATA 67 UN9 68 UF91 69 UF92 70 UF93 (LOAD UNLOAD PREVIEW
MAP DATA 71 UF94 72 UF95 73 UF96 74 UF97 (LOAD UNLOAD PREVIEW
MAP DATA 75 UN10 76 UF101 77 UF102 78 UF103 (LOAD UNLOAD PREVIEW
MAP DATA 79 UF104 80 UF105 81 UF106 82 UF107 (LOAD UNLOAD PREVIEW
MAP DATA 83 UN11 84 UF111 85 UF112 86 UF113 (LOAD UNLOAD PREVIEW
MAP DATA 87 UF114 88 UF115 89 UF116 90 UF117 (LOAD UNLOAD PREVIEW
MAP DATA 91 UN12 92 UF121 93 UF122 94 UF123 (LOAD UNLOAD PREVIEW
MAP DATA 95 UF124 96 UF125 97 UF126 98 UF127 (LOAD UNLOAD PREVIEW
MAP DATA 99 UN13 100 UF131 101 UF132 102 UF133 (LOAD UNLOAD PREVIEW
MAP DATA 103 UF134 104 UF135 105 UF136 106 UF137 (LOAD UNLOAD PREVIEW
MAP DATA 107 UN14 108 UF141 109 UF142 110 UF143 (LOAD UNLOAD PREVIEW
MAP DATA 111 UF144 112 UF145 113 UF146 114 UF147 (LOAD UNLOAD PREVIEW
MAP DATA 115 UN15 116 UF151 117 UF152 118 UF153 (LOAD UNLOAD PREVIEW
MAP DATA 119 UF154 120 UF155 121 UF156 122 UF157 (LOAD UNLOAD PREVIEW
MAP DATA 123 UN16 124 UF161 125 UF162 126 UF163 (LOAD UNLOAD PREVIEW
MAP DATA 127 UF164 128 UF165 129 UF166 130 UF167 (LOAD UNLOAD PREVIEW
MAP DATA 131 UN17 132 UF171 133 UF172 134 UF173 (LOAD UNLOAD PREVIEW
MAP DATA 135 UF174 136 UF175 137 UF176 138 UF177 (LOAD UNLOAD PREVIEW
MAP DATA 139 UN18 140 UF181 141 UF182 142 UF183 (LOAD UNLOAD PREVIEW
MAP DATA 143 UF184 144 UF185 145 UF186 146 UF187 (LOAD UNLOAD PREVIEW
MAP DATA 147 UN19 148 UF191 149 UF192 150 UF193 (LOAD UNLOAD PREVIEW
```

```
MAP DATA 151 UF194 152 UF195 153 UF196 154 UF197  (LOAD UNLOAD PREVIEW
MAP DATA 155  UN20 156 UF201 157 UF202 158 UF203  (LOAD UNLOAD PREVIEW
MAP DATA 159 UF204 160 UF205 161 UF206 162 UF207  (LOAD UNLOAD PREVIEW

&COMMAND EXECIO &NU DISKR USEN   TEMP X 1 (FINIS
&M = 0
&LOOP 3 &NU
&M = &M + 1
&NAME = &CONCAT OF UN &M
&READ STRING &&NAME


&N = 1
&NYLEFT = &NY - 1
&LOOP -OPT2YRS &NYLEFT
&N = &N + 1

&COMMAND EXECIO 1 DISKR YEAR TEMP X &N (FINIS
&READ STRING &YEAR

&YRNO = &N
&YRNO = &CONCAT OF &YRNO YR

&M = &N - 1
&NL = &NU + 1
&LN = &MULT OF &NL &M
&LN = &LN + 1
&COMMAND EXECIO &NL DISKR OPTION2 DATA X &LN (FINIS
&M = 0
&LOOP -OPT2YR2 &NU
&M = &M + 1
&V1 = &CONCAT OF UF &M 1
&V2 = &CONCAT OF UF &M 2
&V3 = &CONCAT OF UF &M 3
&V4 = &CONCAT OF UF &M 4
&V5 = &CONCAT OF UF &M 5
&V6 = &CONCAT OF UF &M 6
&V7 = &CONCAT OF UF &M 7
&READ VAR &&V1 &&V2 &&V3 &&V4 &&V5 &&V6 &&V7
&&V1 = &RIGHT OF &&V1 6
&&V2 = &RIGHT OF &&V2 6
&&V3 = &RIGHT OF &&V3 6
&&V4 = &RIGHT OF &&V4 6
&&V5 = &RIGHT OF &&V5 6
&&V6 = &RIGHT OF &&V6 6
&&V7 = &RIGHT OF &&V7 6
-OPT2YR2

&M = &NU + 1
&V1 = &CONCAT OF UF &M 1
&V2 = &CONCAT OF UF &M 2
&V3 = &CONCAT OF UF &M 3
&V4 = &CONCAT OF UF &M 4
&V5 = &CONCAT OF UF &M 5
&V6 = &CONCAT OF UF &M 6
&V7 = &CONCAT OF UF &M 7
&&V1 = _____
&&V2 = _____
&&V3 = _____
&&V4 = _____
&&V5 = _____
&&V6 = _____
&&V7 = _____

&M = &NU + 2
&V1 = &CONCAT OF UF &M 1
&V2 = &CONCAT OF UF &M 2
&V3 = &CONCAT OF UF &M 3
&V4 = &CONCAT OF UF &M 4
&V5 = &CONCAT OF UF &M 5
&V6 = &CONCAT OF UF &M 6
&V7 = &CONCAT OF UF &M 7
```

```
&READ VAR &&V1 &&V2 &&V3 &&V4 &&V5 &&V6 &&V7
&&V1 = &RIGHT OF &&V1 6
&&V2 = &RIGHT OF &&V2 6
&&V3 = &RIGHT OF &&V3 6
&&V4 = &RIGHT OF &&V4 6
&&V5 = &RIGHT OF &&V5 6
&&V6 = &RIGHT OF &&V6 6
&&V7 = &RIGHT OF &&V7 6
&NAME = &CONCAT OF UN &M
&&NAME = TOTAL
DISPLAY
-OPT2YRS

&RETURN


*******************************************************************
*   OPTION 3 - SOURCE EXPENDITURES
*******************************************************************


-OPTION3


&CALL -OPT3
&GOTO -MENU

-OPT3

*   SELECT SOURCE

&COMMAND EXECIO 1 DISKR INIT TEMP X 1 (FINIS
&READ VAR &NS &NU &NY

&COMMAND EXECIO &NS DISKR SOURCEN TEMP X 1 (FINIS
&M = 0
&LOOP 3 &NS
&M = &M + 1
&NAME = &CONCAT OF SNAM &M
&READ STRING &&NAME

&COMMAND EXECIO &NU DISKR USEN    TEMP X 1 (FINIS
&M = 0
&LOOP 3 &NU
&M = &M + 1
&NAME = &CONCAT OF UNAM &M
&READ STRING &&NAME

-SELSRC

&QUIT = NO

USE SELSRC
MAP DATA  1  SN1  2  SN2  3 SN3  4  SN4  5  SN5  (LOAD UNLOAD PREVIEW
MAP DATA  6  SN6  7  SN7  8 SN8  9  SN9  10 SN10 (LOAD UNLOAD PREVIEW
MAP DATA 11 SN11 12 SN12 13 SN13 14 SN14 15 SN15 (LOAD UNLOAD PREVIEW
MAP DATA 16 SN16 17 SN17 18 SN18 19 SN19 20 SN20 (LOAD UNLOAD PREVIEW
MAP DATA 21 ECODE                                (LOAD UNLOAD PREVIEW

&NSRC = &NS + 1

&M = 0
&LOOP 5 &NS
&M = &M + 1
&NAME = &CONCAT OF SN &M
&NAME1 = &CONCAT OF SNAM &M
&&NAME = &&NAME1
&&NAME = &CONCAT OF &BLANK &&NAME

&NAME = &CONCAT OF SN &NSRC
&&NAME = &CONCAT OF &BLANK DEFICIT
```

```
&ALLS = &NSRC + 1
&NAME = &CONCAT OF SN &ALLS
&&NAME = &CONCAT OF &BLANK ALL &BLANK SOURCES

&TEMPN = &ALLS

&IF &TEMPN GE 20 &GOTO -DISPSRC
&TEMPN = &TEMPN + 1
&NAME = &CONCAT OF SN &TEMPN
SET &NAME (PRO
&SKIP -4

-DISPSRC
&SN = 0
DISPLAY

&IF &RSTATUS = PF10 &RETURN
&IF &RCURSOR = SN1 &SN = 1
&IF &RCURSOR = SN2 &SN = 2
&IF &RCURSOR = SN3 &SN = 3
&IF &RCURSOR = SN4 &SN = 4
&IF &RCURSOR = SN5 &SN = 5
&IF &RCURSOR = SN6 &SN = 6
&IF &RCURSOR = SN7 &SN = 7
&IF &RCURSOR = SN8 &SN = 8
&IF &RCURSOR = SN9 &SN = 9
&IF &RCURSOR = SN10 &SN = 10
&IF &RCURSOR = SN11 &SN = 11
&IF &RCURSOR = SN12 &SN = 12
&IF &RCURSOR = SN13 &SN = 13
&IF &RCURSOR = SN14 &SN = 14
&IF &RCURSOR = SN15 &SN = 15
&IF &RCURSOR = SN16 &SN = 16
&IF &RCURSOR = SN17 &SN = 17
&IF &RCURSOR = SN18 &SN = 18
&IF &RCURSOR = SN19 &SN = 19
&IF &RCURSOR = SN20 &SN = 20
&IF &RSTATUS EQ ENTER &GOTO -SRCSLCTD
&ECODE = &STRING OF UNDEFINED PF KEY!
SIGNAL
&GOTO -DISPSRC

-SRCSLCTD
&IF &SN NE &ALLS &GOTO -SPECSRC
&M = 0
&LOOP -ALLSRC &NSRC
&M = &M + 1
&CALL -OPT3SUB
&IF .&QUIT EQ .YES &GOTO -SELSRC
-ALLSRC

&GOTO -SELSRC

-SPECSRC
&M = &SN
&CALL -OPT3SUB
&GOTO -SELSRC

-OPT3SUB

USE EXPUSE1
MAP DATA 1 SNAME 2 YEAR                    (LOAD UNLOAD PREVIEW
MAP DATA  3 DF11  4 DF12  5 DF13  6 DF14  7 DF15   (LOAD UNLOAD PREVIEW
MAP DATA  8 DF21  9 DF22 10 DF23 11 DF24 12 DF25   (LOAD UNLOAD PREVIEW
MAP DATA 13 DF31 14 DF32 15 DF33 16 DF34 17 DF35   (LOAD UNLOAD PREVIEW
MAP DATA  18  UN1  19  UF11  20  UF12  21  UF13  (LOAD UNLOAD PREVIEW
MAP DATA  22  UF14  23  UF15  24  UF16          (LOAD UNLOAD PREVIEW
MAP DATA  25  UN2  26  UF21  27  UF22  28  UF23  (LOAD UNLOAD PREVIEW
MAP DATA  29  UF24  30  UF25  31  UF26          (LOAD UNLOAD PREVIEW
MAP DATA  32  UN3  33  UF31  34  UF32  35  UF33  (LOAD UNLOAD PREVIEW
MAP DATA  36  UF34  37  UF35  38  UF36          (LOAD UNLOAD PREVIEW
MAP DATA  39  UN4  40  UF41  41  UF42  42  UF43  (LOAD UNLOAD PREVIEW
```

```
MAP DATA 43 UF44 44 UF45 45 UF46          (LOAD UNLOAD PREVIEW
MAP DATA 46  UN5 47 UF51 48 UF52 49 UF53  (LOAD UNLOAD PREVIEW
MAP DATA 50 UF54 51 UF55 52 UF56          (LOAD UNLOAD PREVIEW
MAP DATA 53  UN6 54 UF61 55 UF62 56 UF63  (LOAD UNLOAD PREVIEW
MAP DATA 57 UF64 58 UF65 59 UF66          (LOAD UNLOAD PREVIEW
MAP DATA 60  UN7 61 UF71 62 UF72 63 UF73  (LOAD UNLOAD PREVIEW
MAP DATA 64 UF74 65 UF75 66 UF76          (LOAD UNLOAD PREVIEW
MAP DATA 67  UN8 68 UF81 69 UF82 70 UF83  (LOAD UNLOAD PREVIEW
MAP DATA 71 UF84 72 UF85 73 UF86          (LOAD UNLOAD PREVIEW
MAP DATA 74  UN9 75 UF91 76 UF92 77 UF93  (LOAD UNLOAD PREVIEW
MAP DATA 78 UF94 79 UF95 80 UF96          (LOAD UNLOAD PREVIEW
MAP DATA 81 UN10 82 UF101 83 UF102 84 UF103  (LOAD UNLOAD PREVIEW
MAP DATA 85 UF104 86 UF105 87 UF106          (LOAD UNLOAD PREVIEW
MAP DATA 88 UN11 89 UF111 90 UF112 91 UF113  (LOAD UNLOAD PREVIEW
MAP DATA 92 UF114 93 UF115 94 UF116          (LOAD UNLOAD PREVIEW
MAP DATA 95 UN12 96 UF121 97 UF122 98 UF123  (LOAD UNLOAD PREVIEW
MAP DATA 99 UF124 100 UF125 101 UF126        (LOAD UNLOAD PREVIEW
MAP DATA 102 UN13 103 UF131 104 UF132 105 UF133  (LOAD UNLOAD PREVIEW
MAP DATA 106 UF134 107 UF135 108 UF136       (LOAD UNLOAD PREVIEW
MAP DATA 109 UN14 110 UF141 111 UF142 112 UF143  (LOAD UNLOAD PREVIEW
MAP DATA 113 UF144 114 UF145 115 UF146       (LOAD UNLOAD PREVIEW
MAP DATA 116 UN15 117 UF151 118 UF152 119 UF153  (LOAD UNLOAD PREVIEW
MAP DATA 120 UF154 121 UF155 122 UF156       (LOAD UNLOAD PREVIEW
MAP DATA 123 ECODE                       (LOAD UNLOAD PREVIEW

&NAME = &CONCAT OF SN &M
&SNAME = &&NAME

&COMMAND EXECIO 1 DISKR YEAR TEMP X 1 (FINIS
&READ STRING &YEAR

&N = &M - 1
&N1 = &NU + 5
&LN = &MULT OF &N &N1
&LN = &MULT OF &LN &NY
&LN = &LN + 1

&COMMAND EXECIO &N1 DISKR OPTION3  DATA X &LN (FINIS

&N = 0
&LOOP -OPT31YR1 3
&N = &N + 1
&V1 = &CONCAT OF DF &N 1
&V2 = &CONCAT OF DF &N 2
&V3 = &CONCAT OF DF &N 3
&V4 = &CONCAT OF DF &N 4
&V5 = &CONCAT OF DF &N 5
&READ VAR &&V1 &&V2 &&V3 &&V4 &&V5
&&V1 = &RIGHT OF &&V1 6
&&V2 = &RIGHT OF &&V2 6
&&V3 = &RIGHT OF &&V3 6
&&V4 = &RIGHT OF &&V4 6
&&V5 = &RIGHT OF &&V5 6
-OPT31YR1

&J = 0
&LOOP 3 &NU
&J = &J + 1
&NAME = &CONCAT OF I &J
&&NAME = 0

&N = 0
&J = 0
&LOOP -OPT32YR1 &NU
&N = &N + 1
&READ VAR &VV1 &VV2 &VV3 &VV4 &VV5 &VV6
&IF .&VV1 EQ .0 &GOTO -OPT32YR1

&NAME = &CONCAT OF I &N
&&NAME = 1
&J = &J + 1
&NAME = &CONCAT OF UN &J
```

```
&NAME1 = &CONCAT OF UNAM &N
&&NAME = &&NAME1

&V1 = &CONCAT OF UF &J 1
&V2 = &CONCAT OF UF &J 2
&V3 = &CONCAT OF UF &J 3
&V4 = &CONCAT OF UF &J 4
&V5 = &CONCAT OF UF &J 5
&V6 = &CONCAT OF UF &J 6

&&V1 = &VV1
&&V2 = &VV2
&&V3 = &VV3
&&V4 = &VV4
&&V5 = &VV5
&&V6 = &VV6

&&V1 = &RIGHT OF &&V1 6
&&V2 = &RIGHT OF &&V2 6
&&V3 = &RIGHT OF &&V3 6
&&V4 = &RIGHT OF &&V4 6
&&V5 = &RIGHT OF &&V5 6
&&V6 = &RIGHT OF &&V6 6

-OPT32YR1

&N = &J + 1
&V1 = &CONCAT OF UF &N 1
&V2 = &CONCAT OF UF &N 2
&V3 = &CONCAT OF UF &N 3
&V4 = &CONCAT OF UF &N 4
&V5 = &CONCAT OF UF &N 5
&V6 = &CONCAT OF UF &N 6
&&V1 = ------
&&V2 = ------
&&V3 = ------
&&V4 = ------
&&V5 = ------
&&V6 = ------

&N = &J + 2
&V1 = &CONCAT OF UF &N 1
&V2 = &CONCAT OF UF &N 2
&V3 = &CONCAT OF UF &N 3
&V4 = &CONCAT OF UF &N 4
&V5 = &CONCAT OF UF &N 5
&V6 = &CONCAT OF UF &N 6
&READ VAR &&V1 &&V2 &&V3 &&V4 &&V5 &&V6
&&V1 = &RIGHT OF &&V1 6
&&V2 = &RIGHT OF &&V2 6
&&V3 = &RIGHT OF &&V3 6
&&V4 = &RIGHT OF &&V4 6
&&V5 = &RIGHT OF &&V5 6
&&V6 = &RIGHT OF &&V6 6
&NAME = &CONCAT OF UN &N
&&NAME = TOTAL

&N = &J + 3
&V2 = &CONCAT OF UF &N 2
&V3 = &CONCAT OF UF &N 3
&V4 = &CONCAT OF UF &N 4
&V5 = &CONCAT OF UF &N 5
&V6 = &CONCAT OF UF &N 6
&&V2 = = = = = = =
&&V3 = = = = = = =
&&V4 = = = = = = =
&&V5 = = = = = = =
&&V6 = = = = = = =

&N = &J + 4
&V2 = &CONCAT OF UF &N 2
&V3 = &CONCAT OF UF &N 3
```

```
&V4 = &CONCAT OF UF &N 4
&V5 = &CONCAT OF UF &N 5
&V6 = &CONCAT OF UF &N 6
&READ VAR &&V2 &&V3 &&V4 &&V5 &&V6
&&V2 = &RIGHT OF &&V2 6
&&V3 = &RIGHT OF &&V3 6
&&V4 = &RIGHT OF &&V4 6
&&V5 = &RIGHT OF &&V5 6
&&V6 = &RIGHT OF &&V6 6
&NAME = &CONCAT OF UN &N
&&NAME = &CONCAT OF ENDING &BLANK BALANCE

DISPLAY
&IF &RSTATUS = PF10 &GOTO -OPT3QUIT
&IF &RSTATUS EQ ENTER &GOTO -OPT3CONT
&ECODE = &STRING OF UNDEFINED PF KEY!
SIGNAL
&SKIP -5

-OPT3CONT

&YR = 1
&YRLEFT = &NY - 1
&LOOP -OPT3YRL &YRLEFT
&YR = &YR + 1

USE EXPUSE2
MAP DATA 1 SNAME 2 YEAR                    (LOAD UNLOAD PREVIEW
MAP DATA  3 DF11  4 DF12  5 DF13  6 DF14  7 DF15   (LOAD UNLOAD PREVIEW
MAP DATA  8 DF21  9 DF22 10 DF23 11 DF24 12 DF25   (LOAD UNLOAD PREVIEW
MAP DATA 13 DF31 14 DF32 15 DF33 16 DF34 17 DF35   (LOAD UNLOAD PREVIEW
MAP DATA 18 YRNO                           (LOAD UNLOAD PREVIEW
MAP DATA  19  UN1  20  UF11  21  UF12  22  UF13  (LOAD UNLOAD PREVIEW
MAP DATA  23  UF14  24  UF15  25  UF16  26  UF17  (LOAD UNLOAD PREVIEW
MAP DATA  27  UN2  28  UF21  29  UF22  30  UF23  (LOAD UNLOAD PREVIEW
MAP DATA  31  UF24  32  UF25  33  UF26  34  UF27  (LOAD UNLOAD PREVIEW
MAP DATA  35  UN3  36  UF31  37  UF32  38  UF33  (LOAD UNLOAD PREVIEW
MAP DATA  39  UF34  40  UF35  41  UF36  42  UF37  (LOAD UNLOAD PREVIEW
MAP DATA  43  UN4  44  UF41  45  UF42  46  UF43  (LOAD UNLOAD PREVIEW
MAP DATA  47  UF44  48  UF45  49  UF46  50  UF47  (LOAD UNLOAD PREVIEW
MAP DATA  51  UN5  52  UF51  53  UF52  54  UF53  (LOAD UNLOAD PREVIEW
MAP DATA  55  UF54  56  UF55  57  UF56  58  UF57  (LOAD UNLOAD PREVIEW
MAP DATA  59  UN6  60  UF61  61  UF62  62  UF63  (LOAD UNLOAD PREVIEW
MAP DATA  63  UF64  64  UF65  65  UF66  66  UF67  (LOAD UNLOAD PREVIEW
MAP DATA  67  UN7  68  UF71  69  UF72  70  UF73  (LOAD UNLOAD PREVIEW
MAP DATA  71  UF74  72  UF75  73  UF76  74  UF77  (LOAD UNLOAD PREVIEW
MAP DATA  75  UN8  76  UF81  77  UF82  78  UF83  (LOAD UNLOAD PREVIEW
MAP DATA  79  UF84  80  UF85  81  UF86  82  UF87  (LOAD UNLOAD PREVIEW
MAP DATA  83  UN9  84  UF91  85  UF92  86  UF93  (LOAD UNLOAD PREVIEW
MAP DATA  87  UF94  88  UF95  89  UF96  90  UF97  (LOAD UNLOAD PREVIEW
MAP DATA  91  UN10  92 UF101  93 UF102  94 UF103  (LOAD UNLOAD PREVIEW
MAP DATA  95 UF104  96 UF105  97 UF106  98 UF107  (LOAD UNLOAD PREVIEW
MAP DATA  99  UN11 100 UF111 101 UF112 102 UF113  (LOAD UNLOAD PREVIEW
MAP DATA 103 UF114 104 UF115 105 UF116 106 UF117  (LOAD UNLOAD PREVIEW
MAP DATA 107  UN12 108 UF121 109 UF122 110 UF123  (LOAD UNLOAD PREVIEW
MAP DATA 111 UF124 112 UF125 113 UF126 114 UF127  (LOAD UNLOAD PREVIEW
MAP DATA 115  UN13 116 UF131 117 UF132 118 UF133  (LOAD UNLOAD PREVIEW
MAP DATA 119 UF134 120 UF135 121 UF136 122 UF137  (LOAD UNLOAD PREVIEW
MAP DATA 123  UN14 124 UF141 125 UF142 126 UF143  (LOAD UNLOAD PREVIEW
MAP DATA 127 UF144 128 UF145 129 UF146 130 UF147  (LOAD UNLOAD PREVIEW
MAP DATA 131  UN15 132 UF151 133 UF152 134 UF153  (LOAD UNLOAD PREVIEW
MAP DATA 135 UF154 136 UF155 137 UF156 138 UF157  (LOAD UNLOAD PREVIEW
MAP DATA 139 ECODE                         (LOAD UNLOAD PREVIEW

&NAME = &CONCAT OF SN &M
&SNAME = &&NAME

&COMMAND EXECIO 1 DISKR YEAR TEMP X &YR (FINIS
&READ STRING &YEAR

&YRNO = &CONCAT OF &YR YR
```

```
&N = &M - 1
&N1 = &NU + 5
&N2 = &YR - 1
&N3 = &MULT OF &N1 &N2
&LN = &MULT OF &N &N1
&LN = &MULT OF &LN &NY
&LN = &LN + &N3
&LN = &LN + 1

&COMMAND EXECIO &N1 DISKR OPTION3  DATA X &LN (FINIS

&N = 0
&LOOP -OPT31YRL 3
&N = &N + 1
&V1 = &CONCAT OF DF &N 1
&V2 = &CONCAT OF DF &N 2
&V3 = &CONCAT OF DF &N 3
&V4 = &CONCAT OF DF &N 4
&V5 = &CONCAT OF DF &N 5
&READ VAR &&V1 &&V2 &&V3 &&V4 &&V5
&&V1 = &RIGHT OF &&V1 6
&&V2 = &RIGHT OF &&V2 6
&&V3 = &RIGHT OF &&V3 6
&&V4 = &RIGHT OF &&V4 6
&&V5 = &RIGHT OF &&V5 6
-OPT31YRL


&N = 0
&J = 0
&LOOP -OPT32YRL &NU
&N = &N + 1
&READ VAR &VV1 &VV2 &VV3 &VV4 &VV5 &VV6 &VV7
&NAME = &CONCAT OF I &N
&IF .&&NAME EQ .0 &GOTO -OPT32YRL

&J = &J + 1
&NAME = &CONCAT OF UN &J
&NAME1 = &CONCAT OF UNAM &N
&&NAME = &&NAME1

&V1 = &CONCAT OF UF &J 1
&V2 = &CONCAT OF UF &J 2
&V3 = &CONCAT OF UF &J 3
&V4 = &CONCAT OF UF &J 4
&V5 = &CONCAT OF UF &J 5
&V6 = &CONCAT OF UF &J 6
&V7 = &CONCAT OF UF &J 7

&&V1 = &VV1
&&V2 = &VV2
&&V3 = &VV3
&&V4 = &VV4
&&V5 = &VV5
&&V6 = &VV6
&&V7 = &VV7

&&V1 = &RIGHT OF &&V1 6
&&V2 = &RIGHT OF &&V2 6
&&V3 = &RIGHT OF &&V3 6
&&V4 = &RIGHT OF &&V4 6
&&V5 = &RIGHT OF &&V5 6
&&V6 = &RIGHT OF &&V6 6
&&V7 = &RIGHT OF &&V7 6

-OPT32YRL

&N = &J + 1
&V1 = &CONCAT OF UF &N 1
&V2 = &CONCAT OF UF &N 2
&V3 = &CONCAT OF UF &N 3
&V4 = &CONCAT OF UF &N 4
```

```
&V5 = &CONCAT OF UF &N 5
&V6 = &CONCAT OF UF &N 6
&V7 = &CONCAT OF UF &N 7
&&V1 = ------
&&V2 = ------
&&V3 = ------
&&V4 = ------
&&V5 = ------
&&V6 = ------
&&V7 = ------

&N = &J + 2
&V1 = &CONCAT OF UF &N 1
&V2 = &CONCAT OF UF &N 2
&V3 = &CONCAT OF UF &N 3
&V4 = &CONCAT OF UF &N 4
&V5 = &CONCAT OF UF &N 5
&V6 = &CONCAT OF UF &N 6
&V7 = &CONCAT OF UF &N 7
&READ VAR &&V1 &&V2 &&V3 &&V4 &&V5 &&V6 &&V7
&&V1 = &RIGHT OF &&V1 6
&&V2 = &RIGHT OF &&V2 6
&&V3 = &RIGHT OF &&V3 6
&&V4 = &RIGHT OF &&V4 6
&&V5 = &RIGHT OF &&V5 6
&&V6 = &RIGHT OF &&V6 6
&&V7 = &RIGHT OF &&V7 6
&NAME = &CONCAT OF UN &N
&&NAME = TOTAL

&N = &J + 3
&V2 = &CONCAT OF UF &N 2
&V3 = &CONCAT OF UF &N 3
&V4 = &CONCAT OF UF &N 4
&V5 = &CONCAT OF UF &N 5
&V6 = &CONCAT OF UF &N 6
&&V2 = = = = = = =
&&V3 = = = = = = =
&&V4 = = = = = = =
&&V5 = = = = = = =
&&V6 = = = = = = =

&N = &J + 4
&V2 = &CONCAT OF UF &N 2
&V3 = &CONCAT OF UF &N 3
&V4 = &CONCAT OF UF &N 4
&V5 = &CONCAT OF UF &N 5
&V6 = &CONCAT OF UF &N 6
&READ VAR &&V2 &&V3 &&V4 &&V5 &&V6
&&V2 = &RIGHT OF &&V2 6
&&V3 = &RIGHT OF &&V3 6
&&V4 = &RIGHT OF &&V4 6
&&V5 = &RIGHT OF &&V5 6
&&V6 = &RIGHT OF &&V6 6
&NAME = &CONCAT OF UN &N
&&NAME = &CONCAT OF ENDING &BLANK BALANCE

DISPLAY
&IF &RSTATUS = PF10 &GOTO -OPT3QUIT
&IF &RSTATUS EQ ENTER &GOTO -OPT3YRL
&ECODE = &STRING OF UNDEFINED PF KEY!
SIGNAL
&SKIP -5

-OPT3YRL

&RETURN

-OPT3QUIT
&QUIT = YES

&RETURN
```

```
*********************************************************************
*   OPTION 4 - SOURCE EXPENDITURES
*********************************************************************


-OPTION4


&CALL -OPT4
&GOTO -MENU

-OPT4

*   SELECT USE

&COMMAND EXECIO 1 DISKR INIT TEMP X 1 (FINIS
&READ VAR &NS &NU &NY

&COMMAND EXECIO &NS DISKR SOURCEN TEMP X 1 (FINIS
&M = 0
&LOOP 3 &NS
&M = &M + 1
&NAME = &CONCAT OF SNAM &M
&READ STRING &&NAME

&NSRC = &M + 1
&NAME = &CONCAT OF SNAM &NSRC
&&NAME = DEFICIT

&COMMAND EXECIO &NU DISKR USEN    TEMP X 1 (FINIS
&M = 0
&LOOP 3 &NU
&M = &M + 1
&NAME = &CONCAT OF UNAM &M
&READ STRING &&NAME

-SELUSE

&QUIT = NO

USE SELUSE
MAP DATA  1  UN1  2  UN2  3 UN3  4  UN4  5  UN5  (LOAD UNLOAD PREVIEW
MAP DATA  6  UN6  7  UN7  8 UN8  9  UN9  10 UN10 (LOAD UNLOAD PREVIEW
MAP DATA 11 UN11 12 UN12 13 UN13 14 UN14 15 UN15 (LOAD UNLOAD PREVIEW
MAP DATA 16 UN16 17 UN17 18 UN18 19 UN19 20 UN20 (LOAD UNLOAD PREVIEW
MAP DATA 21 ECODE                               (LOAD UNLOAD PREVIEW

&M = 0
&LOOP 5 &NU
&M = &M + 1
&NAME = &CONCAT OF UN &M
&NAME1 = &CONCAT OF UNAM &M
&&NAME = &&NAME1
&&NAME = &CONCAT OF &BLANK &&NAME

&ALLU = &NU + 1
&NAME = &CONCAT OF UN &ALLU
&&NAME = &CONCAT OF &BLANK ALL &BLANK USES

&TEMPN = &ALLU

&IF &TEMPN GE 20 &GOTO -DISPUSE
&TEMPN = &TEMPN + 1
&NAME = &CONCAT OF UN &TEMPN
SET &NAME (PRO
&SKIP -4

-DISPUSE
&UN = 0
```

```
DISPLAY

&IF &RSTATUS = PF10 &RETURN
&IF &RCURSOR = UN1 &UN = 1
&IF &RCURSOR = UN2 &UN = 2
&IF &RCURSOR = UN3 &UN = 3
&IF &RCURSOR = UN4 &UN = 4
&IF &RCURSOR = UN5 &UN = 5
&IF &RCURSOR = UN6 &UN = 6
&IF &RCURSOR = UN7 &UN = 7
&IF &RCURSOR = UN8 &UN = 8
&IF &RCURSOR = UN9 &UN = 9
&IF &RCURSOR = UN10 &UN = 10
&IF &RCURSOR = UN11 &UN = 11
&IF &RCURSOR = UN12 &UN = 12
&IF &RCURSOR = UN13 &UN = 13
&IF &RCURSOR = UN14 &UN = 14
&IF &RCURSOR = UN15 &UN = 15
&IF &RCURSOR = UN16 &UN = 16
&IF &RCURSOR = UN17 &UN = 17
&IF &RCURSOR = UN18 &UN = 18
&IF &RCURSOR = UN19 &UN = 19
&IF &RCURSOR = UN20 &UN = 20
&IF &RSTATUS EQ ENTER &GOTO -USESLCTD
&ECODE = &STRING OF UNDEFINED PF KEY!
SIGNAL
&GOTO -DISPUSE

-USESLCTD
&IF &UN NE &ALLU &GOTO -SPECUSE
&M = 0
&LOOP -ALLUSE &NU
&M = &M + 1
&CALL -OPT4SUB
&IF .&QUIT EQ .YES &GOTO -SELUSE
-ALLUSE

&GOTO -SELUSE

-SPECUSE
&M = &UN
&CALL -OPT4SUB
&GOTO -SELUSE

-OPT4SUB

USE EXPSRC1
MAP DATA 1 UNAME 2 YEAR                    (LOAD UNLOAD PREVIEW
MAP DATA  3  SN1  4 SF11  5 SF12  6 SF13  (LOAD UNLOAD PREVIEW
MAP DATA  7 SF14  8 SF15  9 SF16          (LOAD UNLOAD PREVIEW
MAP DATA 10  SN2 11 SF21 12 SF22 13 SF23  (LOAD UNLOAD PREVIEW
MAP DATA 14 SF24 15 SF25 16 SF26          (LOAD UNLOAD PREVIEW
MAP DATA 17  SN3 18 SF31 19 SF32 20 SF33  (LOAD UNLOAD PREVIEW
MAP DATA 21 SF34 22 SF35 23 SF36          (LOAD UNLOAD PREVIEW
MAP DATA 24  SN4 25 SF41 26 SF42 27 SF43  (LOAD UNLOAD PREVIEW
MAP DATA 28 SF44 29 SF45 30 SF46          (LOAD UNLOAD PREVIEW
MAP DATA 31  SN5 32 SF51 33 SF52 34 SF53  (LOAD UNLOAD PREVIEW
MAP DATA 35 SF54 36 SF55 37 SF56          (LOAD UNLOAD PREVIEW
MAP DATA 38  SN6 39 SF61 40 SF62 41 SF63  (LOAD UNLOAD PREVIEW
MAP DATA 42 SF64 43 SF65 44 SF66          (LOAD UNLOAD PREVIEW
MAP DATA 45  SN7 46 SF71 47 SF72 48 SF73  (LOAD UNLOAD PREVIEW
MAP DATA 49 SF74 50 SF75 51 SF76          (LOAD UNLOAD PREVIEW
MAP DATA 52  SN8 53 SF81 54 SF82 55 SF83  (LOAD UNLOAD PREVIEW
MAP DATA 56 SF84 57 SF85 58 SF86          (LOAD UNLOAD PREVIEW
MAP DATA 59  SN9 60 SF91 61 SF92 62 SF93  (LOAD UNLOAD PREVIEW
MAP DATA 63 SF94 64 SF95 65 SF96          (LOAD UNLOAD PREVIEW
MAP DATA 66 SN10 67 SF101 68 SF102 69 SF103  (LOAD UNLOAD PREVIEW
MAP DATA 70 SF104 71 SF105 72 SF106          (LOAD UNLOAD PREVIEW
MAP DATA 73 SN11 74 SF111 75 SF112 76 SF113  (LOAD UNLOAD PREVIEW
MAP DATA 77 SF114 78 SF115 79 SF116          (LOAD UNLOAD PREVIEW
MAP DATA 80 SN12 81 SF121 82 SF122 83 SF123  (LOAD UNLOAD PREVIEW
MAP DATA 84 SF124 85 SF125 86 SF126          (LOAD UNLOAD PREVIEW
```

```
MAP DATA  87  SN13  88 SF131  89 SF132  90 SF133   (LOAD UNLOAD PREVIEW
MAP DATA  91 SF134  92 SF135  93 SF136            (LOAD UNLOAD PREVIEW
MAP DATA  94  SN14  95 SF141  96 SF142  97 SF143   (LOAD UNLOAD PREVIEW
MAP DATA  98 SF144  99 SF145 100 SF146            (LOAD UNLOAD PREVIEW
MAP DATA 101  SN15 102 SF151 103 SF152 104 SF153   (LOAD UNLOAD PREVIEW
MAP DATA 105 SF154 106 SF155 107 SF156            (LOAD UNLOAD PREVIEW
MAP DATA 108  SN16 109 SF161 110 SF162 111 SF163   (LOAD UNLOAD PREVIEW
MAP DATA 112 SF164 113 SF165 114 SF166            (LOAD UNLOAD PREVIEW
MAP DATA 115  SN17 116 SF171 117 SF172 118 SF173   (LOAD UNLOAD PREVIEW
MAP DATA 119 SF174 120 SF175 121 SF176            (LOAD UNLOAD PREVIEW
MAP DATA 122  SN18 123 SF181 124 SF182 125 SF183   (LOAD UNLOAD PREVIEW
MAP DATA 126 SF184 127 SF185 128 SF186            (LOAD UNLOAD PREVIEW
MAP DATA 129  SN19 130 SF191 131 SF192 132 SF193   (LOAD UNLOAD PREVIEW
MAP DATA 133 SF194 134 SF195 135 SF196            (LOAD UNLOAD PREVIEW
MAP DATA 136  SN20 137 SF201 138 SF202 139 SF203   (LOAD UNLOAD PREVIEW
MAP DATA 140 SF204 141 SF205 142 SF206            (LOAD UNLOAD PREVIEW
MAP DATA 143 ECODE                          (LOAD UNLOAD PREVIEW

&NAME = &CONCAT OF UN &M
&UNAME = &&NAME

&COMMAND EXECIO 1 DISKR YEAR TEMP X 1 (FINIS
&READ STRING &YEAR

&N = &M - 1
&N1 = &NSRC + 1
&LN = &MULT OF &N &N1
&LN = &MULT OF &LN &NY
&LN = &LN + 1

&COMMAND EXECIO &N1 DISKR OPTION4  DATA X &LN (FINIS

&J = 0
&LOOP 3 &NSRC
&J = &J + 1
&NAME = &CONCAT OF I &J
&&NAME = 0

&N = 0
&J = 0
&LOOP -OPT42YR1 &NSRC
&N = &N + 1
&READ VAR &VV1 &VV2 &VV3 &VV4 &VV5 &VV6
&IF .&VV1 EQ .0 &GOTO -OPT42YR1

&NAME = &CONCAT OF I &N
&&NAME = 1
&J = &J + 1
&NAME = &CONCAT OF SN &J
&NAME1 = &CONCAT OF SNAM &N
&&NAME = &&NAME1

&V1 = &CONCAT OF SF &J 1
&V2 = &CONCAT OF SF &J 2
&V3 = &CONCAT OF SF &J 3
&V4 = &CONCAT OF SF &J 4
&V5 = &CONCAT OF SF &J 5
&V6 = &CONCAT OF SF &J 6

&&V1 = &VV1
&&V2 = &VV2
&&V3 = &VV3
&&V4 = &VV4
&&V5 = &VV5
&&V6 = &VV6

&&V1 = &RIGHT OF &&V1 6
&&V2 = &RIGHT OF &&V2 6
&&V3 = &RIGHT OF &&V3 6
&&V4 = &RIGHT OF &&V4 6
&&V5 = &RIGHT OF &&V5 6
&&V6 = &RIGHT OF &&V6 6
```

```
-OPT42YR1

&N = &J + 1
&V1 = &CONCAT OF SF &N 1
&V2 = &CONCAT OF SF &N 2
&V3 = &CONCAT OF SF &N 3
&V4 = &CONCAT OF SF &N 4
&V5 = &CONCAT OF SF &N 5
&V6 = &CONCAT OF SF &N 6
&&V1 = ------
&&V2 = ------
&&V3 = ------
&&V4 = ------
&&V5 = ------
&&V6 = ------

&N = &J + 2
&V1 = &CONCAT OF SF &N 1
&V2 = &CONCAT OF SF &N 2
&V3 = &CONCAT OF SF &N 3
&V4 = &CONCAT OF SF &N 4
&V5 = &CONCAT OF SF &N 5
&V6 = &CONCAT OF SF &N 6
&READ VAR &&V1 &&V2 &&V3 &&V4 &&V5 &&V6
&&V1 = &RIGHT OF &&V1 6
&&V2 = &RIGHT OF &&V2 6
&&V3 = &RIGHT OF &&V3 6
&&V4 = &RIGHT OF &&V4 6
&&V5 = &RIGHT OF &&V5 6
&&V6 = &RIGHT OF &&V6 6
&NAME = &CONCAT OF SN &N
&&NAME = TOTAL


DISPLAY
&IF &RSTATUS = PF10 &GOTO -OPT4QUIT
&IF &RSTATUS EQ ENTER &GOTO -OPT4CONT
&ECODE = &STRING OF UNDEFINED PF KEY!
SIGNAL
&SKIP -5

-OPT4CONT

&YR = 1
&YRLEFT = &NY - 1
&LOOP -OPT4YRL &YRLEFT
&YR = &YR + 1

USE EXPSRC2
MAP DATA 1 UNAME 2 YEAR 3 YRNO                (LOAD UNLOAD PREVIEW
MAP DATA  4  SN1  5 SF11  6 SF12  7 SF13  (LOAD UNLOAD PREVIEW
MAP DATA  8 SF14  9 SF15 10 SF16 11 SF17  (LOAD UNLOAD PREVIEW
MAP DATA 12  SN2 13 SF21 14 SF22 15 SF23  (LOAD UNLOAD PREVIEW
MAP DATA 16 SF24 17 SF25 18 SF26 19 SF27  (LOAD UNLOAD PREVIEW
MAP DATA 20  SN3 21 SF31 22 SF32 23 SF33  (LOAD UNLOAD PREVIEW
MAP DATA 24 SF34 25 SF35 26 SF36 27 SF37  (LOAD UNLOAD PREVIEW
MAP DATA 28  SN4 29 SF41 30 SF42 31 SF43  (LOAD UNLOAD PREVIEW
MAP DATA 32 SF44 33 SF45 34 SF46 35 SF47  (LOAD UNLOAD PREVIEW
MAP DATA 36  SN5 37 SF51 38 SF52 39 SF53  (LOAD UNLOAD PREVIEW
MAP DATA 40 SF54 41 SF55 42 SF56 43 SF57  (LOAD UNLOAD PREVIEW
MAP DATA 44  SN6 45 SF61 46 SF62 47 SF63  (LOAD UNLOAD PREVIEW
MAP DATA 48 SF64 49 SF65 50 SF66 51 SF67  (LOAD UNLOAD PREVIEW
MAP DATA 52  SN7 53 SF71 54 SF72 55 SF73  (LOAD UNLOAD PREVIEW
MAP DATA 56 SF74 57 SF75 58 SF76 59 SF77  (LOAD UNLOAD PREVIEW
MAP DATA 60  SN8 61 SF81 62 SF82 63 SF83  (LOAD UNLOAD PREVIEW
MAP DATA 64 SF84 65 SF85 66 SF86 67 SF87  (LOAD UNLOAD PREVIEW
MAP DATA 68  SN9 69 SF91 70 SF92 71 SF93  (LOAD UNLOAD PREVIEW
MAP DATA 72 SF94 73 SF95 74 SF96 75 SF97  (LOAD UNLOAD PREVIEW
MAP DATA 76 SN10 77 SF101 78 SF102 79 SF103  (LOAD UNLOAD PREVIEW
MAP DATA 80 SF104 81 SF105 82 SF106 83 SF107  (LOAD UNLOAD PREVIEW
MAP DATA 84 SN11 85 SF111 86 SF112 87 SF113  (LOAD UNLOAD PREVIEW
```

```
MAP DATA  88 SF114  89 SF115  90 SF116  91 SF117  (LOAD UNLOAD PREVIEW
MAP DATA  92  SN12  93 SF121  94 SF122  95 SF123  (LOAD UNLOAD PREVIEW
MAP DATA  96 SF124  97 SF125  98 SF126  99 SF127  (LOAD UNLOAD PREVIEW
MAP DATA 100  SN13 101 SF131 102 SF132 103 SF133  (LOAD UNLOAD PREVIEW
MAP DATA 104 SF134 105 SF135 106 SF136 107 SF137  (LOAD UNLOAD PREVIEW
MAP DATA 108  SN14 109 SF141 110 SF142 111 SF143  (LOAD UNLOAD PREVIEW
MAP DATA 112 SF144 113 SF145 114 SF146 115 SF147  (LOAD UNLOAD PREVIEW
MAP DATA 116  SN15 117 SF151 118 SF152 119 SF153  (LOAD UNLOAD PREVIEW
MAP DATA 120 SF154 121 SF155 122 SF156 123 SF157  (LOAD UNLOAD PREVIEW
MAP DATA 124  SN16 125 SF161 126 SF162 127 SF163  (LOAD UNLOAD PREVIEW
MAP DATA 128 SF164 129 SF165 130 SF166 131 SF167  (LOAD UNLOAD PREVIEW
MAP DATA 132  SN17 133 SF171 134 SF172 135 SF173  (LOAD UNLOAD PREVIEW
MAP DATA 136 SF174 137 SF175 138 SF176 139 SF177  (LOAD UNLOAD PREVIEW
MAP DATA 140  SN18 141 SF181 142 SF182 143 SF183  (LOAD UNLOAD PREVIEW
MAP DATA 144 SF184 145 SF185 146 SF186 147 SF187  (LOAD UNLOAD PREVIEW
MAP DATA 148  SN19 149 SF191 150 SF192 151 SF193  (LOAD UNLOAD PREVIEW
MAP DATA 152 SF194 153 SF195 154 SF196 155 SF197  (LOAD UNLOAD PREVIEW
MAP DATA 156  SN20 157 SF201 158 SF202 159 SF203  (LOAD UNLOAD PREVIEW
MAP DATA 160 SF204 161 SF205 162 SF206 163 SF207  (LOAD UNLOAD PREVIEW
MAP DATA 164 ECODE                          (LOAD UNLOAD PREVIEW

&NAME = &CONCAT OF UN &M
&UNAME = &&NAME

&COMMAND EXECIO 1 DISKR YEAR TEMP X &YR (FINIS
&READ STRING &YEAR

&YRNO = &CONCAT OF &YR YR


&N = &M - 1
&N1 = &NSRC + 1
&N2 = &YR - 1
&N3 = &MULT OF &N1 &N2
&LN = &MULT OF &N &N1
&LN = &MULT OF &LN &NY
&LN = &LN + &N3
&LN = &LN + 1

&COMMAND EXECIO &N1 DISKR OPTION4  DATA X &LN (FINIS

&N = 0
&J = 0
&LOOP -OPT42YRL &NSRC
&N = &N + 1
&READ VAR &VV1 &VV2 &VV3 &VV4 &VV5 &VV6 &VV7
&NAME = &CONCAT OF I &N
&IF .&&NAME EQ .0 &GOTO -OPT42YRL

&J = &J + 1
&NAME = &CONCAT OF SN &J
&NAME1 = &CONCAT OF SNAM &N
&&NAME = &&NAME1

&V1 = &CONCAT OF SF &J 1
&V2 = &CONCAT OF SF &J 2
&V3 = &CONCAT OF SF &J 3
&V4 = &CONCAT OF SF &J 4
&V5 = &CONCAT OF SF &J 5
&V6 = &CONCAT OF SF &J 6
&V7 = &CONCAT OF SF &J 7

&&V1 = &VV1
&&V2 = &VV2
&&V3 = &VV3
&&V4 = &VV4
&&V5 = &VV5
&&V6 = &VV6
&&V7 = &VV7

&&V1 = &RIGHT OF &&V1 6
&&V2 = &RIGHT OF &&V2 6
```

```
&&V3 = &RIGHT OF &&V3 6
&&V4 = &RIGHT OF &&V4 6
&&V5 = &RIGHT OF &&V5 6
&&V6 = &RIGHT OF &&V6 6
&&V7 = &RIGHT OF &&V7 6

-OPT42YRL

&N = &J + 1
&V1 = &CONCAT OF SF &N 1
&V2 = &CONCAT OF SF &N 2
&V3 = &CONCAT OF SF &N 3
&V4 = &CONCAT OF SF &N 4
&V5 = &CONCAT OF SF &N 5
&V6 = &CONCAT OF SF &N 6
&V7 = &CONCAT OF SF &N 7
&&V1 = ------
&&V2 = ------
&&V3 = ------
&&V4 = ------
&&V5 = ------
&&V6 = ------
&&V7 = ------

&N = &J + 2
&V1 = &CONCAT OF SF &N 1
&V2 = &CONCAT OF SF &N 2
&V3 = &CONCAT OF SF &N 3
&V4 = &CONCAT OF SF &N 4
&V5 = &CONCAT OF SF &N 5
&V6 = &CONCAT OF SF &N 6
&V7 = &CONCAT OF SF &N 7
&READ VAR &&V1 &&V2 &&V3 &&V4 &&V5 &&V6 &&V7
&&V1 = &RIGHT OF &&V1 6
&&V2 = &RIGHT OF &&V2 6
&&V3 = &RIGHT OF &&V3 6
&&V4 = &RIGHT OF &&V4 6
&&V5 = &RIGHT OF &&V5 6
&&V6 = &RIGHT OF &&V6 6
&&V7 = &RIGHT OF &&V7 6
&NAME = &CONCAT OF SN &N
&&NAME = TOTAL


DISPLAY
&IF &RSTATUS = PF10 &GOTO -OPT4QUIT
&IF &RSTATUS EQ ENTER &GOTO -OPT4YRL
&ECODE = &STRING OF UNDEFINED PF KEY!
SIGNAL
&SKIP -5

-OPT4YRL

&RETURN

-OPT4QUIT
&QUIT = YES

&RETURN

*********************************************************************
*   OPTION 5 - SOURCE EXPENDITURES THRU TIME
*********************************************************************


-OPTION5


&CALL -OPT5
&GOTO -MENU
```

```
-OPT5

* FIRST YEAR

USE SRCEXP1
MAP DATA 1 YEAR (LOAD UNLOAD PREVIEW
MAP DATA  2  SN1  3 SF11  4 SF12  5 SF13  (LOAD UNLOAD PREVIEW
MAP DATA  6 SF14  7 SF15  8 SF16  9 SF17  (LOAD UNLOAD PREVIEW
MAP DATA 10  SN2 11 SF21 12 SF22 13 SF23  (LOAD UNLOAD PREVIEW
MAP DATA 14 SF24 15 SF25 16 SF26 17 SF27  (LOAD UNLOAD PREVIEW
MAP DATA 18  SN3 19 SF31 20 SF32 21 SF33  (LOAD UNLOAD PREVIEW
MAP DATA 22 SF34 23 SF35 24 SF36 25 SF37  (LOAD UNLOAD PREVIEW
MAP DATA 26  SN4 27 SF41 28 SF42 29 SF43  (LOAD UNLOAD PREVIEW
MAP DATA 30 SF44 31 SF45 32 SF46 33 SF47  (LOAD UNLOAD PREVIEW
MAP DATA 34  SN5 35 SF51 36 SF52 37 SF53  (LOAD UNLOAD PREVIEW
MAP DATA 38 SF54 39 SF55 40 SF56 41 SF57  (LOAD UNLOAD PREVIEW
MAP DATA 42  SN6 43 SF61 44 SF62 45 SF63  (LOAD UNLOAD PREVIEW
MAP DATA 46 SF64 47 SF65 48 SF66 49 SF67  (LOAD UNLOAD PREVIEW
MAP DATA 50  SN7 51 SF71 52 SF72 53 SF73  (LOAD UNLOAD PREVIEW
MAP DATA 54 SF74 55 SF75 56 SF76 57 SF77  (LOAD UNLOAD PREVIEW
MAP DATA 58  SN8 59 SF81 60 SF82 61 SF83  (LOAD UNLOAD PREVIEW
MAP DATA 62 SF84 63 SF85 64 SF86 65 SF87  (LOAD UNLOAD PREVIEW
MAP DATA 66  SN9 67 SF91 68 SF92 69 SF93  (LOAD UNLOAD PREVIEW
MAP DATA 70 SF94 71 SF95 72 SF96 73 SF97  (LOAD UNLOAD PREVIEW
MAP DATA 74 SN10 75 SF101 76 SF102 77 SF103  (LOAD UNLOAD PREVIEW
MAP DATA 78 SF104 79 SF105 80 SF106 81 SF107  (LOAD UNLOAD PREVIEW
MAP DATA 82 SN11 83 SF111 84 SF112 85 SF113  (LOAD UNLOAD PREVIEW
MAP DATA 86 SF114 87 SF115 88 SF116 89 SF117  (LOAD UNLOAD PREVIEW
MAP DATA 90 SN12 91 SF121 92 SF122 93 SF123  (LOAD UNLOAD PREVIEW
MAP DATA 94 SF124 95 SF125 96 SF126 97 SF127  (LOAD UNLOAD PREVIEW
MAP DATA 98 SN13 99 SF131 100 SF132 101 SF133  (LOAD UNLOAD PREVIEW
MAP DATA 102 SF134 103 SF135 104 SF136 105 SF137  (LOAD UNLOAD PREVIEW
MAP DATA 106 SN14 107 SF141 108 SF142 109 SF143  (LOAD UNLOAD PREVIEW
MAP DATA 110 SF144 111 SF145 112 SF146 113 SF147  (LOAD UNLOAD PREVIEW
MAP DATA 114 SN15 115 SF151 116 SF152 117 SF153  (LOAD UNLOAD PREVIEW
MAP DATA 118 SF154 119 SF155 120 SF156 121 SF157  (LOAD UNLOAD PREVIEW
MAP DATA 122 SN16 123 SF161 124 SF162 125 SF163  (LOAD UNLOAD PREVIEW
MAP DATA 126 SF164 127 SF165 128 SF166 129 SF167  (LOAD UNLOAD PREVIEW
MAP DATA 130 SN17 131 SF171 132 SF172 133 SF173  (LOAD UNLOAD PREVIEW
MAP DATA 134 SF174 135 SF175 136 SF176 137 SF177  (LOAD UNLOAD PREVIEW
MAP DATA 138 SN18 139 SF181 140 SF182 141 SF183  (LOAD UNLOAD PREVIEW
MAP DATA 142 SF184 143 SF185 144 SF186 145 SF187  (LOAD UNLOAD PREVIEW
MAP DATA 146 SN19 147 SF191 148 SF192 149 SF193  (LOAD UNLOAD PREVIEW
MAP DATA 150 SF194 151 SF195 152 SF196 153 SF197  (LOAD UNLOAD PREVIEW
MAP DATA 154 SN20 155 SF201 156 SF202 157 SF203  (LOAD UNLOAD PREVIEW
MAP DATA 158 SF204 159 SF205 160 SF206 161 SF207  (LOAD UNLOAD PREVIEW

&COMMAND EXECIO 1 DISKR INIT TEMP X 1 (FINIS
&READ VAR &NS &NU &NY
&NSRC = &NS + 1
&COMMAND EXECIO &NS DISKR SOURCEN TEMP X 1 (FINIS
&M = 0
&LOOP 3 &NS
&M = &M + 1
&NAME = &CONCAT OF SN &M
&READ STRING &&NAME

&NAME = &CONCAT OF SN &NSRC
&&NAME = DEFICIT

&COMMAND EXECIO 1 DISKR YEAR TEMP X 1 (FINIS
&READ STRING &YEAR

&NL = &NSRC + 1
&COMMAND EXECIO &NL DISKR OPTION5 DATA X 1 (FINIS
&M = 0
&LOOP -OPT5YR1 &NSRC
&M = &M + 1
&V1 = &CONCAT OF SF &M 1
&V2 = &CONCAT OF SF &M 2
```

```
&V3 = &CONCAT OF SF &M 3
&V4 = &CONCAT OF SF &M 4
&V5 = &CONCAT OF SF &M 5
&V6 = &CONCAT OF SF &M 6
&V7 = &CONCAT OF SF &M 7
&READ VAR &&V1 &&V2 &&V3 &&V4 &&V5 &&V6 &&V7
&&V1 = &RIGHT OF &&V1 6
&&V2 = &RIGHT OF &&V2 6
&&V3 = &RIGHT OF &&V3 6
&&V4 = &RIGHT OF &&V4 6
&&V5 = &RIGHT OF &&V5 6
&&V6 = &RIGHT OF &&V6 6
&&V7 = &RIGHT OF &&V7 6
-OPT5YR1

&M = &NSRC + 1
&V1 = &CONCAT OF SF &M 1
&V2 = &CONCAT OF SF &M 2
&V3 = &CONCAT OF SF &M 3
&V4 = &CONCAT OF SF &M 4
&V5 = &CONCAT OF SF &M 5
&V6 = &CONCAT OF SF &M 6
&V7 = &CONCAT OF SF &M 7
&&V1 = _____
&&V2 = _____
&&V3 = _____
&&V4 = _____
&&V5 = _____
&&V6 = _____
&&V7 = _____

&M = &NSRC + 2
&V1 = &CONCAT OF SF &M 1
&V2 = &CONCAT OF SF &M 2
&V3 = &CONCAT OF SF &M 3
&V4 = &CONCAT OF SF &M 4
&V5 = &CONCAT OF SF &M 5
&V6 = &CONCAT OF SF &M 6
&V7 = &CONCAT OF SF &M 7
&READ VAR &&V1 &&V2 &&V3 &&V4 &&V5 &&V6 &&V7
&&V1 = &RIGHT OF &&V1 6
&&V2 = &RIGHT OF &&V2 6
&&V3 = &RIGHT OF &&V3 6
&&V4 = &RIGHT OF &&V4 6
&&V5 = &RIGHT OF &&V5 6
&&V6 = &RIGHT OF &&V6 6
&&V7 = &RIGHT OF &&V7 6
&NAME = &CONCAT OF SN &M
&&NAME = TOTAL
DISPLAY

* SUCCEEDING YEARS


USE SRCEXP2
MAP DATA 1 YEAR 2 YRNO (LOAD UNLOAD PREVIEW
MAP DATA 3 SN1 4 SF11 5 SF12 6 SF13 (LOAD UNLOAD PREVIEW
MAP DATA 7 SF14 8 SF15 9 SF16 10 SF17 (LOAD UNLOAD PREVIEW
MAP DATA 11 SN2 12 SF21 13 SF22 14 SF23 (LOAD UNLOAD PREVIEW
MAP DATA 15 SF24 16 SF25 17 SF26 18 SF27 (LOAD UNLOAD PREVIEW
MAP DATA 19 SN3 20 SF31 21 SF32 22 SF33 (LOAD UNLOAD PREVIEW
MAP DATA 23 SF34 24 SF35 25 SF36 26 SF37 (LOAD UNLOAD PREVIEW
MAP DATA 27 SN4 28 SF41 29 SF42 30 SF43 (LOAD UNLOAD PREVIEW
MAP DATA 31 SF44 32 SF45 33 SF46 34 SF47 (LOAD UNLOAD PREVIEW
MAP DATA 35 SN5 36 SF51 37 SF52 38 SF53 (LOAD UNLOAD PREVIEW
MAP DATA 39 SF54 40 SF55 41 SF56 42 SF57 (LOAD UNLOAD PREVIEW
MAP DATA 43 SN6 44 SF61 45 SF62 46 SF63 (LOAD UNLOAD PREVIEW
MAP DATA 47 SF64 48 SF65 49 SF66 50 SF67 (LOAD UNLOAD PREVIEW
MAP DATA 51 SN7 52 SF71 53 SF72 54 SF73 (LOAD UNLOAD PREVIEW
MAP DATA 55 SF74 56 SF75 57 SF76 58 SF77 (LOAD UNLOAD PREVIEW
MAP DATA 59 SN8 60 SF81 61 SF82 62 SF83 (LOAD UNLOAD PREVIEW
MAP DATA 63 SF84 64 SF85 65 SF86 66 SF87 (LOAD UNLOAD PREVIEW
```

```
MAP DATA 67  SN9 68 SF91 69 SF92 70 SF93  (LOAD UNLOAD PREVIEW
MAP DATA 71 SF94 72 SF95 73 SF96 74 SF97  (LOAD UNLOAD PREVIEW
MAP DATA 75 SN10 76 SF101 77 SF102 78 SF103  (LOAD UNLOAD PREVIEW
MAP DATA 79 SF104 80 SF105 81 SF106 82 SF107  (LOAD UNLOAD PREVIEW
MAP DATA 83 SN11 84 SF111 85 SF112 86 SF113  (LOAD UNLOAD PREVIEW
MAP DATA 87 SF114 88 SF115 89 SF116 90 SF117  (LOAD UNLOAD PREVIEW
MAP DATA 91 SN12 92 SF121 93 SF122 94 SF123  (LOAD UNLOAD PREVIEW
MAP DATA 95 SF124 96 SF125 97 SF126 98 SF127  (LOAD UNLOAD PREVIEW
MAP DATA 99 SN13 100 SF131 101 SF132 102 SF133  (LOAD UNLOAD PREVIEW
MAP DATA 103 SF134 104 SF135 105 SF136 106 SF137  (LOAD UNLOAD PREVIEW
MAP DATA 107 SN14 108 SF141 109 SF142 110 SF143  (LOAD UNLOAD PREVIEW
MAP DATA 111 SF144 112 SF145 113 SF146 114 SF147  (LOAD UNLOAD PREVIEW
MAP DATA 115 SN15 116 SF151 117 SF152 118 SF153  (LOAD UNLOAD PREVIEW
MAP DATA 119 SF154 120 SF155 121 SF156 122 SF157  (LOAD UNLOAD PREVIEW
MAP DATA 123 SN16 124 SF161 125 SF162 126 SF163  (LOAD UNLOAD PREVIEW
MAP DATA 127 SF164 128 SF165 129 SF166 130 SF167  (LOAD UNLOAD PREVIEW
MAP DATA 131 SN17 132 SF171 133 SF172 134 SF173  (LOAD UNLOAD PREVIEW
MAP DATA 135 SF174 136 SF175 137 SF176 138 SF177  (LOAD UNLOAD PREVIEW
MAP DATA 139 SN18 140 SF181 141 SF182 142 SF183  (LOAD UNLOAD PREVIEW
MAP DATA 143 SF184 144 SF185 145 SF186 146 SF187  (LOAD UNLOAD PREVIEW
MAP DATA 147 SN19 148 SF191 149 SF192 150 SF193  (LOAD UNLOAD PREVIEW
MAP DATA 151 SF194 152 SF195 153 SF196 154 SF197  (LOAD UNLOAD PREVIEW
MAP DATA 155 SN20 156 SF201 157 SF202 158 SF203  (LOAD UNLOAD PREVIEW
MAP DATA 159 SF204 160 SF205 161 SF206 162 SF207  (LOAD UNLOAD PREVIEW

&COMMAND EXECIO &NS DISKR SOURCEN TEMP X 1 (FINIS
&M = 0
&LOOP 3 &NS
&M = &M + 1
&NAME = &CONCAT OF SN &M
&READ STRING &&NAME

&NAME = &CONCAT OF SN &NSRC
&&NAME = DEFICIT

&N = 1
&NYLEFT = &NY - 1
&LOOP -OPT5YRS &NYLEFT
&N = &N + 1

&COMMAND EXECIO 1 DISKR YEAR TEMP X &N (FINIS
&READ STRING &YEAR

&YRNO = &N
&YRNO = &CONCAT OF &YRNO YR

&M = &N - 1
&NL = &NSRC + 1
&LN = &MULT OF &NL &M
&LN = &LN + 1
&COMMAND EXECIO &NL DISKR OPTION5 DATA X &LN (FINIS
&M = 0
&LOOP -OPT5YR2 &NSRC
&M = &M + 1
&V1 = &CONCAT OF SF &M 1
&V2 = &CONCAT OF SF &M 2
&V3 = &CONCAT OF SF &M 3
&V4 = &CONCAT OF SF &M 4
&V5 = &CONCAT OF SF &M 5
&V6 = &CONCAT OF SF &M 6
&V7 = &CONCAT OF SF &M 7
&READ VAR &&V1 &&V2 &&V3 &&V4 &&V5 &&V6 &&V7
&&V1 = &RIGHT OF &&V1 6
&&V2 = &RIGHT OF &&V2 6
&&V3 = &RIGHT OF &&V3 6
&&V4 = &RIGHT OF &&V4 6
&&V5 = &RIGHT OF &&V5 6
&&V6 = &RIGHT OF &&V6 6
&&V7 = &RIGHT OF &&V7 6
-OPT5YR2
```

```
&M = &NSRC + 1
&V1 = &CONCAT OF SF &M 1
&V2 = &CONCAT OF SF &M 2
&V3 = &CONCAT OF SF &M 3
&V4 = &CONCAT OF SF &M 4
&V5 = &CONCAT OF SF &M 5
&V6 = &CONCAT OF SF &M 6
&V7 = &CONCAT OF SF &M 7
&&V1 = _____
&&V2 = _____
&&V3 = _____
&&V4 = _____
&&V5 = _____
&&V6 = _____
&&V7 = _____

&M = &NSRC + 2
&V1 = &CONCAT OF SF &M 1
&V2 = &CONCAT OF SF &M 2
&V3 = &CONCAT OF SF &M 3
&V4 = &CONCAT OF SF &M 4
&V5 = &CONCAT OF SF &M 5
&V6 = &CONCAT OF SF &M 6
&V7 = &CONCAT OF SF &M 7
&READ VAR &&V1 &&V2 &&V3 &&V4 &&V5 &&V6 &&V7
&&V1 = &RIGHT OF &&V1 6
&&V2 = &RIGHT OF &&V2 6
&&V3 = &RIGHT OF &&V3 6
&&V4 = &RIGHT OF &&V4 6
&&V5 = &RIGHT OF &&V5 6
&&V6 = &RIGHT OF &&V6 6
&&V7 = &RIGHT OF &&V7 6
&NAME = &CONCAT OF SN &M
&&NAME = TOTAL
DISPLAY

-OPT5YRS
&RETURN


*********************************************************************
*    OPTION 6 - ALL REPORTS
*********************************************************************

-OPTION6

&CALL -OPT1
&CALL -OPT2
&CALL -OPT3
&CALL -OPT4
&CALL -OPT5

&GOTO -MENU


*********************************************************************
*    OPTION 7 - PRINT ALL REPORTS
*********************************************************************

-OPTION7

&PRESUME &COMMAND
FILEDEF FT01F001 DISK INIT    TEMP X
FILEDEF FT02F001 DISK SOURCEN TEMP X
FILEDEF FT03F001 DISK USEN    TEMP X
FILEDEF FT04F001 DISK YEAR    TEMP X
FILEDEF FT11F001 DISK OPTION1 DATA X
FILEDEF FT12F001 DISK OPTION2 DATA X
FILEDEF FT13F001 DISK OPTION3 DATA X
FILEDEF FT14F001 DISK OPTION4 DATA X
FILEDEF FT15F001 DISK OPTION5 DATA X
FILEDEF FT21F001 DISK REPTS LISTING X (LRECL 132 BLKSIZE 132 RECFM F
```

```
PRNTRPTS
PRINT REPTS LISTING X
ERASE REPTS LISTING X

EUDEXEC2
&PRESUME &SUBCOMMAND DISPLAY

USE SELOUT
MAP DATA 1 ECODE (LOAD UNLOAD PREVIEW
&ECODE = &STRING OF REPORTS SENT TO PRINTER
SIGNAL
&GOTO -ERRMAIN


-END

&PRESUME &COMMAND

ERASE OPTION1  DATA X
ERASE OPTION2  DATA X
ERASE OPTION3  DATA X
ERASE OPTION4  DATA X
ERASE OPTION5  DATA X

ERASE YEAR     TEMP X
ERASE INIT     TEMP X
ERASE CONST    TEMP X
ERASE USEN     TEMP X
ERASE USED     TEMP X
ERASE SOURCEN  TEMP X
ERASE SOURCED  TEMP X
ERASE ALLOCATN TEMP X


&EXIT
```

A.8 RUNMODEL

```
*********************************************************************
*
*                    OPTION 6 - RUN X MODEL
*
*********************************************************************

&TRACE OFF


EUDEXEC2
&PRESUME &SUBCOMMAND DISPLAY

*******************************************************************
*   DISPLAY PLANNING HORIZON AND NUMBER OF SOURCES AND USES
*******************************************************************

USE MODWARN
MAP DATA 1 ECODE                        (LOAD UNLOAD PREVIEW
-ERRWARN
DISPLAY
&IF &RSTATUS = PF10 &GOTO -QUIT
&IF &RSTATUS EQ ENTER &SKIP 3
&ECODE = &STRING OF UNDEFINED PF KEY!
SIGNAL
&GOTO -ERRWARN

&COMMAND EXECIO 1 DISKR INIT DATA X 1 (FINIS
&READ VAR &NS &NU &NY &STYR

&COMMAND EXECIO &NU DISKR USEN DATA X 1 (FINIS
&N = 0
&LOOP 3 &NU
&N = &N + 1
&NAME = &CONCAT OF U &N
&READ STRING &&NAME

&COMMAND EXECIO &NS DISKR SOURCEN DATA X 1 (FINIS
&N = 0
&LOOP 3 &NS
&N = &N + 1
&NAME = &CONCAT OF S &N
&READ STRING &&NAME


USE MODDATA
MAP DATA 1 NSRC 2 NUSE 3 NYRS 4 STARYR 5 ECODE   (LOAD UNLOAD PREVIEW
&NSRC = &NS
&NUSE = &NU
&NYRS = &NY
&STARYR = &STYR
-ERRMODD
DISPLAY
&IF &RSTATUS = PF10 &GOTO -QUIT
&IF &RSTATUS EQ ENTER &SKIP 3
&ECODE = &STRING OF UNDEFINED PF KEY!
SIGNAL
&GOTO -ERRMODD


*******************************************************************
*    MODEL OPTION - EXISTING VS NEW
*******************************************************************


-MODLOPTN
```

```
&COMMAND EXECIO &NU DISKR USEN DATA X 1 (FINIS
&N = 0
&LOOP 3 &NU
&N = &N + 1
&NAME = &CONCAT OF U &N
&READ STRING &&NAME

&COMMAND EXECIO &NS DISKR SOURCEN DATA X 1 (FINIS
&N = 0
&LOOP 3 &NS
&N = &N + 1
&NAME = &CONCAT OF S &N
&READ STRING &&NAME

&COMMAND EXECIO &NS DISKR CONST   DATA X 1 (FINIS
&N = 0
&LOOP 9 &NS
&READ VAR &Y1 &Y2 &Y3 &Y4 &Y5 &Y6 &Y7 &Y8 &Y9 &Y10 &Y11 &Y12 &Y13 &Y14 &Y15 &Y16
&N = &N + 1
&M = 0
&LOOP 4 &NU
&M = &M + 1
&NAME1 = &CONCAT OF C &N &M
&NAME2 = &CONCAT OF Y &M
&&NAME1 = &&NAME2


&M = &NY + 1
&M = &MULT OF &M &NS
&COMMAND EXECIO &M DISKR SOURCED DATA X 1 (FINIS
&N = 0
&LOOP -EACHSRC &NS
&N = &N + 1
&K = 0
&IBAL = &CONCAT OF T &N &K
&READ VAR &&IBAL
&K = -4
&LOOP -EACHYEAR &NY
&K = &K + 4
&Q1 = &K + 1
&Q2 = &K + 2
&Q3 = &K + 3
&Q4 = &K + 4
&VAL1 = &CONCAT OF T &N &Q1
&VAL2 = &CONCAT OF T &N &Q2
&VAL3 = &CONCAT OF T &N &Q3
&VAL4 = &CONCAT OF T &N &Q4
&READ VAR &&VAL1 &&VAL2 &&VAL3 &&VAL4
-EACHYEAR
&NAME = &CONCAT OF T &N 1
&&NAME = &&NAME + &&IBAL
-EACHSRC

&M = &NY
&M = &MULT OF &M &NU
&COMMAND EXECIO &M DISKR USED DATA X 1 (FINIS
&N = 0
&LOOP -EACHUSE &NU
&N = &N + 1
&K = -4
&LOOP -EACHYR &NY
&K = &K + 4
&Q1 = &K + 1
&Q2 = &K + 2
&Q3 = &K + 3
&Q4 = &K + 4
&VAL1 = &CONCAT OF V &N &Q1
&VAL2 = &CONCAT OF V &N &Q2
&VAL3 = &CONCAT OF V &N &Q3
&VAL4 = &CONCAT OF V &N &Q4
&READ VAR &&VAL1 &&VAL2 &&VAL3 &&VAL4
```

```
-EACHYR
-EACHUSE

&M = &MULT OF &NY 4
&K = 0
&LOOP -INGOAL1 &NS
&K = &K + 1
&L = 0
&LOOP -INGOAL1 &NU
&L = &L + 1
&N = 0
&LOOP -INGOAL1 &M
&N = &N + 1
&NAME = &CONCAT OF G 1 &K &L &N
&&NAME = &BLANK
&NAME = &CONCAT OF X 1 &K &L &N
&&NAME = &BLANK
-INGOAL1

&K = 0
&LOOP -INGOAL2 &NS
&K = &K + 1
&L = 0
&LOOP -INGOAL2 &NU
&L = &L + 1
&N = 0
&LOOP -INGOAL2 &NY
&N = &N + 1
&NAME = &CONCAT OF G 2 &K &L &N
&&NAME = &BLANK
&NAME = &CONCAT OF X 2 &K &L &N
&&NAME = &BLANK
-INGOAL2

&K = 0
&LOOP -INGOAL3 &NS
&K = &K + 1
&L = 0
&LOOP -INGOAL3 &NU
&L = &L + 1
&N = 0
&LOOP -INGOAL3 &NY
&N = &N + 1
&NAME = &CONCAT OF G 3 &K &L &N
&&NAME = &BLANK
&NAME = &CONCAT OF X 3 &K &L &N
&&NAME = &BLANK
-INGOAL3

&M = &MULT OF &NY 4
&K = 0
&LOOP -INITIAL &NS
&K = &K + 1
&L = 0
&LOOP -INITIAL &NU
&L = &L + 1
&N = 0
&LOOP -INITIAL &M
&N = &N + 1
&NAME = &CONCAT OF X &K &L &N
&&NAME = &BLANK
-INITIAL


USE PANEL0
MAP DATA 1 ECODE                    (LOAD UNLOAD PREVIEW
-EMODLOPN
DISPLAY
&IF &RSTATUS = PF1 &GOTO -GPCONT
&IF &RSTATUS = PF2 &GOTO -MODEL
&IF &RSTATUS = PF10 &GOTO -QUIT
&ECODE = &STRING OF UNDEFINED PF KEY!
```

```
SIGNAL
&GOTO -EMODLOPN


-GPCONT

&COMMAND EXECIO 1 DISKR GOALS DATA X 1 (FINIS
&READ VAR &NG0 &NG1 &NG2 &NG3

&N = 0
&LOOP -READGOAL 3
&N = &N + 1
&NAME = &CONCAT OF NG &N
&NL = &&NAME
&NAME = &CONCAT OF GOAL &N
&COMMAND EXECIO &NL DISKR &NAME DATA X (FINIS
&READ VAR

&NL = &NL - 1
&LOOP -READGOAL &NL
&IF &N = 1 &SKIP 8

&READ VAR &I &J &K &Y1 &Y2 &Y3 &Y4 &Y5 &Y6 &Y7 &Y8 &Y9 &Y10 &Y11 &Y12
&NAME = &CONCAT OF G &N &I &J &K
&&NAME = &STRING OF &Y1 &Y2 &Y3 &Y4
&NAME = &CONCAT OF X &N &I &J &K
&&NAME = &STRING OF &Y5 &Y6 &Y7 &Y8 &Y9 &Y10 &Y11 &Y12
&GOTO -READGOAL


&READ VAR &I &J &K &Y1 &Y2 &Y3 &Y4 &Y5 &Y6 &Y7 &Y8
&NAME = &CONCAT OF G &N &I &J &K
&&NAME = &STRING OF &Y1 &Y2 &Y3 &Y4
&NAME = &CONCAT OF X &N &I &J &K
&&NAME = &STRING OF &Y5 &Y6 &Y7 &Y8

-READGOAL

&COMMAND EXECIO &NG0 DISKR RIGID DATA X (FINIS
&READ VAR

&NL = &NG0 - 1
&LOOP 4 &NL
&READ VAR &I &J &K &Y1
&NAME = &CONCAT OF X &I &J &K
&&NAME = &Y1



-MODEL
&COMMAND ERASE RIGID DATA X
&COMMAND ERASE GOAL1 DATA X
&COMMAND ERASE GOAL2 DATA X
&COMMAND ERASE GOAL3 DATA X
&COMMAND ERASE GOALS DATA X

&PRESUME &COMMAND
EUDEXEC2
&PRESUME &SUBCOMMAND DISPLAY


*******************************************************************
*    MENU FOR MODEL FORMULATION
*******************************************************************


USE PANEL1
MAP DATA 1 ECODE                    (LOAD UNLOAD PREVIEW
-EMODOPN
DISPLAY
&IF &RSTATUS = PF1 &GOTO -REPTS
&IF &RSTATUS = PF2 &GOTO -RIGID
```

```
&IF &RSTATUS = PF3 &GOTO -GOALS
&IF &RSTATUS = PF4 &GOTO -VIEW
&IF &RSTATUS = PF5 &GOTO -EXECUTE
&IF &RSTATUS = PF10 &GOTO -MODLOPTN
&ECODE = &STRING OF UNDEFINED PF KEY!
SIGNAL
&GOTO -EMODOPN

*****************************************************************
*    DISPLAY RESULTS OF PREVIOUS MODEL
*****************************************************************

-REPTS

&PRESUME &COMMAND

COPY YEAR     DATA X YEAR    TEMP X
COPY INIT     DATA X INIT    TEMP X
COPY CONST    DATA X CONST   TEMP X
COPY USED     DATA X USED    TEMP X
COPY USEN     DATA X USEN    TEMP X
COPY SOURCED  DATA X SOURCED TEMP X
COPY SOURCEN  DATA X SOURCEN TEMP X
COPY ALLOCATN DATA X ALLOCATN TEMP X

EXEC RESULTS

EUDEXEC2
&PRESUME &SUBCOMMAND DISPLAY

&GOTO -MODEL

*****************************************************************
*    FORM RIGID CONSTRAINTS
*****************************************************************

-RIGID

USE PANEL2
MAP DATA 1 SN1 2 UN1 3 SN2 4 UN2          (LOAD UNLOAD PREVIEW
MAP DATA 5 SN3 6 UN3 7 SN4 8 UN4          (LOAD UNLOAD PREVIEW
MAP DATA 9 SN5 10 UN5 11 SN6 12 UN6        (LOAD UNLOAD PREVIEW
MAP DATA 13 SN7 14 UN7 15 SN8 16 UN8       (LOAD UNLOAD PREVIEW
MAP DATA 17 SN9 18 UN9 19 SN10 20 UN10      (LOAD UNLOAD PREVIEW
MAP DATA 21 SN11 22 UN11 23 SN12 24 UN12     (LOAD UNLOAD PREVIEW
MAP DATA 25 SN13 26 UN13 27 SN14 28 UN14     (LOAD UNLOAD PREVIEW
MAP DATA 29 SN15 30 UN15 31 SN16 32 UN16     (LOAD UNLOAD PREVIEW
MAP DATA 33 SN 34 UN 35 ECODE             (LOAD UNLOAD PREVIEW

&N = 0
&LOOP 5 &NS
&N = &N + 1
&NAME = &CONCAT OF SN &N
&NAME1 = &CONCAT OF S &N
&&NAME = &CONCAT OF &N . &BLANK &&NAME1
&IF &N LT 10 &&NAME = &CONCAT OF &BLANK &&NAME

&N = 0
&LOOP 5 &NU
&N = &N + 1
&NAME = &CONCAT OF UN &N
&NAME1 = &CONCAT OF U &N
&&NAME = &CONCAT OF &N . &BLANK &&NAME1
&IF &N LT 10 &&NAME = &CONCAT OF &BLANK &&NAME

-ERIGID

DISPLAY
```

```
&IF &RSTATUS = PF10 &GOTO -MODEL
&IF &RSTATUS = ENTER &SKIP 3
&ECODE = &STRING OF USE RETURN KEY!
SIGNAL
&GOTO -ERIGID

&IF .&SN EQ .&BLANK &GOTO -GTERIGID
&IF .&UN EQ .&BLANK &GOTO -GTERIGID
&NAME1 = &LEFT OF &SN 1
&IF .&NAME1 = .&BLANK &SN = &RIGHT OF &SN 1
&SN = &TRIM OF &SN
&NAME1 = &LEFT OF &UN 1
&IF .&NAME1 = .&BLANK &UN = &RIGHT OF &UN 1
&UN = &TRIM OF &UN
&IF &SN LT 1 &GOTO -GTERIGID
&IF &SN GT &NS &GOTO -GTERIGID
&IF &UN LT 1 &GOTO -GTERIGID
&IF &UN GT &NU &GOTO -GTERIGID
&NAME = &CONCAT OF C &SN &UN
&IF &&NAME = 1 &GOTO -RIGCONT
&ECODE = &STRING OF NOT ELIGIBLE!
SIGNAL
&GOTO -ERIGID

-GTERIGID
&ECODE = &STRING OF BLANK/IMPROPER NUMBER!
SIGNAL
&GOTO -ERIGID

-RIGCONT

USE PANEL3
MAP DATA 1 SNAM 2 UNAM 3 YNO                (LOAD UNLOAD PREVIEW
MAP DATA 4 AV1  5 AV2 6 AV3 7 AV4           (LOAD UNLOAD PREVIEW
MAP DATA 8 RE1  9 RE2 10 RE3 11 RE4         (LOAD UNLOAD PREVIEW
MAP DATA 12 AL1 13 AL2 14 AL3 15 AL4        (LOAD UNLOAD PREVIEW
MAP DATA 16 ECODE                           (LOAD UNLOAD PREVIEW

&NAME = &CONCAT OF S &SN
&SNAM = &&NAME
&NAME = &CONCAT OF U &UN
&UNAM = &&NAME

&L = 0
&K = -4
&LOOP -GETYRALLOC &NY
&L = &L + 1
&COMMAND EXECIO 1 DISKR YEAR DATA X &L (FINIS
&READ VAR &YNO

&AL1 = &BLANK
&AL2 = &BLANK
&AL3 = &BLANK
&AL4 = &BLANK

&K = &K + 4
&Q1 = &K + 1
&Q2 = &K + 2
&Q3 = &K + 3
&Q4 = &K + 4

&GAV1 = 0
&USED1 = 0
&M = 0
&LOOP -IQTR &Q1
&M = &M + 1
&NAME = &CONCAT OF T &SN &M
&GAV1 = &GAV1 + &&NAME
&N = 0
&LOOP -IQTR &NU
&N = &N + 1
&NAME = &CONCAT OF X &SN &N &M
```

```
&IF .&&NAME NE .&BLANK &USED1 = &USED1 + &&NAME
-IQTR

&M = 1
&LOOP -RESTQTR 3
&M = &M + 1
&QTR = &CONCAT OF Q &M
&NAME = &CONCAT OF GAV &M
&NAME1 = &CONCAT OF T &SN &&QTR
&&NAME = &&NAME1
&USED = &CONCAT OF USED &M
&&USED = 0
&N = 0
&LOOP -RESTQTR &NU
&N = &N + 1
&NAME = &CONCAT OF X &SN &N &&QTR
&IF .&&NAME NE .&BLANK &&USED = &&USED + &&NAME
-RESTQTR

&M = 0
&LOOP -AMTAVAIL 4
&M = &M + 1
&GAVAIL = &CONCAT OF GAV &M
&USED = &CONCAT OF USED &M
&NAME = &CONCAT OF AV &M
&&NAME = &&GAVAIL - &&USED
-AMTAVAIL

&M = 5
&LOOP -NEGAMT 3
&M = &M - 1
&N = &M - 1
&NAME1 = &CONCAT OF AV &M
&NAME2 = &CONCAT OF AV &N
&IF &&NAME1 GE 0 &GOTO -NEGAMT
&&NAME2 = &&NAME2 + &&NAME1
&&NAME1 = 0
-NEGAMT


&M = 0
&LOOP -IQTR1 4
&M = &M + 1
&QTR = &CONCAT OF Q &M
&USED = &CONCAT OF USED &M
&&USED = 0
&N = 0
&LOOP -IQTR1 &NS
&N = &N + 1
&NAME = &CONCAT OF X &N &UN &&QTR
&IF .&&NAME NE .&BLANK &&USED = &&USED + &&NAME
-IQTR1

&VAL1 = &CONCAT OF V &UN &Q1
&VAL2 = &CONCAT OF V &UN &Q2
&VAL3 = &CONCAT OF V &UN &Q3
&VAL4 = &CONCAT OF V &UN &Q4
&RE1 = &&VAL1 - &USED1
&RE2 = &&VAL2 - &USED2
&RE3 = &&VAL3 - &USED3
&RE4 = &&VAL4 - &USED4

&M = 0
&LOOP -ADJRE 4
&M = &M + 1
&QTR = &CONCAT OF Q &M
&NAME = &CONCAT OF X &SN &UN &&QTR
&IF .&&NAME = .&BLANK &GOTO -ADJRE
&NAME1 = &CONCAT OF RE &M
&NAME2 = &CONCAT OF AL &M
&&NAME1 = &&NAME1 + &&NAME
&&NAME2 = &&NAME
```

```
&AV1 = &AV1 + &&NAME
-ADJRE

-IQTR1
SET AL1 (PRO
SET AL2 (PRO
SET AL3 (PRO
SET AL4 (PRO

&M = 0
&LOOP -GETALLOC 4
&M = &M + 1
&NAME = &CONCAT OF AL &M
RESET &NAME

-RESHOW

DISPLAY

&ECODE = &BLANK
&AVAIL = &CONCAT OF AV &M
&REQD = &CONCAT OF RE &M
&ALLOC = &CONCAT OF AL &M
&&ALLOC = &TRIM OF &&ALLOC
&IF .&&ALLOC EQ .&BLANK &SKIP 6
&IF &&ALLOC GE 0  &SKIP 2
&&ALLOC = &BLANK
&SKIP 3
&IF &&ALLOC GT &&REQD &GOTO -CHECKERR
&IF &&ALLOC GT &&AVAIL &GOTO -CHECKERR

&IF &M = 4 &GOTO -GETALLOC

&N = &M + 1
&AVAIL1 = &CONCAT OF AV &N
&IF .&&ALLOC = .&BLANK &&AVAIL1 = &&AVAIL1 + &&AVAIL
&IF .&&ALLOC NE .&BLANK &&AVAIL1 = &&AVAIL1 + &&AVAIL - &&ALLOC
SET &ALLOC (PRO
&GOTO -GETALLOC

-CHECKERR
&ECODE = &STRING OF IMPROPER ALLOCATION!
SIGNAL
&GOTO -RESHOW

-GETALLOC

&M = 0
&LOOP -GETYRALLOC 4
&M = &M + 1
&QTR = &CONCAT OF Q &M
&NAME = &CONCAT OF X &SN &UN &&QTR
&NAME1 = &CONCAT OF AL &M
&IF .&&NAME1 = .&BLANK &GOTO -GETYRALLOC
&&NAME = &&NAME1

-GETYRALLOC

&GOTO -MODEL

*******************************************************************
*    FORM GOALS
*******************************************************************


-GOALS


*******************************************************************
*    MENU FOR SELECTING GOAL TYPE
*******************************************************************
```

```
USE PANEL4
MAP DATA 1 ECODE                    (LOAD UNLOAD PREVIEW
-EGOALS
DISPLAY
&SG = 0
&IF &RSTATUS = PF1 &SG = 1
&IF &RSTATUS = PF2 &SG = 2
&IF &RSTATUS = PF3 &SG = 3
&IF &RSTATUS = PF10 &GOTO -MODEL
&IF &SG NE 0 &GOTO -GOALCONT
&ECODE = &STRING OF UNDEFINED PF KEY!
SIGNAL
&GOTO -EGOALS

-GOALCONT

&IF &SG = 1 USE PANEL41
&IF &SG = 2 USE PANEL42
&IF &SG = 3 USE PANEL43

MAP DATA 1 SN1 2 UN1 3 SN2 4 UN2          (LOAD UNLOAD PREVIEW
MAP DATA 5 SN3 6 UN3 7 SN4 8 UN4          (LOAD UNLOAD PREVIEW
MAP DATA 9 SN5 10 UN5 11 SN6 12 UN6        (LOAD UNLOAD PREVIEW
MAP DATA 13 SN7 14 UN7 15 SN8 16 UN8       (LOAD UNLOAD PREVIEW
MAP DATA 17 SN9 18 UN9 19 SN10 20 UN10      (LOAD UNLOAD PREVIEW
MAP DATA 21 SN11 22 UN11 23 SN12 24 UN12     (LOAD UNLOAD PREVIEW
MAP DATA 25 SN13 26 UN13 27 SN14 28 UN14     (LOAD UNLOAD PREVIEW
MAP DATA 29 SN15 30 UN15 31 SN16 32 UN16     (LOAD UNLOAD PREVIEW
MAP DATA 33 SN 34 UN 35 ECODE             (LOAD UNLOAD PREVIEW

&N = 0
&LOOP 5 &NS
&N = &N + 1
&NAME = &CONCAT OF SN &N
&NAME1 = &CONCAT OF S &N
&&NAME = &CONCAT OF &N . &BLANK &&NAME1
&IF &N LT 10 &&NAME = &CONCAT OF &BLANK &&NAME

&N = 0
&LOOP 5 &NU
&N = &N + 1
&NAME = &CONCAT OF UN &N
&NAME1 = &CONCAT OF U &N
&&NAME = &CONCAT OF &N . &BLANK &&NAME1
&IF &N LT 10 &&NAME = &CONCAT OF &BLANK &&NAME

-EGOALSANDU

DISPLAY

&IF &RSTATUS = ENTER &SKIP 3
&ECODE = &STRING OF USE RETURN KEY!
SIGNAL
&GOTO -EGOALSANDU

&IF .&SN EQ .&BLANK &GOTO -GTEGOAL
&IF .&UN EQ .&BLANK &GOTO -GTEGOAL
&NAME1 = &LEFT OF &SN 1
&IF .&NAME1 = .&BLANK &SN = &RIGHT OF &SN 1
&SN = &TRIM OF &SN
&NAME1 = &LEFT OF &UN 1
&IF .&NAME1 = .&BLANK &UN = &RIGHT OF &UN 1
&UN = &TRIM OF &UN
&IF &SN LT 1 &GOTO -GTEGOAL
&IF &SN GT &NS &GOTO -GTEGOAL
&IF &UN LT 1 &GOTO -GTEGOAL
&IF &UN GT &NU &GOTO -GTEGOAL
&NAME = &CONCAT OF C &SN &UN
&IF &&NAME = 1 &GOTO -GLCONT
&ECODE = &STRING OF NOT ELIGIBLE!
```

```
SIGNAL
&GOTO -EGOALSANDU

-GTEGOAL
&ECODE = &STRING OF BLANK/IMPROPER NUMBER!
SIGNAL
&GOTO -EGOALSANDU


-GLCONT

&IF &SG = 1 &GOTO -GOAL1
&IF &SG = 2 &GOTO -GOAL2
&IF &SG = 3 &GOTO -GOAL3


*****************************************************************
*    GOAL TYPE I
*****************************************************************

-GOAL1

USE PANEL412
MAP DATA 1 SNAM 2 UNAM 3 YNO                (LOAD UNLOAD PREVIEW
MAP DATA 4 AV1 5 AV2 6 AV3 7 AV4            (LOAD UNLOAD PREVIEW
MAP DATA 8 RE1 9 RE2 10 RE3 11 RE4          (LOAD UNLOAD PREVIEW
MAP DATA 12 AL1 13 AL2 14 AL3 15 AL4        (LOAD UNLOAD PREVIEW
MAP DATA 16 DT1 17 DT2 18 DT3 19 DT4        (LOAD UNLOAD PREVIEW
MAP DATA 20 PR1 21 PR2 22 PR3 23 PR4        (LOAD UNLOAD PREVIEW
MAP DATA 24 WT1 25 WT2 26 WT3 27 WT4        (LOAD UNLOAD PREVIEW
MAP DATA 28 DQ1 29 DQ2 30 DQ3 31 DQ4        (LOAD UNLOAD PREVIEW
MAP DATA 32 TG1 33 TG2 34 TG3 35 TG4        (LOAD UNLOAD PREVIEW
MAP DATA 36 AG1 37 AG2 38 AG3 39 AG4        (LOAD UNLOAD PREVIEW
MAP DATA 40 AD1 41 AD2 42 AD3 43 AD4        (LOAD UNLOAD PREVIEW
MAP DATA 44 PD1 45 PD2 46 PD3 47 PD4        (LOAD UNLOAD PREVIEW
MAP DATA 48 ECODE                           (LOAD UNLOAD PREVIEW

&NAME = &CONCAT OF S &SN
&SNAM = &&NAME
&NAME = &CONCAT OF U &UN
&UNAM = &&NAME

&K = -4
&L = 0
&LOOP -GETGOAL1 &NY
&L = &L + 1
&COMMAND EXECIO 1 DISKR YEAR DATA X &L (FINIS
&READ VAR &YNO

&N = 0
&LOOP -G1INIT1 4
&N = &N + 1
&AL = &CONCAT OF AL &N
&DT = &CONCAT OF DT &N
&PR = &CONCAT OF PR &N
&WT = &CONCAT OF WT &N
&DQ = &CONCAT OF DQ &N
&TG = &CONCAT OF TG &N
&AG = &CONCAT OF AG &N
&AD = &CONCAT OF AD &N
&PD = &CONCAT OF PD &N
&&AL = &BLANK
&&DT = &BLANK
&&PR = &BLANK
&&TG = &BLANK
&&AG = &BLANK
&&AD = &BLANK
&&PD = &BLANK
&&WT = 1
&&DQ = N
-G1INIT1
```

```
&K = &K + 4
&Q1 = &K + 1
&Q2 = &K + 2
&Q3 = &K + 3
&Q4 = &K + 4

&N = 0
&LOOP -G1INIT2 4
&N = &N + 1
&QTR = &CONCAT OF Q &N
&NAME1 = &CONCAT OF T &SN &&QTR
&NAME2 = &CONCAT OF AV &N
&&NAME2 = &&NAME1
&NAME1 = &CONCAT OF V &UN &&QTR
&NAME2 = &CONCAT OF RE &N
&&NAME2 = &&NAME1
-G1INIT2

&N = 0
&LOOP -G1INIT3 4
&N = &N + 1
&QTR = &CONCAT OF Q &N
&TG = &CONCAT OF TG &N
&AG = &CONCAT OF AG &N
&AD = &CONCAT OF AD &N
&PD = &CONCAT OF PD &N
&NAME = &CONCAT OF X 1 &SN &UN &&QTR
&STACK &&NAME
&READ VAR &&TG &&AG &&AD &&PD
&NAME = &CONCAT OF G 1 &SN &UN &&QTR
&IF .&&NAME = .&BLANK &GOTO -G1INIT3
&AL = &CONCAT OF AL &N
&DT = &CONCAT OF DT &N
&PR = &CONCAT OF PR &N
&WT = &CONCAT OF WT &N
&STACK &&NAME
&READ VAR &&AL &&DT &&PR &&WT
&IF &&DT = 1 &&DT = <
&IF &&DT = 2 &&DT = >
&IF &&DT = 3 &&DT = =
-G1INIT3

-EG1

DISPLAY

&IF &RSTATUS EQ ENTER &SKIP 4
&ECODE = &STRING OF USE RETURN KEY!
-ELG1
SIGNAL
&GOTO -EG1

&ECODE = &BLANK
&N = 0
&LOOP -CKGOAL1 4
&N = &N + 1
&QTR = &CONCAT OF Q &N
&AL = &CONCAT OF AL &N
&DQ = &CONCAT OF DQ &N
&IF .&&AL EQ .&BLANK &GOTO -CKGOAL1
&IF .&&DQ EQ .Y     &GOTO -CKGOAL1

&AL = &CONCAT OF AL &N
&DT = &CONCAT OF DT &N
&PR = &CONCAT OF PR &N
&WT = &CONCAT OF WT &N
&DQ = &CONCAT OF DQ &N
&IF &&AL LT 0          &ECODE = &STRING OF NEGATIVE AMOUNT!
&IF .&ECODE NE .&BLANK &GOTO -ELG1
&IF .&&DT = .&BLANK     &ECODE = &STRING OF NO DEVIATIONAL TYPE!
&IF .&ECODE NE .&BLANK &GOTO -ELG1
&M = &LOCATION OF &&DT < = >
```

```
&IF &M = 0            &ECODE = &STRING OF INVALID DEVIATIONAL TYPE!
&IF .&ECODE NE .&BLANK &GOTO -ELG1
&IF .&&PR = .&BLANK     &ECODE = &STRING OF NO PRIORITY!
&IF .&ECODE NE .&BLANK &GOTO -ELG1
&IF &&PR LT 1          &ECODE = &STRING OF INVALID PRIORITY!
&IF .&ECODE NE .&BLANK &GOTO -ELG1
&IF .&&WT = .&BLANK     &ECODE = &STRING OF NO WEIGHT!
&IF .&ECODE NE .&BLANK &GOTO -ELG1
&IF &&WT LT 0          &ECODE = &STRING OF INVALID WEIGHT!
&IF .&ECODE NE .&BLANK &GOTO -ELG1
&IF &&DQ NE N          &ECODE = &STRING OF ENTER Y/N TO DELETE!
&IF .&ECODE NE .&BLANK &GOTO -ELG1

-CKGOAL1

&N = 0
&LOOP -G1INIT4 4
&N = &N + 1
&QTR = &CONCAT OF Q &N
&AL = &CONCAT OF AL &N
&DT = &CONCAT OF DT &N
&PR = &CONCAT OF PR &N
&WT = &CONCAT OF WT &N
&DQ = &CONCAT OF DQ &N
&IF .&&AL EQ .&BLANK &GOTO -G1NOGOAL
&IF .&&DQ EQ .Y &GOTO -G1NOGOAL
&IF &&DT = < &&DT = 1
&IF &&DT = > &&DT = 2
&IF &&DT = = &&DT = 3
&NAME1 = &STRING OF &&AL &&DT &&PR &&WT
&NAME = &CONCAT OF G 1 &SN &UN &&QTR
&&NAME = &NAME1
&GOTO -G1INIT4
-G1NOGOAL
&NAME = &CONCAT OF G 1 &SN &UN &&QTR
&&NAME = &BLANK
-G1INIT4


-GETGOAL1

&GOTO -GOALS


*****************************************************************
*    GOAL TYPE II
*****************************************************************

-GOAL2

USE PANEL421
MAP DATA 1 SNAM 2 UNAM 3 YNO                    (LOAD UNLOAD PREVIEW
MAP DATA 4 AV1 5 RE1 6 AV2 7 RE2 8 AV3 9 RE3      (LOAD UNLOAD PREVIEW
MAP DATA 10 AL 11 DT 12 PR 13 WT 14 DQ           (LOAD UNLOAD PREVIEW
MAP DATA 15 GT1 16 GT2 17 AT1 18 AT2            (LOAD UNLOAD PREVIEW
MAP DATA 19 AD1 20 AD2 21 PD1 22 PD2             (LOAD UNLOAD PREVIEW
MAP DATA 23 ECODE                          (LOAD UNLOAD PREVIEW

&NAME = &CONCAT OF S &SN
&SNAM = &&NAME
&NAME = &CONCAT OF U &UN
&UNAM = &&NAME

&AV1 = 0
&AV2 = 0
&AV3 = 0
&RE1 = 0
&RE2 = 0
&RE3 = 0

&M = &MULT OF &NY 4
&K = 0
```

```
&LOOP -AVREG2 &M
&K = &K + 1
&NAME = &CONCAT OF T &SN &K
&AV3 = &AV3 + &&NAME
&NAME = &CONCAT OF V &UN &K
&RE3 = &RE3 + &&NAME
-AVREG2

&L = 0
&LOOP -GETGOAL2 &NY
&L = &L + 1
&COMMAND EXECIO 1 DISKR YEAR DATA X &L (FINIS
&READ VAR &YNO

&AL = &BLANK
&DT = &BLANK
&PR = &BLANK
&DQ = N
&WT = 1
&AV1 = 0
&RE1 = 0
&GT1 = &BLANK
&AT1 = &BLANK
&AD1 = &BLANK
&PD1 = &BLANK
&GT2 = &BLANK
&AT2 = &BLANK
&AD2 = &BLANK
&PD2 = &BLANK

&K = &MULT OF &L 4
&M = &L - 1
&M = &MULT OF &M 4
&LOOP -COMGOAL2 4
&M = &M + 1
&NAME = &CONCAT OF T &SN &M
&AV1 = &AV1 + &&NAME
&NAME = &CONCAT OF V &UN &M
&RE1 = &RE1 + &&NAME
-COMGOAL2

&AV2 = &AV2 + &AV1
&RE2 = &RE2 + &RE1

&NAME = &CONCAT OF X 2 &SN &UN &L
&STACK &&NAME
&READ VAR &GT1 &GT2 &AT1 &AT2 &AD1 &AD2 &PD1 &PD2

&NAME = &CONCAT OF G 2 &SN &UN &L
&IF .&&NAME = .&BLANK &GOTO -EG2

&STACK &&NAME
&READ VAR &AL &DT &PR &WT
&IF &DT = 1 &DT = <
&IF &DT = 2 &DT = >
&IF &DT = 3 &DT = =

-EG2

DISPLAY

&IF &RSTATUS EQ ENTER &SKIP 4
&ECODE = &STRING OF USE RETURN KEY!
-ELG2
SIGNAL
&GOTO -EG2

&ECODE = &BLANK
&IF .&AL EQ .&BLANK &SKIP 1
&IF .&DQ NE .Y &SKIP 3
&NAME = &CONCAT OF G 2 &SN &UN &L
```

```
&&NAME = &STRING OF &BLANK
&GOTO -GETGOAL2

* &IF &AL LT 0          &ECODE = &STRING OF INVALID PERCENTAGE!
* &IF .&ECODE NE .&BLANK &GOTO -ELG2
* &IF &AL GT 100        &ECODE = &STRING OF INVALID PERCENTAGE!
* &IF .&ECODE NE .&BLANK &GOTO -ELG2
&IF .&DT = .&BLANK      &ECODE = &STRING OF NO DEVIATIONAL TYPE!
&IF .&ECODE NE .&BLANK &GOTO -ELG2
&M = &LOCATION OF &DT < = >
&IF &M = 0              &ECODE = &STRING OF INVALID DEVIATIONAL TYPE!
&IF .&ECODE NE .&BLANK &GOTO -ELG2
&IF .&PR = .&BLANK      &ECODE = &STRING OF NO PRIORITY!
&IF .&ECODE NE .&BLANK &GOTO -ELG2
&IF &PR LT 1            &ECODE = &STRING OF INVALID PRIORITY!
&IF .&ECODE NE .&BLANK &GOTO -ELG2
&IF .&WT = .&BLANK      &ECODE = &STRING OF NO WEIGHT!
&IF .&ECODE NE .&BLANK &GOTO -ELG2
&IF &WT LT 0            &ECODE = &STRING OF INVALID WEIGHT!
&IF .&ECODE NE .&BLANK &GOTO -ELG2
&IF &DQ NE N            &ECODE = &STRING OF ENTER Y/N FOR DELETE?
&IF .&ECODE NE .&BLANK &GOTO -ELG2

&IF &DT = < &DT = 1
&IF &DT = > &DT = 2
&IF &DT = = &DT = 3

&MM = &LOCATION OF . &AL
&IF &MM = 0 &AL = &CONCAT OF &AL .0
&NAME1 = &STRING OF &AL &DT &PR &WT
&NAME = &CONCAT OF G 2 &SN &UN &L
&&NAME = &NAME1

-GETGOAL2

&GOTO -GOALS


*****************************************************************
*    GOAL TYPE III
*****************************************************************

-GOAL3

USE PANEL431
MAP DATA 1 SNAM 2 UNAM 3 YNO                    (LOAD UNLOAD PREVIEW
MAP DATA 4 AV1 5 RE1 6 AV2 7 RE2 8 AV3 9 RE3      (LOAD UNLOAD PREVIEW
MAP DATA 10 AL 11 DT 12 PR 13 WT 14 DQ           (LOAD UNLOAD PREVIEW
MAP DATA 15 GT1 16 GT2 17 AT1 18 AT2            (LOAD UNLOAD PREVIEW
MAP DATA 19 AD1 20 AD2 21 PD1 22 PD2             (LOAD UNLOAD PREVIEW
MAP DATA 23 ECODE                          (LOAD UNLOAD PREVIEW

&NAME = &CONCAT OF S &SN
&SNAM = &&NAME
&NAME = &CONCAT OF U &UN
&UNAM = &&NAME

&AV1 = 0
&AV2 = 0
&AV3 = 0
&RE1 = 0
&RE2 = 0
&RE3 = 0

&M = &MULT OF &NY 4
&K = 0
&LOOP -AVREG3 &M
&K = &K + 1
&NAME = &CONCAT OF T &SN &K
&AV3 = &AV3 + &&NAME
&NAME = &CONCAT OF V &UN &K
```

```
&RE3 = &RE3 + &&NAME
-AVREG3

&L = 0
&LOOP -GETGOAL3 &NY
&L = &L + 1
&COMMAND EXECIO 1 DISKR YEAR DATA X &L (FINIS
&READ VAR &YNO

&AL = &BLANK
&DT = &BLANK
&PR = &BLANK
&DQ = N
&WT = 1
&AV1 = 0
&RE1 = 0
&GT1 = &BLANK
&AT1 = &BLANK
&AD1 = &BLANK
&PD1 = &BLANK
&GT2 = &BLANK
&AT2 = &BLANK
&AD2 = &BLANK
&PD2 = &BLANK

&K = &MULT OF &L 4
&M = &L - 1
&M = &MULT OF &M 4
&LOOP -COMGOAL3 4
&M = &M + 1
&NAME = &CONCAT OF T &SN &M
&AV1 = &AV1 + &&NAME
&NAME = &CONCAT OF V &UN &M
&RE1 = &RE1 + &&NAME
-COMGOAL3

&AV2 = &AV2 + &AV1
&RE2 = &RE2 + &RE1

&NAME = &CONCAT OF X 3 &SN &UN &L
&STACK &&NAME
&READ VAR &GT1 &GT2 &AT1 &AT2 &AD1 &AD2 &PD1 &PD2


&NAME = &CONCAT OF G 3 &SN &UN &L
&IF .&&NAME = .&BLANK &GOTO -EG3

&STACK &&NAME
&READ VAR &AL &DT &PR &WT
&IF &DT = 1 &DT = <
&IF &DT = 2 &DT = >
&IF &DT = 3 &DT = =

-EG3

DISPLAY

&IF &RSTATUS EQ ENTER &SKIP 4
&ECODE = &STRING OF USE RETURN KEY!
-ELG3
SIGNAL
&GOTO -EG3

&ECODE = &BLANK
&IF .&AL EQ .&BLANK &SKIP 1
&IF .&DQ NE .Y &SKIP 3
&NAME = &CONCAT OF G 3 &SN &UN &L
&&NAME = &STRING OF &BLANK
&GOTO -GETGOAL3

* &IF &AL LT 0          &ECODE = &STRING OF INVALID PERCENTAGE!
* &IF .&ECODE NE .&BLANK &GOTO -ELG3
```

```
* &IF &AL GT 100          &ECODE = &STRING OF INVALID PERCENTAGE!
* &IF .&ECODE NE .&BLANK &GOTO -ELG3
&IF .&DT = .&BLANK       &ECODE = &STRING OF NO DEVIATIONAL TYPE!
&IF .&ECODE NE .&BLANK &GOTO -ELG3
&M = &LOCATION OF &DT < = >
&IF &M = 0               &ECODE = &STRING OF INVALID DEVIATIONAL TYPE!
&IF .&ECODE NE .&BLANK &GOTO -ELG3
&IF .&PR = .&BLANK       &ECODE = &STRING OF NO PRIORITY!
&IF .&ECODE NE .&BLANK &GOTO -ELG3
&IF &PR LT 1             &ECODE = &STRING OF INVALID PRIORITY!
&IF .&ECODE NE .&BLANK &GOTO -ELG3
&IF .&WT = .&BLANK       &ECODE = &STRING OF NO WEIGHT!
&IF .&ECODE NE .&BLANK &GOTO -ELG3
&IF &WT LT 0             &ECODE = &STRING OF INVALID WEIGHT!
&IF .&ECODE NE .&BLANK &GOTO -ELG3
&IF &DQ NE N             &ECODE = &STRING OF ENTER Y/N FOR DELETE?
&IF .&ECODE NE .&BLANK &GOTO -ELG3

&IF &DT = < &DT = 1
&IF &DT = > &DT = 2
&IF &DT = = &DT = 3

&MM = &LOCATION OF . &AL
&IF &MM = 0 &AL = &CONCAT OF &AL .0
&NAME1 = &STRING OF &AL &DT &PR &WT
&NAME = &CONCAT OF G 3 &SN &UN &L
&&NAME = &NAME1

-GETGOAL3

&GOTO -GOALS


*******************************************************************
*    VIEW GOALS EXISTING IN THE PRESENT MODEL
*******************************************************************

-VIEW

&PRESUME &COMMAND
* WRITE RIGID CONSTRAINTS

&STACK RIGID CONSTRAINTS

&I = 1
&M = &MULT OF &NY 4
&K = 0
&LOOP -RIGCONS &NS
&K = &K + 1
&L = 0
&LOOP -RIGCONS &NU
&L = &L + 1
&N = 0
&LOOP -RIGCONS &M
&N = &N + 1
&NAME = &CONCAT OF X &K &L &N
&IF .&&NAME = .&BLANK &SKIP 2
&I = &I + 1
&STACK &K &L &N &&NAME
-RIGCONS

EXECIO &I DISKW RIGID DATA1 X 1 (FINIS
COPYFILE RIGID DATA1 X (LRECL 80 RECFM F

* WRITE TYPE 1 GOALS

&STACK TYPE 1 GOALS

&I = 1

&M = &MULT OF &NY 4
&K = 0
```

```
&LOOP -GOAL1CON &NS
&K = &K + 1
&L = 0
&LOOP -GOAL1CON &NU
&L = &L + 1
&N = 0
&LOOP -GOAL1CON &M
&N = &N + 1
&NAME = &CONCAT OF G 1 &K &L &N
&IF .&&NAME = .&BLANK &SKIP 2
&I = &I + 1
&STACK &K &L &N &&NAME
-GOAL1CON

EXECIO &I DISKW GOAL1 DATA1 X 1 (FINIS
COPYFILE GOAL1 DATA1 X (LRECL 80 RECFM F

* WRITE TYPE 2 GOALS

&STACK TYPE 2 GOALS

&I = 1

&K = 0
&LOOP -GOAL2CON &NS
&K = &K + 1
&L = 0
&LOOP -GOAL2CON &NU
&L = &L + 1
&N = 0
&LOOP -GOAL2CON &NY
&N = &N + 1
&NAME = &CONCAT OF G 2 &K &L &N
&IF .&&NAME = .&BLANK &SKIP 2
&I = &I + 1
&STACK &K &L &N &&NAME
-GOAL2CON

EXECIO &I DISKW GOAL2 DATA1 X 1 (FINIS
COPYFILE GOAL2 DATA1 X (LRECL 80 RECFM F

* WRITE TYPE 3 GOALS

&STACK TYPE 3 GOALS

&I = 1

&K = 0
&LOOP -GOAL3CON &NS
&K = &K + 1
&L = 0
&LOOP -GOAL3CON &NU
&L = &L + 1
&N = 0
&LOOP -GOAL3CON &NY
&N = &N + 1
&NAME = &CONCAT OF G 3 &K &L &N
&IF .&&NAME = .&BLANK &SKIP 2
&I = &I + 1
&STACK &K &L &N &&NAME
-GOAL3CON


EXECIO &I DISKW GOAL3 DATA1 X 1 (FINIS
COPYFILE GOAL3 DATA1 X (LRECL 80 RECFM F

EXEC VIEWGOAL
ERASE RIGID DATA1 X
ERASE GOAL1 DATA1 X
ERASE GOAL2 DATA1 X
ERASE GOAL3 DATA1 X
```

```
EUDEXEC2
&PRESUME &SUBCOMMAND DISPLAY
&GOTO -MODEL

*****************************************************************
*    EXECUTE THE GP MODEL USING LINDOGP
*****************************************************************

-EXECUTE

&PRESUME &COMMAND


CLEAR
&BEGTYPE 22



          ****************************************
          *                                      *
          *                                      *
          *                                      *
          *      EXECUTING .............         *
          *                                      *
          *                                      *
          *                                      *
          *                                      *
          ****************************************



* WRITE RIGID CONSTRAINTS

&STACK RIGID CONSTRAINTS

&I = 1
&M = &MULT OF &NY 4
&K = 0
&LOOP -RIGCONS &NS
&K = &K + 1
&L = 0
&LOOP -RIGCONS &NU
&L = &L + 1
&N = 0
&LOOP -RIGCONS &M
&N = &N + 1
&NAME = &CONCAT OF X &K &L &N
&IF .&&NAME = .&BLANK &SKIP 2
&I = &I + 1
&STACK &K &L &N &&NAME
-RIGCONS

EXECIO &I DISKW RIGID DATA X 1 (FINIS
COPYFILE RIGID DATA X (LRECL 80 RECFM F
&NRC = &I

* WRITE TYPE 1 GOALS

&STACK TYPE 1 GOALS

&I = 1

&M = &MULT OF &NY 4
&K = 0
```

```
&LOOP -GOAL1CON &NS
&K = &K + 1
&L = 0
&LOOP -GOAL1CON &NU
&L = &L + 1
&N = 0
&LOOP -GOAL1CON &M
&N = &N + 1
&NAME = &CONCAT OF G 1 &K &L &N
&IF .&&NAME = .&BLANK &SKIP 2
&I = &I + 1
&STACK &K &L &N &&NAME
-GOAL1CON

EXECIO &I DISKW GOAL1 DATA X 1 (FINIS
COPYFILE GOAL1 DATA X (LRECL 80 RECFM F

* WRITE TYPE 2 GOALS

&STACK TYPE 2 GOALS

&I = 1

&K = 0
&LOOP -GOAL2CON &NS
&K = &K + 1
&L = 0
&LOOP -GOAL2CON &NU
&L = &L + 1
&N = 0
&LOOP -GOAL2CON &NY
&N = &N + 1
&NAME = &CONCAT OF G 2 &K &L &N
&IF .&&NAME = .&BLANK &SKIP 2
&I = &I + 1
&STACK &K &L &N &&NAME
-GOAL2CON

EXECIO &I DISKW GOAL2 DATA X 1 (FINIS
COPYFILE GOAL2 DATA X (LRECL 80 RECFM F

* WRITE TYPE 3 GOALS

&STACK TYPE 3 GOALS

&I = 1

&K = 0
&LOOP -GOAL3CON &NS
&K = &K + 1
&L = 0
&LOOP -GOAL3CON &NU
&L = &L + 1
&N = 0
&LOOP -GOAL3CON &NY
&N = &N + 1
&NAME = &CONCAT OF G 3 &K &L &N
&IF .&&NAME = .&BLANK &SKIP 2
&I = &I + 1
&STACK &K &L &N &&NAME
-GOAL3CON

EXECIO &I DISKW GOAL3 DATA X 1 (FINIS
COPYFILE GOAL3 DATA X (LRECL 80 RECFM F

FILEDEF FT01F001 DISK INIT    DATA X
FILEDEF FT02F001 DISK SOURCED DATA X
FILEDEF FT03F001 DISK USED    DATA X
FILEDEF FT04F001 DISK CONST   DATA X
FILEDEF FT16F001 DISK RIGID   DATA X
FILEDEF FT17F001 DISK GOAL1   DATA X
FILEDEF FT18F001 DISK GOAL2   DATA X
```

```
FILEDEF FT19F001 DISK GOAL3   DATA X
FILEDEF FT11F001 DISK ROW     DATA X
FILEDEF FT12F001 DISK COLUMN  DATA X
FILEDEF FT13F001 DISK RHS     DATA X
FILEDEF FT14F001 DISK BOUNDS  DATA X
MPSFILES
COPYFILE ROW     DATA X (LRECL 80 RECFM F
COPYFILE COLUMN  DATA X (LRECL 80 RECFM F
COPYFILE RHS     DATA X (LRECL 80 RECFM F
COPYFILE BOUNDS  DATA X (LRECL 80 RECFM F

FILEDEF FT01F001 DISK COLUMN DATA X
FILEDEF FT11F001 DISK COLS   DATA X
DLCLMTTL
COPYFILE COLS   DATA X (LRECL 80 RECFM F
ERASE COLUMN DATA X

SET CMSTYPE HT
&STACK (5,8,CH,A,19,4,BI,A)
SSORT COLS DATA X COLSTD DATA X
SET CMSTYPE RT
ERASE COLS DATA X
COPYFILE COLSTD DATA X (LRECL 80 RECFM F

FILEDEF FT01F001 DISK COLSTD DATA X
FILEDEF FT11F001 DISK COLM   DATA X
ADCLMTTL
COPYFILE COLM   DATA X (LRECL 80 RECFM F
ERASE COLSTD DATA X
COPY COLM  DATA X COLUMN DATA X
ERASE COLM DATA X

FILEDEF FT01F001 DISK ROW     DATA X
FILEDEF FT02F001 DISK COLUMN  DATA X
FILEDEF FT03F001 DISK RHS     DATA X
FILEDEF FT04F001 DISK BOUNDS  DATA X
FILEDEF FT25F001 DISK FILE FT25F001 X
CONSOL
COPYFILE FILE FT25F001 X (LRECL 80 RECFM F

ERASE ROW    DATA X
ERASE COLUMN DATA X
ERASE RHS    DATA X
ERASE BOUNDS DATA X

FILEDEF FT01F001 DISK GOAL1   DATA X
FILEDEF FT02F001 DISK GOAL2   DATA X
FILEDEF FT03F001 DISK GOAL3   DATA X
FILEDEF FT11F001 DISK SGOAL   DATA  X
FILEDEF FT12F001 DISK NGOAL   DATA  X
FILEDEF FT13F001 DISK GOALS   DATA  X
PREPRIOR
COPYFILE SGOAL   DATA X (LRECL 80 RECFM F
COPYFILE NGOAL   DATA X (LRECL 80 RECFM F
COPYFILE GOALS   DATA X (LRECL 80 RECFM F

EXECIO 1 DISKR GOALS DATA X 1 (FINIS
&READ STRING  &YY
&STACK &NRC &YY
ERASE GOALS DATA X
EXECIO 1 DISKW GOALS DATA X 1 (FINIS
COPYFILE GOALS   DATA X (LRECL 80 RECFM F

SET CMSTYPE HT
&STACK 21 22
SORT SGOAL DATA X STDGOAL DATA X
SET CMSTYPE RT
COPYFILE STDGOAL DATA X (LRECL 80 RECFM F
ERASE SGOAL DATA X

FILEDEF FT01F001 DISK NGOAL   DATA X
FILEDEF FT02F001 DISK STDGOAL DATA X
```

```
FILEDEF FT75F001 DISK FILE FT75F001 X
PRIOR
ERASE  NGOAL  DATA  X
ERASE  STDGOAL DATA  X
COPYFILE FILE FT75F001 X (LRECL 80 RECFM F

SET CMSTYPE HT
FILEDEF FT06F001 DISK Z Z X
FILEDEF 12 CLEAR
&STACK RMPS
&STACK 25
&STACK MIN
&STACK USER
&STACK 75
&STACK NO
&STACK NO
&STACK NO
&STACK NO
&STACK NO
&STACK NO
&STACK NO
&STACK NO
&STACK NO
&STACK NO
&STACK NO
&STACK NO
&STACK NO
&STACK NO
&STACK NO
&STACK NO
&STACK NO
&STACK NO
&STACK NO
&STACK NO
&STACK QUIT
LINDOGP
SET CMSTYPE RT
RENAME FILE FT12F001 A DECVARS DATA A
COPYFILE DECVARS DATA A (LRECL 80 RECFM F
FILEDEF FT01F001 DISK DECVARS  DATA A
FILEDEF FT02F001 DISK ALLOCATN DATA X
ALLOCATN
COPYFILE ALLOCATN DATA X (LRECL 80 RECFM F
ERASE  DECVARS DATA A
ERASE FILE GPTEMP A
ERASE FILE FT25F001 X
ERASE FILE FT75F001 X
ERASE FILE FT12F001 A
ERASE Z Z X

COPY YEAR     DATA X YEAR    TEMP X
COPY INIT     DATA X INIT    TEMP X
COPY CONST    DATA X CONST   TEMP X
COPY USED     DATA X USED    TEMP X
COPY USEN     DATA X USEN    TEMP X
COPY SOURCED  DATA X SOURCED TEMP X
COPY SOURCEN  DATA X SOURCEN TEMP X
COPY ALLOCATN DATA X ALLOCATN TEMP X

*****************************************************************
*   DISPLAY RESULTS
*****************************************************************


EXEC RESULTS

*****************************************************************
*   OPTION - VIEW GOAL ACHIEVEMENTS
*****************************************************************


EXEC ACHVMNT
```

```
EUDEXEC2
&PRESUME &SUBCOMMAND DISPLAY

*****************************************************************
*   OPTION TO SAVE MODEL AS PERMANENT MODEL
*****************************************************************

-CHKMOD
USE PANEL22
MAP DATA 1 REPLY 2 ECODE              (LOAD UNLOAD PREVIEW
&REPLY = N
DISPLAY
&IF .&REPLY = .N &GOTO -NONPMODL
&IF .&REPLY = .Y &GOTO -SAVEMODL
&ECODE = STRING OF ENTER Y/N
&SKIP -4

-SAVEMODL

&PRESUME &COMMAND
ERASE SOURCED PERM A
ERASE SOURCEN PERM A
ERASE USED    PERM A
ERASE USEN    PERM A
ERASE YEAR    PERM A
ERASE INIT    PERM A
ERASE CONST   PERM A
ERASE GOALS   PERM A
ERASE GOAL1   PERM A
ERASE GOAL2   PERM A
ERASE GOAL3   PERM A
ERASE RIGID   PERM A
ERASE ALLOCATN PERM A
COPY SOURCED DATA X SOURCED PERM A
COPY SOURCEN DATA X SOURCEN PERM A
COPY USED    DATA X USED    PERM A
COPY USEN    DATA X USEN    PERM A
COPY YEAR    DATA X YEAR    PERM A
COPY INIT    DATA X INIT    PERM A
COPY CONST   DATA X CONST   PERM A
COPY GOALS   DATA X GOALS   PERM A
COPY GOAL1   DATA X GOAL1   PERM A
COPY GOAL2   DATA X GOAL2   PERM A
COPY GOAL3   DATA X GOAL3   PERM A
COPY RIGID   DATA X RIGID   PERM A
COPY ALLOCATN DATA X ALLOCATN PERM A

EUDEXEC2
&PRESUME &SUBCOMMAND DISPLAY

-NONPMODL


&GOTO -GPCONT


-QUIT
&COMMAND ERASE ALLOCATN DATA X
&COMMAND ERASE FILE FT32F001 A
&COMMAND ERASE FILE FT37F001 A
&EXIT
```

A.9 SANDU

```
*********************************************************************
*
*                    THE CONTROL PROGRAM
*
*********************************************************************
&TRACE OFF

GLOBAL LOADLIB VFLODLIB

SET CMSTYPE HT
EXEC TDISK 6 X 150
SET CMSTYPE RT


*********************************************************************
* RESET DATA BASE & CREATE DMS ENVIRONMENT
*********************************************************************

COPY SOURCED PERM A SOURCED DATA X
COPY SOURCEN PERM A SOURCEN DATA X
COPY USED    PERM A USED    DATA X
COPY USEN    PERM A USEN    DATA X
COPY YEAR    PERM A YEAR    DATA X
COPY INIT    PERM A INIT    DATA X
COPY CONST   PERM A CONST   DATA X
COPY ALLOCATN PERM A ALLOCATN DATA X
COPY GOALS   PERM A GOALS   DATA X
COPY GOAL1   PERM A GOAL1   DATA X
COPY GOAL2   PERM A GOAL2   DATA X
COPY GOAL3   PERM A GOAL3   DATA X
COPY RIGID   PERM A RIGID   DATA X

EUDEXEC2
&PRESUME &SUBCOMMAND DISPLAY


*********************************************************************
* INTRODUCTORY PANEL
*********************************************************************


-INTRO
USE INTRO
DISPLAY


*********************************************************************
* DISPLAY MAIN MENU
*********************************************************************


-MAINMENU
USE MAINMENU
-ERRORMAIN
DISPLAY
MAP DATA 1 ECODE                    (LOAD UNLOAD PREVIEW
&IF &RSTATUS = PF1 &GOTO -OPTION1
&IF &RSTATUS = PF2 &GOTO -OPTION2
&IF &RSTATUS = PF3 &GOTO -OPTION3
&IF &RSTATUS = PF4 &GOTO -OPTION4
&IF &RSTATUS = PF5 &GOTO -OPTION5
&IF &RSTATUS = PF6 &GOTO -OPTION6
&IF &RSTATUS = PF10 &GOTO -END
&ECODE = &STRING OF UNDEFINED PF KEY!
SIGNAL
&GOTO -ERRORMAIN
```

```
*********************************************************************
* OPTION1 - RUN CURRENT GP MODEL
*********************************************************************

-OPTION1

&PRESUME &COMMAND

COPY SOURCED PERM A SOURCED TEMP X
COPY SOURCEN PERM A SOURCEN TEMP X
COPY USED    PERM A USED    TEMP X
COPY USEN    PERM A USEN    TEMP X
COPY YEAR    PERM A YEAR    TEMP X
COPY INIT    PERM A INIT    TEMP X
COPY CONST   PERM A CONST   TEMP X
COPY ALLOCATN PERM A ALLOCATN TEMP X

EXEC RESULTS

EUDEXEC2
&PRESUME &SUBCOMMAND DISPLAY

&GOTO -MAINMENU


*********************************************************************
* OPTION2 - MAKE TEMPORARY CHANGES
*********************************************************************

-OPTION2
&COMMAND EXEC TEMPCHNG

&GOTO -MAINMENU

*********************************************************************
* OPTION3 - LOAD ORIGINAL DATA BASE
*********************************************************************

-OPTION3

&PRESUME &COMMAND
ERASE SOURCED DATA X
ERASE SOURCEN DATA X
ERASE USED    DATA X
ERASE USEN    DATA X
ERASE YEAR    DATA X
ERASE INIT    DATA X
ERASE CONST   DATA X
ERASE RIGID   DATA X
ERASE GOAL1   DATA X
ERASE GOAL2   DATA X
ERASE GOAL3   DATA X
ERASE GOALS   DATA X
ERASE ALLOCATN DATA X
COPY SOURCED PERM A SOURCED DATA X
COPY SOURCEN PERM A SOURCEN DATA X
COPY USED    PERM A USED    DATA X
COPY USEN    PERM A USEN    DATA X
COPY YEAR    PERM A YEAR    DATA X
COPY INIT    PERM A INIT    DATA X
COPY CONST   PERM A CONST   DATA X
COPY GOALS   PERM A GOALS   DATA X
COPY GOAL1   PERM A GOAL1   DATA X
COPY GOAL2   PERM A GOAL2   DATA X
```

```
COPY GOAL3   PERM A GOAL3  DATA X
COPY RIGID   PERM A RIGID  DATA X
COPY ALLOCATN PERM A ALLOCATN DATA X
EUDEXEC2
&PRESUME &SUBCOMMAND DISPLAY

&GOTO -INTRO

*********************************************************************
* OPTION4 - MAKE TEMPORARY CHANGES PERMANENT
*********************************************************************


-OPTION4


USE TEMPPERM
MAP DATA 1 ECODE                    (LOAD UNLOAD PREVIEW
-ERRQUIT
DISPLAY
&IF &RSTATUS = PF1 &GOTO -SAVE
&IF &RSTATUS = PF10 &GOTO -MAINMENU
&ECODE = &STRING OF UNDEFINED PF KEY
SIGNAL
&GOTO -ERRQUIT

-SAVE

&PRESUME &COMMAND
ERASE SOURCED PERM A
ERASE SOURCEN PERM A
ERASE USED    PERM A
ERASE USEN    PERM A
ERASE YEAR    PERM A
ERASE INIT    PERM A
ERASE CONST   PERM A
COPY SOURCED DATA X SOURCED PERM A
COPY SOURCEN DATA X SOURCEN PERM A
COPY USED    DATA X USED    PERM A
COPY USEN    DATA X USEN    PERM A
COPY YEAR    DATA X YEAR    PERM A
COPY INIT    DATA X INIT    PERM A
COPY CONST   DATA X CONST   PERM A
EUDEXEC2
&PRESUME &SUBCOMMAND DISPLAY

&GOTO -INTRO

*********************************************************************
* OPTION5 - MAKE PERMANENT CHANGES
*********************************************************************


-OPTION5
&COMMAND EXEC PERMCHNG

&GOTO -MAINMENU

*********************************************************************
* OPTION6 - RUN GP MODEL
*********************************************************************


-OPTION6
&COMMAND EXEC RUNMODEL

&GOTO -MAINMENU
```

```
*********************************************************************
* END - QUIT THE MODEL
*********************************************************************


-END
USE QUITMODL
-ERRQUITMODL
DISPLAY
MAP DATA 1 ECODE (LOAD UNLOAD PREVIEW
&IF &RSTATUS = PF1 &GOTO -MAINMENU
&IF &RSTATUS = PF10 &GOTO -ENDALL
&ECODE = &STRING OF UNDEFINED PF KEY!
SIGNAL
&GOTO -ERRQUITMODL

-ENDALL
&PRESUME &COMMAND
EXEC DETACH 150

&EXIT
```

A.10 TEMPCHNG

```
*************************************************************************
*
*          OPTION 2 - MAKE TEMPORARY CHANGES TO DATA
*
*************************************************************************

&TRACE OFF


*************************************************************************
*  DECIDE ON PLANNING HORIZON
*************************************************************************

EXEC TEMPHRZN


EUDEXEC2
&PRESUME &SUBCOMMAND DISPLAY


*************************************************************************
*  DISPLAY MAIN MENU
*************************************************************************


-MAIN

USE TEMPMAIN
-ERRORMAIN

DISPLAY
MAP DATA 1 ECODE (LOAD UNLOAD PREVIEW
&IF &RSTATUS = PF1 &GOTO -OPTION1
&IF &RSTATUS = PF2 &GOTO -OPTION2
&IF &RSTATUS = PF10 &GOTO -END
&ECODE = &STRING OF UNDEFINED PF KEY!
SIGNAL
&GOTO -ERRORMAIN


*************************************************************************
*  OPTION1 - MAKE CHANGES TO SOURCES
*************************************************************************


-OPTION1


*************************************************************************
*  DISPLAY SOURCE CHANGE MENU
*************************************************************************


-SRCEMENU

USE TSRCOPTN
MAP DATA 1 ECODE                    (LOAD UNLOAD PREVIEW
-ERRSRCEOPN
DISPLAY
&IF &RSTATUS = PF1 &GOTO -SRCEOPT1
&IF &RSTATUS = PF2 &GOTO -SRCEOPT2
&IF &RSTATUS = PF3 &GOTO -SRCEOPT3
&IF &RSTATUS = PF4 &GOTO -SRCEOPT4
&IF &RSTATUS = PF10 &GOTO -MAIN
&ECODE = &STRING OF UNDEFINED PF KEY!
```

```
SIGNAL
&GOTO -ERRSRCEOPN

*************************************************************************
*  MODIFY X SOURCE
*  SELECT SOURCE
*************************************************************************


-SRCEOPT1

USE TMPSRCEM
MAP DATA  1 SN1   2 SN2   3 SN3   4 SN4   5 SN5     (LOAD UNLOAD PREVIEW
MAP DATA  6 SN6   7 SN7   8 SN8   9 SN9  10 SN10    (LOAD UNLOAD PREVIEW
MAP DATA 11 SN11 12 SN12 13 SN13 14 SN14 15 SN15    (LOAD UNLOAD PREVIEW
MAP DATA 16 SN16 17 ECODE                           (LOAD UNLOAD PREVIEW

&COMMAND EXECIO 1 DISKR INIT DATA X 1 (FINIS
&READ VAR &NS &NU &NY &STYR &STYRNO

&COMMAND EXECIO &NU DISKR USEN DATA X 1 (FINIS
&N = 0
&LOOP 3 &NU
&N = &N + 1
&NAME = &CONCAT OF U &N
&READ STRING &&NAME

&COMMAND EXECIO &NS DISKR SOURCEN DATA X 1 (FINIS
&N = 0
&LOOP 6 &NS
&N = &N + 1
&NAME = &CONCAT OF S &N
&READ STRING &&NAME
&NAME1 = &CONCAT OF SN &N
&&NAME1 = &CONCAT OF &BLANK &N . &BLANK &&NAME
&IF &N LT 10 &&NAME1 = &CONCAT OF &BLANK &&NAME1

&N = &N + 1
&IF &N GT 16 &SKIP 3
&TEMP = &CONCAT OF SN &N
SET &TEMP (PRO
&SKIP -4

&SN = 0

-ERRSRCOPT1

DISPLAY

&IF &RSTATUS = PF10 &GOTO -SRCEMENU
&IF &RCURSOR = SN1 &SN = 1
&IF &RCURSOR = SN2 &SN = 2
&IF &RCURSOR = SN3 &SN = 3
&IF &RCURSOR = SN4 &SN = 4
&IF &RCURSOR = SN5 &SN = 5
&IF &RCURSOR = SN6 &SN = 6
&IF &RCURSOR = SN7 &SN = 7
&IF &RCURSOR = SN8 &SN = 8
&IF &RCURSOR = SN9 &SN = 9
&IF &RCURSOR = SN10 &SN = 10
&IF &RCURSOR = SN11 &SN = 11
&IF &RCURSOR = SN12 &SN = 12
&IF &RCURSOR = SN13 &SN = 13
&IF &RCURSOR = SN14 &SN = 14
&IF &RCURSOR = SN15 &SN = 15
&IF &RCURSOR = SN16 &SN = 16
&IF &RSTATUS EQ ENTER &GOTO -MODSOU
&ECODE = &STRING OF UNDEFINED PF KEY!
SIGNAL
&GOTO -ERRSRCOPT1
```

```
-MODSOU

&STACK &NS &NU &SN &NY
&COMMAND EXECIO 1 DISKW SRCE DATA X 1 F 80 (FINIS

&PRESUME &COMMAND

FILEDEF FT01F001 DISK SRCE    DATA X
FILEDEF FT02F001 DISK SOURCED DATA X
FILEDEF FT03F001 DISK CONST   DATA X
FILEDEF FT07F001 DISK RETSRCE DATA X
FILEDEF FT08F001 DISK RETCONT DATA X
RETSRCE

COPYFILE RETSRCE DATA X (LRECL 80 RECFM F
COPYFILE RETCONT DATA X (LRECL 80 RECFM F

EUDEXEC2
&PRESUME &SUBCOMMAND DISPLAY


*********************************************************************
*  MODIFY INITIAL BALANCE
*********************************************************************


USE TMSRCBAL
MAP DATA 1 SNAME 2 CIBAL 3 IBAL 4 ECODE          (LOAD UNLOAD PREVIEW

&NAME = &CONCAT OF S &SN
&SNAME = &&NAME
&COMMAND EXECIO 1 DISKR RETSRCE DATA X 1 (FINIS
&READ VAR &CIBAL

DISPLAY

&IF .&IBAL NE .&BLANK &SKIP 3
&IF .&IBAL = .&BLANK &IBAL = &CIBAL

DISPLAY

&STACK &IBAL
&COMMAND EXECIO 1 DISKW MODSRCE DATA X 1 F 80 (FINIS


*********************************************************************
*  MODIFY QUARTERLY FUNDS
*********************************************************************


USE TMSRCQTR
MAP DATA 1 SNAME 2 YEAR                  (LOAD UNLOAD PREVIEW
MAP DATA 3 QTRO1 4 QTRN1 5 QTRO2 6 QTRN2      (LOAD UNLOAD PREVIEW
MAP DATA 7 QTRO3 8 QTRN3 9 QTRO4 10 QTRN4     (LOAD UNLOAD PREVIEW
MAP DATA 11 ECODE                        (LOAD UNLOAD PREVIEW

&N = 0
&LOOP -MSRCQTR &NY
&N = &N + 1
&M = &N + 1
&QTRN1 = &BLANK
&QTRN2 = &BLANK
&QTRN3 = &BLANK
&QTRN4 = &BLANK

&NAME = &CONCAT OF S &SN
&SNAME = &&NAME

&COMMAND EXECIO 1 DISKR YEAR DATA X &N (FINIS
&READ VAR &YEAR
```

```
&COMMAND EXECIO 1 DISKR RETSRCE DATA X &M (FINIS
&READ VAR &QTRO1 &QTRO2 &QTRO3 &QTRO4

&NB = 0
DISPLAY

&IF .&QTRN1 EQ .&BLANK &NB = 1
&IF .&QTRN2 EQ .&BLANK &NB = 1
&IF .&QTRN3 EQ .&BLANK &NB = 1
&IF .&QTRN4 EQ .&BLANK &NB = 1
&IF .&QTRN1 EQ .&BLANK &QTRN1 = &QTRO1
&IF .&QTRN2 EQ .&BLANK &QTRN2 = &QTRO2
&IF .&QTRN3 EQ .&BLANK &QTRN3 = &QTRO3
&IF .&QTRN4 EQ .&BLANK &QTRN4 = &QTRO4

&IF &NB = 0 &SKIP 2

DISPLAY

&STACK &QTRN1 &QTRN2 &QTRN3 &QTRN4
&COMMAND EXECIO 1 DISKW MODSRCE DATA X &M F 80 (FINIS

-MSRCQTR

USE TSRCLIST
MAP DATA 1 SNAME 2 REPLY 3 ECODE            (LOAD UNLOAD PREVIEW

&NAME = &CONCAT OF S &SN
&SNAME = &&NAME
&REPLY = N

DISPLAY

&IF &REPLY = N &GOTO -NMSRCELIG
&IF &REPLY = Y &GOTO -MSRCELIG
&ECODE = &STRING OF ENTER 'Y' OR 'N'
SIGNAL
&SKIP -6

-MSRCELIG

USE TMCKSRC
MAP DATA 1 SNAME                        (LOAD UNLOAD PREVIEW
MAP DATA  2 UN1  3 E1  4 UN2  5 E2  6 UN3  7 E3   (LOAD UNLOAD PREVIEW
MAP DATA  8 UN4  9 E4 10 UN5 11 E5 12 UN6 13 E6   (LOAD UNLOAD PREVIEW
MAP DATA 14 UN7 15 E7 16 UN8 17 E8 18 UN9 19 E9   (LOAD UNLOAD PREVIEW
MAP DATA 20 UN10 21 E10 22 UN11 23 E11          (LOAD UNLOAD PREVIEW
MAP DATA 24 UN12 25 E12 26 UN13 27 E13          (LOAD UNLOAD PREVIEW
MAP DATA 28 UN14 29 E14 30 UN15 31 E15          (LOAD UNLOAD PREVIEW
MAP DATA 32 UN16 33 E16 34 ECODE                (LOAD UNLOAD PREVIEW

&NAME = &CONCAT OF S &SN
&SNAME = &&NAME

&COMMAND EXECIO &NU DISKR RETCONT DATA X 1 (FINIS
&N = 0
&LOOP 6 &NU
&N = &N + 1
&NAME = &CONCAT OF E &N
&READ VAR &&NAME
&NAME = &CONCAT OF UN &N
&NAME1 = &CONCAT OF U &N
&&NAME = &&NAME1

&IF &N GE 16 &SKIP 4
&N = &N + 1
&NAME = &CONCAT OF E &N
SET &NAME (PRO
&SKIP -4

-MSRCLERR
```

```
DISPLAY

&N = 0
&LOOP -MSRCCONT &NU
&N = &N + 1
&NAME = &CONCAT OF E &N
&IF .&&NAME EQ .Y &GOTO -MSRCCONT
&IF .&&NAME EQ .N &GOTO -MSRCCONT
&ECODE = &STRING OF ENTER 'Y' OR 'N'
SIGNAL
&GOTO -MSRCLERR

-MSRCCONT

&N = 0
&LOOP 3 &NU
&N = &N + 1
&NAME = &CONCAT OF E &N
&STACK &&NAME
&COMMAND EXECIO &NU DISKW MODCONT DATA X 1 F 80 (FINIS
&GOTO -MSDONE

-NMSRCELIG
&COMMAND COPY RETCONT DATA X MODCONT DATA X

-MSDONE
&PRESUME &COMMAND
FILEDEF FT01F001 DISK SRCE    DATA X
FILEDEF FT02F001 DISK SOURCED DATA X
FILEDEF FT03F001 DISK CONST   DATA X
FILEDEF FT08F001 DISK MODSRCE DATA X
FILEDEF FT09F001 DISK MODCONT DATA X
FILEDEF FT10F001 DISK NEWSRCE DATA X
FILEDEF FT11F001 DISK NEWCONT DATA X
FILEDEF FT21F001 DISK RIGID    DATA X
FILEDEF FT22F001 DISK GOAL1    DATA X
FILEDEF FT23F001 DISK GOAL2    DATA X
FILEDEF FT24F001 DISK GOAL3    DATA X
FILEDEF FT31F001 DISK RIGID    DATA1 X
FILEDEF FT32F001 DISK GOAL1    DATA1 X
FILEDEF FT33F001 DISK GOAL2    DATA1 X
FILEDEF FT34F001 DISK GOAL3    DATA1 X
FILEDEF FT35F001 DISK GOALS    DATA1 X
MODSRCE
COPYFILE NEWSRCE DATA X (LRECL 80 RECFM F
COPYFILE NEWCONT DATA X (LRECL 80 RECFM F
ERASE SOURCED DATA X
ERASE CONST  DATA X
COPY NEWSRCE DATA X SOURCED DATA X
COPY NEWCONT DATA X CONST  DATA X
ERASE NEWSRCE DATA X
ERASE NEWCONT DATA X
ERASE SRCE DATA X

ERASE MODSRCE DATA X
ERASE RETSRCE DATA X
ERASE MODCONT DATA X
ERASE RETCONT DATA X

ERASE RIGID DATA X
ERASE GOAL1 DATA X
ERASE GOAL2 DATA X
ERASE GOAL3 DATA X
ERASE GOALS DATA X

COPY RIGID DATA1 X RIGID DATA X (LRECL 100 RECFM F
COPY GOAL1 DATA1 X GOAL1 DATA X (LRECL 100 RECFM F
COPY GOAL2 DATA1 X GOAL2 DATA X (LRECL 100 RECFM F
COPY GOAL3 DATA1 X GOAL3 DATA X (LRECL 100 RECFM F
COPY GOALS DATA1 X GOALS DATA X (LRECL 100 RECFM F
```

```
ERASE RIGID DATA1 X
ERASE GOAL1 DATA1 X
ERASE GOAL2 DATA1 X
ERASE GOAL3 DATA1 X
ERASE GOALS DATA1 X


EUDEXEC2
&PRESUME &SUBCOMMAND DISPLAY
&GOTO -SRCEMENU


*********************************************************************
*  DELETE X SOURCE
*  SELECT SOURCE
*********************************************************************


-SRCEOPT2

USE TMPSRCED
MAP DATA  1 SN1   2 SN2   3 SN3   4 SN4   5 SN5     (LOAD UNLOAD PREVIEW
MAP DATA  6 SN6   7 SN7   8 SN8   9 SN9  10 SN10    (LOAD UNLOAD PREVIEW
MAP DATA 11 SN11 12 SN12 13 SN13 14 SN14 15 SN15    (LOAD UNLOAD PREVIEW
MAP DATA 16 SN16 17 ECODE                           (LOAD UNLOAD PREVIEW

&COMMAND EXECIO 1 DISKR INIT DATA X 1 (FINIS
&READ VAR &NS &NU &NY &STYR &STYRNO

&COMMAND EXECIO &NU DISKR USEN DATA X 1 (FINIS
&N = 0
&LOOP 3 &NU
&N = &N + 1
&NAME = &CONCAT OF U &N
&READ STRING &&NAME

&COMMAND EXECIO &NS DISKR SOURCEN DATA X 1 (FINIS
&N = 0
&LOOP 6 &NS
&N = &N + 1
&NAME = &CONCAT OF S &N
&READ STRING &&NAME
&NAME1 = &CONCAT OF SN &N
&&NAME1 = &CONCAT OF &BLANK &N . &BLANK &&NAME
&IF &N LT 10 &&NAME1 = &CONCAT OF &BLANK &&NAME1

&N = &N + 1
&IF &N GT 16 &SKIP 3
&TEMP = &CONCAT OF SN &N
SET &TEMP (PRO
&SKIP -4

&SN = 0

-ERRSRCOPT2

DISPLAY

&IF &RSTATUS = PF10 &GOTO -SRCEMENU
&IF &RCURSOR = SN1 &SN = 1
&IF &RCURSOR = SN2 &SN = 2
&IF &RCURSOR = SN3 &SN = 3
&IF &RCURSOR = SN4 &SN = 4
&IF &RCURSOR = SN5 &SN = 5
&IF &RCURSOR = SN6 &SN = 6
&IF &RCURSOR = SN7 &SN = 7
&IF &RCURSOR = SN8 &SN = 8
&IF &RCURSOR = SN9 &SN = 9
&IF &RCURSOR = SN10 &SN = 10
&IF &RCURSOR = SN11 &SN = 11
&IF &RCURSOR = SN12 &SN = 12
&IF &RCURSOR = SN13 &SN = 13
```

```
&IF &RCURSOR = SN14 &SN = 14
&IF &RCURSOR = SN15 &SN = 15
&IF &RCURSOR = SN16 &SN = 16
&IF &RSTATUS EQ ENTER &GOTO -DELSOU
&ECODE = &STRING OF UNDEFINED PF KEY!
SIGNAL
&GOTO -ERRSRCOPT2

-DELSOU

USE TSRCDCK
MAP DATA 1 SNAME 2 REPLY 3 ECODE              (LOAD UNLOAD PREVIEW
-SRCDCHKE
&NAME = &CONCAT OF S &SN
&SNAME = &&NAME
&REPLY = &BLANK
DISPLAY
&IF &REPLY = Y &GOTO -SRCDYES
&IF &REPLY = N &GOTO -SRCEMENU
&ECODE = &STRING OF ENTER 'Y' OR 'N'
SIGNAL
&GOTO -SRCDCHKE


************************************************************************
*  DELETE X SOURCE
*  UPDATE FILES
************************************************************************


-SRCDYES

&LN = &NS - 1
&N = 0
&LOOP 5 &NS
&N = &N + 1
&IF &N = &SN &SKIP 2
&NAME = &CONCAT OF S &N
&STACK &&NAME


&COMMAND ERASE SOURCEN DATA X
&COMMAND EXECIO &LN DISKW SOURCEN DATA X 1 F 80 (FINIS
&STACK &NS &SN &NY
&COMMAND EXECIO 1 DISKW SRCE DATA X 1 F 80 (FINIS
&PRESUME &COMMAND
FILEDEF FT01F001 DISK SRCE DATA X
FILEDEF FT02F001 DISK SOURCED DATA X
FILEDEF FT03F001 DISK CONST  DATA X
FILEDEF FT07F001 DISK NEWSRCE DATA X
FILEDEF FT08F001 DISK NEWCONT  DATA X
FILEDEF FT11F001 DISK RIGID    DATA X
FILEDEF FT12F001 DISK GOAL1    DATA X
FILEDEF FT13F001 DISK GOAL2    DATA X
FILEDEF FT14F001 DISK GOAL3    DATA X
FILEDEF FT21F001 DISK RIGID    DATA1 X
FILEDEF FT22F001 DISK GOAL1    DATA1 X
FILEDEF FT23F001 DISK GOAL2    DATA1 X
FILEDEF FT24F001 DISK GOAL3    DATA1 X
FILEDEF FT25F001 DISK GOALS    DATA1 X
DELSRCE
COPYFILE NEWSRCE DATA X (LRECL 80 RECFM F
COPYFILE NEWCONT  DATA X (LRECL 80 RECFM F
ERASE SOURCED DATA X
ERASE CONST  DATA X
COPY NEWSRCE DATA X SOURCED DATA X
COPY NEWCONT  DATA X CONST  DATA X
ERASE NEWSRCE DATA X
ERASE NEWCONT  DATA X

ERASE SRCE DATA X
```

```
ERASE RIGID DATA X
ERASE GOAL1 DATA X
ERASE GOAL2 DATA X
ERASE GOAL3 DATA X
ERASE GOALS DATA X

COPY RIGID DATA1 X RIGID DATA X (LRECL 100 RECFM F
COPY GOAL1 DATA1 X GOAL1 DATA X (LRECL 100 RECFM F
COPY GOAL2 DATA1 X GOAL2 DATA X (LRECL 100 RECFM F
COPY GOAL3 DATA1 X GOAL3 DATA X (LRECL 100 RECFM F
COPY GOALS DATA1 X GOALS DATA X (LRECL 100 RECFM F

ERASE RIGID DATA1 X
ERASE GOAL1 DATA1 X
ERASE GOAL2 DATA1 X
ERASE GOAL3 DATA1 X
ERASE GOALS DATA1 X

&NS = &NS - 1
&STACK &NS &NU &NY &STYR &STYRNO
&COMMAND EXECIO 1 DISKW INIT DATA X 1 (FINIS

EUDEXEC2
&PRESUME &SUBCOMMAND DISPLAY
USE TMPSRCDL
MAP DATA 1 SNAM                          (LOAD UNLOAD PREVIEW
MAP DATA 2 SN1  3 SN2  4 SN3  5 SN4  6 SN5    (LOAD UNLOAD PREVIEW
MAP DATA 7 SN6  8 SN7  9 SN8  10 SN9  11 SN10   (LOAD UNLOAD PREVIEW
MAP DATA 12 SN11 13 SN12 14 SN13 15 SN14 16 SN15   (LOAD UNLOAD PREVIEW
MAP DATA 17 SN16                         (LOAD UNLOAD PREVIEW

&NAME = &CONCAT OF S &SN
&SNAM = &&NAME

&COMMAND EXECIO &NS DISKR SOURCEN DATA X 1 (FINIS
&N = 0
&LOOP 5 &NS
&N = &N + 1
&NAME = &CONCAT OF SN &N
&READ STRING &&NAME
&&NAME = &CONCAT OF &BLANK &N . &BLANK &&NAME
&IF &N LT 10 &&NAME = &CONCAT OF &BLANK &&NAME

DISPLAY

&GOTO -SRCEMENU

*************************************************************************
*  ADD X NEW SOURCE
*  GET SOURCE NAME
*************************************************************************


-SRCEOPT3

USE TNSRCBAL
MAP DATA 1 SNAM  2 IBAL 3 ECODE              (LOAD UNLOAD PREVIEW

-NSRCNAMER
DISPLAY

&IF .&SNAM NE .&BLANK &SKIP 3
&ECODE = &STRING OF ENTER SOURCE NAME
SIGNAL
&GOTO -NSRCNAMER
&IF .&IBAL NE .&BLANK &SKIP 2
&IF .&IBAL = .&BLANK &IBAL = 0
DISPLAY

&COMMAND EXECIO 1 DISKR INIT DATA X 1 (FINIS
&READ VAR &NS &NU &NY &STYR &STYRNO
```

```
&COMMAND EXECIO &NU DISKR USEN DATA X 1 (FINIS
&N = 0
&LOOP 3 &NU
&N = &N + 1
&NAME = &CONCAT OF U &N
&READ STRING &&NAME

&COMMAND EXECIO &NS DISKR SOURCEN DATA X 1 (FINIS
&N = 0
&LOOP 3 &NS
&N = &N + 1
&NAME = &CONCAT OF S &N
&READ STRING &&NAME

&N = &NS + 1
&STACK &SNAM
&COMMAND EXECIO 1 DISKW SOURCEN DATA X &N F 80 (FINIS
&STACK &IBAL
&COMMAND EXECIO 1 DISKW NSRCE DATA X 1 F 80 (FINIS


************************************************************************
*  READ QUARTERLY FUNDS
************************************************************************


USE TNSRCQTR
MAP DATA 1 SNAME 2 YEAR                    (LOAD UNLOAD PREVIEW
MAP DATA 3 QTR1 4 QTR2 5 QTR3 6 QTR4 7 ECODE   (LOAD UNLOAD PREVIEW

&N = 0
&LOOP -NSRCQTR &NY
&N = &N + 1
&M = &N + 1
&QTR1 = &BLANK
&QTR2 = &BLANK
&QTR3 = &BLANK
&QTR4 = &BLANK
&COMMAND EXECIO 1 DISKR YEAR DATA X &N (FINIS
&READ VAR &YEAR
&SNAME = &SNAM
&NB = 0

DISPLAY

&IF .&QTR1 EQ .&BLANK &NB = 1
&IF .&QTR2 EQ .&BLANK &NB = 1
&IF .&QTR3 EQ .&BLANK &NB = 1
&IF .&QTR4 EQ .&BLANK &NB = 1
&IF .&QTR1 EQ .&BLANK &QTR1 = 0
&IF .&QTR2 EQ .&BLANK &QTR2 = 0
&IF .&QTR3 EQ .&BLANK &QTR3 = 0
&IF .&QTR4 EQ .&BLANK &QTR4 = 0
&IF &NB = 0 &SKIP 2

DISPLAY

&STACK &QTR1 &QTR2 &QTR3 &QTR4
&COMMAND EXECIO 1 DISKW NSRCE DATA X &M F 80 (FINIS


-NSRCQTR

USE TNCKSRC
MAP DATA 1 SNAME                           (LOAD UNLOAD PREVIEW
MAP DATA  2 UN1  3 E1  4 UN2  5 E2  6 UN3  7 E3   (LOAD UNLOAD PREVIEW
MAP DATA  8 UN4  9 E4 10 UN5 11 E5 12 UN6 13 E6   (LOAD UNLOAD PREVIEW
MAP DATA 14 UN7 15 E7 16 UN8 17 E8 18 UN9 19 E9   (LOAD UNLOAD PREVIEW
MAP DATA 20 UN10 21 E10 22 UN11 23 E11          (LOAD UNLOAD PREVIEW
MAP DATA 24 UN12 25 E12 26 UN13 27 E13          (LOAD UNLOAD PREVIEW
```

```
MAP DATA 28 UN14 29 E14 30 UN15 31 E15          (LOAD UNLOAD PREVIEW
MAP DATA 32 UN16 33 E16 34 ECODE                (LOAD UNLOAD PREVIEW

&SNAME = &SNAM

&N = 0
&LOOP 4 &NU
&N = &N + 1
&NAME = &CONCAT OF UN &N
&NAME1 = &CONCAT OF U &N
&&NAME = &&NAME1

&IF &N GE 16 &SKIP 4
&N = &N + 1
&NAME = &CONCAT OF E &N
SET &NAME (PRO
&SKIP -4

-NSRCLERR

DISPLAY

&N = 0
&LOOP -NSRCCONT &NU
&N = &N + 1
&NAME = &CONCAT OF E &N
&IF .&&NAME EQ .Y &GOTO -NSRCCONT
&IF .&&NAME EQ .N &GOTO -NSRCCONT
&ECODE = &STRING OF ENTER 'Y' OR 'N'
SIGNAL
&GOTO -NSRCLERR

-NSRCCONT

&N = 0
&LOOP 3 &NU
&N = &N + 1
&NAME = &CONCAT OF E &N
&STACK &&NAME
&COMMAND EXECIO &NU DISKW NCONT DATA X 1 F 80 (FINIS

&STACK &NS &NU &NY
&COMMAND EXECIO 1 DISKW SRCE DATA X 1 (FINIS

-NSDONE

&PRESUME &COMMAND

FILEDEF FT01F001 DISK SRCE    DATA X
FILEDEF FT02F001 DISK SOURCED DATA X
FILEDEF FT03F001 DISK CONST   DATA X
FILEDEF FT08F001 DISK NSRCE   DATA X
FILEDEF FT09F001 DISK NCONT   DATA X
FILEDEF FT10F001 DISK NEWSRCE DATA X
FILEDEF FT11F001 DISK NEWCONT DATA X
ADDSRCE
COPYFILE NEWSRCE DATA X (LRECL 80 RECFM F
COPYFILE NEWCONT DATA X (LRECL 80 RECFM F
ERASE SOURCED DATA X
ERASE CONST  DATA X
COPY NEWSRCE DATA X SOURCED DATA X
COPY NEWCONT DATA X CONST  DATA X
ERASE NEWSRCE DATA X
ERASE NEWCONT DATA X
ERASE SRCE DATA X

ERASE NSRCE DATA X
ERASE NCONT DATA X

&NS = &NS + 1
&STACK &NS &NU &NY &STYR &STYRNO
&COMMAND EXECIO 1 DISKW INIT DATA X 1 (FINIS
```

```
EUDEXEC2
&PRESUME &SUBCOMMAND DISPLAY

USE TMPSRCNL
MAP DATA  1 SNAME                          (LOAD UNLOAD PREVIEW
MAP DATA  2 SN1   3 SN2   4 SN3   5 SN4   6 SN5    (LOAD UNLOAD PREVIEW
MAP DATA  7 SN6   8 SN7   9 SN8  10 SN9  11 SN10   (LOAD UNLOAD PREVIEW
MAP DATA 12 SN11 13 SN12 14 SN13 15 SN14 16 SN15   (LOAD UNLOAD PREVIEW
MAP DATA 17 SN16                           (LOAD UNLOAD PREVIEW

&SNAME = &SNAM

&COMMAND EXECIO &NS DISKR SOURCEN DATA X 1 (FINIS
&N = 0
&LOOP 5 &NS
&N = &N + 1
&NAME = &CONCAT OF SN &N
&READ STRING &&NAME
&&NAME = &CONCAT OF &BLANK &N . &BLANK &&NAME
&IF &N LT 10 &&NAME = &CONCAT OF &BLANK &&NAME


DISPLAY

&GOTO -SRCEMENU


*********************************************************************
*  SORT SOURCES
*********************************************************************

-SRCEOPT4

&PRESUME &COMMAND
EXEC  TMPSRTSR
EUDEXEC2
&PRESUME &SUBCOMMAND DISPLAY

&GOTO -SRCEMENU

*********************************************************************
*  DISPLAY USE CHANGE MENU
*********************************************************************


-OPTION2


-USEMENU

USE TUSEOPTN
MAP DATA 1 ECODE                           (LOAD UNLOAD PREVIEW
-ERRUSEOPN
DISPLAY
&IF &RSTATUS = PF1 &GOTO -USEOPT1
&IF &RSTATUS = PF2 &GOTO -USEOPT2
&IF &RSTATUS = PF3 &GOTO -USEOPT3
&IF &RSTATUS = PF4 &GOTO -USEOPT4
&IF &RSTATUS = PF10 &GOTO -MAIN
&ECODE = &STRING OF UNDEFINED PF KEY!
SIGNAL
&GOTO -ERRUSEOPN


*********************************************************************
*  MODIFY X USE
*  SELECT USE
*********************************************************************


-USEOPT1
```

```
USE TMPUSEM
MAP DATA  1 UN1   2 UN2   3 UN3   4 UN4   5 UN5     (LOAD UNLOAD PREVIEW
MAP DATA  6 UN6   7 UN7   8 UN8   9 UN9  10 UN10    (LOAD UNLOAD PREVIEW
MAP DATA 11 UN11 12 UN12 13 UN13 14 UN14 15 UN15    (LOAD UNLOAD PREVIEW
MAP DATA 16 UN16 17 ECODE                           (LOAD UNLOAD PREVIEW

&COMMAND EXECIO 1 DISKR INIT DATA X 1 (FINIS
&READ VAR &NS &NU &NY &STYR &STYRNO

&COMMAND EXECIO &NU DISKR USEN DATA X 1 (FINIS
&N = 0
&LOOP 6 &NU
&N = &N + 1
&NAME = &CONCAT OF U &N
&READ STRING &&NAME
&NAME1 = &CONCAT OF UN &N
&&NAME1 = &CONCAT OF &BLANK &N . &BLANK &&NAME
&IF &N LT 10 &&NAME1 = &CONCAT OF &BLANK &&NAME1

&COMMAND EXECIO &NS DISKR SOURCEN DATA X 1 (FINIS
&N = 0
&LOOP 3 &NS
&N = &N + 1
&NAME = &CONCAT OF S &N
&READ STRING &&NAME

&N = &NU
&N = &N + 1
&IF &N GT 16 &SKIP 3
&TEMP = &CONCAT OF UN &N
SET &TEMP (PRO
&SKIP -4

&UN = 0

-ERRUSEOPT1

DISPLAY

&IF &RSTATUS = PF10 &GOTO -USEMENU
&IF &RCURSOR = UN1 &UN = 1
&IF &RCURSOR = UN2 &UN = 2
&IF &RCURSOR = UN3 &UN = 3
&IF &RCURSOR = UN4 &UN = 4
&IF &RCURSOR = UN5 &UN = 5
&IF &RCURSOR = UN6 &UN = 6
&IF &RCURSOR = UN7 &UN = 7
&IF &RCURSOR = UN8 &UN = 8
&IF &RCURSOR = UN9 &UN = 9
&IF &RCURSOR = UN10 &UN = 10
&IF &RCURSOR = UN11 &UN = 11
&IF &RCURSOR = UN12 &UN = 12
&IF &RCURSOR = UN13 &UN = 13
&IF &RCURSOR = UN14 &UN = 14
&IF &RCURSOR = UN15 &UN = 15
&IF &RCURSOR = UN16 &UN = 16
&IF &RSTATUS EQ ENTER &GOTO -MODUSE
&ECODE = &STRING OF UNDEFINED PF KEY!
SIGNAL
&GOTO -ERRUSEOPT1

-MODUSE

&STACK &NS &NU &UN &NY
&COMMAND EXECIO 1 DISKW USE DATA X 1 F 80 (FINIS

&PRESUME &COMMAND

FILEDEF FT01F001 DISK USE    DATA X
FILEDEF FT02F001 DISK USED   DATA X
FILEDEF FT03F001 DISK CONST  DATA X
```

```
FILEDEF FT07F001 DISK RETUSE  DATA X
FILEDEF FT08F001 DISK RETCONT DATA X
RETUSE

COPYFILE RETUSE  DATA X (LRECL 80 RECFM F
COPYFILE RETCONT DATA X (LRECL 80 RECFM F

EUDEXEC2
&PRESUME &SUBCOMMAND DISPLAY


*********************************************************************
*  MODIFY QUARTERLY FUNDS
*********************************************************************


USE TMUSEQTR
MAP DATA 1 UNAME 2 YEAR                    (LOAD UNLOAD PREVIEW
MAP DATA 3 QTRO1 4 QTRN1 5 QTRO2 6 QTRN2      (LOAD UNLOAD PREVIEW
MAP DATA 7 QTRO3 8 QTRN3 9 QTRO4 10 QTRN4     (LOAD UNLOAD PREVIEW
MAP DATA 11 ECODE                         (LOAD UNLOAD PREVIEW

&N = 0
&LOOP -MUSEQTR &NY
&N = &N + 1
&QTRN1 = &BLANK
&QTRN2 = &BLANK
&QTRN3 = &BLANK
&QTRN4 = &BLANK

&NAME = &CONCAT OF U &UN
&UNAME = &&NAME

&COMMAND EXECIO 1 DISKR YEAR DATA X &N (FINIS
&READ VAR &YEAR

&COMMAND EXECIO 1 DISKR RETUSE  DATA X &N (FINIS
&READ VAR &QTRO1 &QTRO2 &QTRO3 &QTRO4

&NB = 0
DISPLAY

&IF .&QTRN1 EQ .&BLANK &NB = 1
&IF .&QTRN2 EQ .&BLANK &NB = 1
&IF .&QTRN3 EQ .&BLANK &NB = 1
&IF .&QTRN4 EQ .&BLANK &NB = 1
&IF .&QTRN1 EQ .&BLANK &QTRN1 = &QTRO1
&IF .&QTRN2 EQ .&BLANK &QTRN2 = &QTRO2
&IF .&QTRN3 EQ .&BLANK &QTRN3 = &QTRO3
&IF .&QTRN4 EQ .&BLANK &QTRN4 = &QTRO4

&IF &NB = 0 &SKIP 2

DISPLAY

&STACK &QTRN1 &QTRN2 &QTRN3 &QTRN4
&COMMAND EXECIO 1 DISKW MODUSE  DATA X &N F 80 (FINIS

-MUSEQTR

USE TUSELIST
MAP DATA 1 UNAME 2 REPLY 3 ECODE            (LOAD UNLOAD PREVIEW

&NAME = &CONCAT OF U &UN
&UNAME = &&NAME
&REPLY = N

DISPLAY

&IF &REPLY = N &GOTO -NMUSEELIG
&IF &REPLY = Y &GOTO -MUSEELIG
&ECODE = &STRING OF ENTER 'Y' OR 'N'
```

```
SIGNAL
&SKIP -6

-MUSEELIG

USE TMCKUSE
MAP DATA 1 UNAME                          (LOAD UNLOAD PREVIEW
MAP DATA  2 SN1  3 E1  4 SN2  5 E2  6 SN3  7 E3   (LOAD UNLOAD PREVIEW
MAP DATA  8 SN4  9 E4 10 SN5 11 E5 12 SN6 13 E6   (LOAD UNLOAD PREVIEW
MAP DATA 14 SN7 15 E7 16 SN8 17 E8 18 SN9 19 E9   (LOAD UNLOAD PREVIEW
MAP DATA 20 SN10 21 E10 22 SN11 23 E11          (LOAD UNLOAD PREVIEW
MAP DATA 24 SN12 25 E12 26 SN13 27 E13          (LOAD UNLOAD PREVIEW
MAP DATA 28 SN14 29 E14 30 SN15 31 E15          (LOAD UNLOAD PREVIEW
MAP DATA 32 SN16 33 E16 34 ECODE                (LOAD UNLOAD PREVIEW

&NAME = &CONCAT OF U &UN
&UNAME = &&NAME

&COMMAND EXECIO &NS DISKR RETCONT DATA X 1 (FINIS
&N = 0
&LOOP 6 &NS
&N = &N + 1
&NAME = &CONCAT OF E &N
&READ VAR &&NAME
&NAME = &CONCAT OF SN &N
&NAME1 = &CONCAT OF S &N
&&NAME = &&NAME1

&IF &N GE 16 &SKIP 4
&N = &N + 1
&NAME = &CONCAT OF E &N
SET &NAME (PRO
&SKIP -4

-MUSELERR

DISPLAY

&N = 0
&LOOP -MUSECONT &NS
&N = &N + 1
&NAME = &CONCAT OF E &N
&IF .&&NAME EQ .Y &GOTO -MUSECONT
&IF .&&NAME EQ .N &GOTO -MUSECONT
&ECODE = &STRING OF ENTER 'Y' OR 'N'
SIGNAL
&GOTO -MUSELERR

-MUSECONT

&N = 0
&LOOP 3 &NS
&N = &N + 1
&NAME = &CONCAT OF E &N
&STACK &&NAME
&COMMAND EXECIO &NS DISKW MODCONT DATA X 1 F 80 (FINIS
&GOTO -MUDONE

-NMUSEELIG
&COMMAND COPY RETCONT DATA X MODCONT DATA X

-MUDONE
&PRESUME &COMMAND
FILEDEF FT01F001 DISK USE     DATA X
FILEDEF FT02F001 DISK USED    DATA X
FILEDEF FT03F001 DISK CONST   DATA X
FILEDEF FT08F001 DISK MODUSE  DATA X
FILEDEF FT09F001 DISK MODCONT DATA X
FILEDEF FT10F001 DISK NEWUSE  DATA X
FILEDEF FT11F001 DISK NEWCONT DATA X
FILEDEF FT21F001 DISK RIGID   DATA X
FILEDEF FT22F001 DISK GOAL1   DATA X
```

```
FILEDEF FT23F001 DISK GOAL2    DATA X
FILEDEF FT24F001 DISK GOAL3    DATA X
FILEDEF FT31F001 DISK RIGID    DATA1 X
FILEDEF FT32F001 DISK GOAL1    DATA1 X
FILEDEF FT33F001 DISK GOAL2    DATA1 X
FILEDEF FT34F001 DISK GOAL3    DATA1 X
FILEDEF FT35F001 DISK GOALS    DATA1 X
MODUSE
COPYFILE NEWUSE  DATA X (LRECL 80 RECFM F
COPYFILE NEWCONT DATA X (LRECL 80 RECFM F
ERASE USED    DATA X
ERASE CONST  DATA X
COPY NEWUSE  DATA X USED    DATA X
COPY NEWCONT DATA X CONST  DATA X
ERASE NEWUSE  DATA X
ERASE NEWCONT DATA X
ERASE USE DATA X

ERASE MODUSE  DATA X
ERASE RETUSE  DATA X
ERASE MODCONT DATA X
ERASE RETCONT DATA X

ERASE RIGID DATA X
ERASE GOAL1 DATA X
ERASE GOAL2 DATA X
ERASE GOAL3 DATA X
ERASE GOALS DATA X

COPY RIGID DATA1 X RIGID DATA X (LRECL 100 RECFM F
COPY GOAL1 DATA1 X GOAL1 DATA X (LRECL 100 RECFM F
COPY GOAL2 DATA1 X GOAL2 DATA X (LRECL 100 RECFM F
COPY GOAL3 DATA1 X GOAL3 DATA X (LRECL 100 RECFM F
COPY GOALS DATA1 X GOALS DATA X (LRECL 100 RECFM F

ERASE RIGID DATA1 X
ERASE GOAL1 DATA1 X
ERASE GOAL2 DATA1 X
ERASE GOAL3 DATA1 X
ERASE GOALS DATA1 X

EUDEXEC2
&PRESUME &SUBCOMMAND DISPLAY
&GOTO -USEMENU


*********************************************************************
*  DELETE X USE
*  SELECT USE
*********************************************************************


-USEOPT2

USE TMPUSED
MAP DATA  1 UN1   2 UN2   3 UN3   4 UN4   5 UN5     (LOAD UNLOAD PREVIEW
MAP DATA  6 UN6   7 UN7   8 UN8   9 UN9  10 UN10    (LOAD UNLOAD PREVIEW
MAP DATA 11 UN11 12 UN12 13 UN13 14 UN14 15 UN15    (LOAD UNLOAD PREVIEW
MAP DATA 16 UN16 17 ECODE                           (LOAD UNLOAD PREVIEW

&COMMAND EXECIO 1 DISKR INIT DATA X 1 (FINIS
&READ VAR &NS &NU &NY &STYR &STYRNO

&COMMAND EXECIO &NU DISKR USEN DATA X 1 (FINIS
&N = 0
&LOOP 6 &NU
&N = &N + 1
&NAME = &CONCAT OF U &N
&READ STRING &&NAME
&NAME1 = &CONCAT OF UN &N
&&NAME1 = &CONCAT OF &BLANK &N . &BLANK &&NAME
&IF &N LT 10 &&NAME1 = &CONCAT OF &BLANK &&NAME1
```

```
&COMMAND EXECIO &NS DISKR SOURCEN DATA X 1 (FINIS
&N = 0
&LOOP 3 &NS
&N = &N + 1
&NAME = &CONCAT OF S &N
&READ STRING &&NAME

&N = &NU
&N = &N + 1
&IF &N GT 16 &SKIP 3
&TEMP = &CONCAT OF UN &N
SET &TEMP (PRO
&SKIP -4

&UN = 0

-ERRUSEOPT2

DISPLAY

&IF &RSTATUS = PF10 &GOTO -USEMENU
&IF &RCURSOR = UN1 &UN = 1
&IF &RCURSOR = UN2 &UN = 2
&IF &RCURSOR = UN3 &UN = 3
&IF &RCURSOR = UN4 &UN = 4
&IF &RCURSOR = UN5 &UN = 5
&IF &RCURSOR = UN6 &UN = 6
&IF &RCURSOR = UN7 &UN = 7
&IF &RCURSOR = UN8 &UN = 8
&IF &RCURSOR = UN9 &UN = 9
&IF &RCURSOR = UN10 &UN = 10
&IF &RCURSOR = UN11 &UN = 11
&IF &RCURSOR = UN12 &UN = 12
&IF &RCURSOR = UN13 &UN = 13
&IF &RCURSOR = UN14 &UN = 14
&IF &RCURSOR = UN15 &UN = 15
&IF &RCURSOR = UN16 &UN = 16
&IF &RSTATUS EQ ENTER &GOTO -DELUSE
&ECODE = &STRING OF UNDEFINED PF KEY!
SIGNAL
&GOTO -ERRUSEOPT2

-DELUSE

USE TUSEDCK
MAP DATA 1 UNAME 2 REPLY 3 ECODE              (LOAD UNLOAD PREVIEW
-USEDCHKE
&NAME = &CONCAT OF U &UN
&UNAME = &&NAME
&REPLY = &BLANK
DISPLAY
&IF &REPLY = Y &GOTO -USEDYES
&IF &REPLY = N &GOTO -USEMENU
&ECODE = &STRING OF ENTER 'Y' OR 'N'
SIGNAL
&GOTO -USEDCHKE


*********************************************************************
*  DELETE X USE
*  UPDATE FILES
*********************************************************************


-USEDYES

&LN = &NU - 1
&N = 0
&LOOP 5 &NU
&N = &N + 1
&IF &N = &UN &SKIP 2
```

```
&NAME = &CONCAT OF U &N
&STACK &&NAME

&COMMAND ERASE USEN    DATA X
&COMMAND EXECIO &LN DISKW USEN    DATA X 1 F 80 (FINIS
&STACK &NS &NU &UN &NY
&COMMAND EXECIO 1 DISKW USE DATA X 1 F 80 (FINIS
&PRESUME &COMMAND
FILEDEF FT01F001 DISK USE DATA X
FILEDEF FT02F001 DISK USED    DATA X
FILEDEF FT03F001 DISK CONST  DATA X
FILEDEF FT07F001 DISK NEWUSE  DATA X
FILEDEF FT08F001 DISK NEWCONT  DATA X
FILEDEF FT11F001 DISK RIGID    DATA X
FILEDEF FT12F001 DISK GOAL1    DATA X
FILEDEF FT13F001 DISK GOAL2    DATA X
FILEDEF FT14F001 DISK GOAL3    DATA X
FILEDEF FT21F001 DISK RIGID    DATA1 X
FILEDEF FT22F001 DISK GOAL1    DATA1 X
FILEDEF FT23F001 DISK GOAL2    DATA1 X
FILEDEF FT24F001 DISK GOAL3    DATA1 X
FILEDEF FT25F001 DISK GOALS    DATA1 X
DELUSE
COPYFILE NEWUSE  DATA X (LRECL 80 RECFM F
COPYFILE NEWCONT  DATA X (LRECL 80 RECFM F
ERASE USED    DATA X
ERASE CONST  DATA X
COPY NEWUSE  DATA X USED    DATA X
COPY NEWCONT  DATA X CONST  DATA X
ERASE NEWUSE  DATA X
ERASE NEWCONT  DATA X
ERASE USE DATA X

ERASE RIGID DATA X
ERASE GOAL1 DATA X
ERASE GOAL2 DATA X
ERASE GOAL3 DATA X
ERASE GOALS DATA X

COPY RIGID DATA1 X RIGID DATA X (LRECL 100 RECFM F
COPY GOAL1 DATA1 X GOAL1 DATA X (LRECL 100 RECFM F
COPY GOAL2 DATA1 X GOAL2 DATA X (LRECL 100 RECFM F
COPY GOAL3 DATA1 X GOAL3 DATA X (LRECL 100 RECFM F
COPY GOALS DATA1 X GOALS DATA X (LRECL 100 RECFM F

ERASE RIGID DATA1 X
ERASE GOAL1 DATA1 X
ERASE GOAL2 DATA1 X
ERASE GOAL3 DATA1 X
ERASE GOALS DATA1 X

&NU = &NU - 1
&STACK &NS &NU &NY &STYR &STYRNO
&COMMAND EXECIO 1 DISKW INIT DATA X 1 (FINIS

EUDEXEC2
&PRESUME &SUBCOMMAND DISPLAY

USE TMPUSEDL
MAP DATA  1 UNAM                          (LOAD UNLOAD PREVIEW
MAP DATA  2 UN1   3 UN2   4 UN3   5 UN4   6 UN5    (LOAD UNLOAD PREVIEW
MAP DATA  7 UN6   8 UN7   9 UN8  10 UN9  11 UN10   (LOAD UNLOAD PREVIEW
MAP DATA 12 UN11 13 UN12 14 UN13 15 UN14 16 UN15   (LOAD UNLOAD PREVIEW
MAP DATA 17 UN16                          (LOAD UNLOAD PREVIEW

&NAME = &CONCAT OF U &UN
&UNAM = &&NAME

&COMMAND EXECIO &NU DISKR USEN DATA X 1 (FINIS
&N = 0
&LOOP 5 &NU
```

```
&N = &N + 1
&NAME = &CONCAT OF UN &N
&READ STRING &&NAME
&&NAME = &CONCAT OF &BLANK &N . &BLANK &&NAME
&IF &N LT 10 &&NAME = &CONCAT OF &BLANK &&NAME


DISPLAY

&GOTO -USEMENU

*********************************************************************
*  ADD X NEW USE
*  GET USE NAME
*********************************************************************


-USEOPT3

USE TNUSEBAL
MAP DATA 1 UNAM  2 ECODE                    (LOAD UNLOAD PREVIEW

-NUSENAMER
DISPLAY

&IF .&UNAM NE .&BLANK &SKIP 3
&ECODE = &STRING OF ENTER USE NAME
SIGNAL
&GOTO -NUSENAMER

&COMMAND EXECIO 1 DISKR INIT DATA X 1 (FINIS
&READ VAR &NS &NU &NY &STYR &STYRNO

&COMMAND EXECIO &NU DISKR USEN DATA X 1 (FINIS
&N = 0
&LOOP 3 &NU
&N = &N + 1
&NAME = &CONCAT OF U &N
&READ STRING &&NAME

&COMMAND EXECIO &NS DISKR SOURCEN DATA X 1 (FINIS
&N = 0
&LOOP 3 &NS
&N = &N + 1
&NAME = &CONCAT OF S &N
&READ STRING &&NAME

&N = &NU + 1
&STACK &UNAM
&COMMAND EXECIO 1 DISKW USEN    DATA X &N F 80 (FINIS


*********************************************************************
*  READ QUARTERLY FUNDS
*********************************************************************


USE TNUSEQTR
MAP DATA 1 UNAME 2 YEAR                     (LOAD UNLOAD PREVIEW
MAP DATA 3 QTR1 4 QTR2 5 QTR3 6 QTR4 7 ECODE    (LOAD UNLOAD PREVIEW

&N = 0
&LOOP -NUSEQTR &NY
&N = &N + 1
&QTR1 = &BLANK
&QTR2 = &BLANK
&QTR3 = &BLANK
&QTR4 = &BLANK
&COMMAND EXECIO 1 DISKR YEAR DATA X &N (FINIS
&READ VAR &YEAR
&UNAME = &UNAM
&NB = 0
```

```
DISPLAY

&IF .&QTR1 EQ .&BLANK &NB = 1
&IF .&QTR2 EQ .&BLANK &NB = 1
&IF .&QTR3 EQ .&BLANK &NB = 1
&IF .&QTR4 EQ .&BLANK &NB = 1
&IF .&QTR1 EQ .&BLANK &QTR1 = 0
&IF .&QTR2 EQ .&BLANK &QTR2 = 0
&IF .&QTR3 EQ .&BLANK &QTR3 = 0
&IF .&QTR4 EQ .&BLANK &QTR4 = 0
&IF &NB = 0 &SKIP 2

DISPLAY

&STACK &QTR1 &QTR2 &QTR3 &QTR4
&COMMAND EXECIO 1 DISKW NUSE  DATA X &N F 80 (FINIS


-NUSEQTR

USE TNCKUSE
MAP DATA 1 UNAME                          (LOAD UNLOAD PREVIEW
MAP DATA  2 SN1  3 E1  4 SN2  5 E2  6 SN3  7 E3    (LOAD UNLOAD PREVIEW
MAP DATA  8 SN4  9 E4 10 SN5 11 E5 12 SN6 13 E6    (LOAD UNLOAD PREVIEW
MAP DATA 14 SN7 15 E7 16 SN8 17 E8 18 SN9 19 E9    (LOAD UNLOAD PREVIEW
MAP DATA 20 SN10 21 E10 22 SN11 23 E11            (LOAD UNLOAD PREVIEW
MAP DATA 24 SN12 25 E12 26 SN13 27 E13            (LOAD UNLOAD PREVIEW
MAP DATA 28 SN14 29 E14 30 SN15 31 E15            (LOAD UNLOAD PREVIEW
MAP DATA 32 SN16 33 E16 34 ECODE                  (LOAD UNLOAD PREVIEW

&UNAME = &UNAM

&N = 0
&LOOP 4 &NS
&N = &N + 1
&NAME = &CONCAT OF SN &N
&NAME1 = &CONCAT OF S &N
&&NAME = &&NAME1

&IF &N GE 16 &SKIP 4
&N = &N + 1
&NAME = &CONCAT OF E &N
SET &NAME (PRO
&SKIP -4

-NUSELERR

DISPLAY

&N = 0
&LOOP -NUSECONT &NS
&N = &N + 1
&NAME = &CONCAT OF E &N
&IF .&&NAME EQ .Y &GOTO -NUSECONT
&IF .&&NAME EQ .N &GOTO -NUSECONT
&ECODE = &STRING OF ENTER 'Y' OR 'N'
SIGNAL
&GOTO -NUSELERR

-NUSECONT

&N = 0
&LOOP 3 &NS
&N = &N + 1
&NAME = &CONCAT OF E &N
&STACK &&NAME
&COMMAND EXECIO &NS DISKW NCONT DATA X 1 F 80 (FINIS

&STACK &NS &NU &NY
&COMMAND EXECIO 1 DISKW USE DATA X 1 (FINIS
```

```
-NSDONE

&PRESUME &COMMAND

FILEDEF FT01F001 DISK USE     DATA X
FILEDEF FT02F001 DISK USED    DATA X
FILEDEF FT03F001 DISK CONST   DATA X
FILEDEF FT08F001 DISK NUSE    DATA X
FILEDEF FT09F001 DISK NCONT   DATA X
FILEDEF FT10F001 DISK NEWUSE  DATA X
FILEDEF FT11F001 DISK NEWCONT DATA X
ADDUSE
COPYFILE NEWUSE  DATA X (LRECL 80 RECFM F
COPYFILE NEWCONT DATA X (LRECL 80 RECFM F
ERASE USED    DATA X
ERASE CONST  DATA X
COPY NEWUSE  DATA X USED    DATA X
COPY NEWCONT DATA X CONST  DATA X
ERASE NEWUSE  DATA X
ERASE NEWCONT DATA X
ERASE USE DATA X
ERASE NUSE  DATA X
ERASE NCONT DATA X

&NU = &NU + 1
&STACK &NS &NU &NY &STYR &STYRNO
&COMMAND EXECIO 1 DISKW INIT DATA X 1 (FINIS

EUDEXEC2
&PRESUME &SUBCOMMAND DISPLAY

USE TMPUSENL
MAP DATA  1 UNAME                          (LOAD UNLOAD PREVIEW
MAP DATA  2 UN1   3 UN2   4 UN3   5 UN4   6 UN5    (LOAD UNLOAD PREVIEW
MAP DATA  7 UN6   8 UN7   9 UN8  10 UN9  11 UN10   (LOAD UNLOAD PREVIEW
MAP DATA 12 UN11 13 UN12 14 UN13 15 UN14 16 UN15   (LOAD UNLOAD PREVIEW
MAP DATA 17 UN16                           (LOAD UNLOAD PREVIEW

&UNAME = &UNAM

&COMMAND EXECIO &NU DISKR USEN DATA X 1 (FINIS
&N = 0
&LOOP 5 &NU
&N = &N + 1
&NAME = &CONCAT OF UN &N
&READ STRING &&NAME
&&NAME = &CONCAT OF &BLANK &N . &BLANK &&NAME
&IF &N LT 10 &&NAME = &CONCAT OF &BLANK &&NAME


DISPLAY

&GOTO -USEMENU

*************************************************************************
*  SORT SOURCES
*************************************************************************

-USEOPT4

&PRESUME &COMMAND
EXEC  TMPSRTUS
EUDEXEC2
&PRESUME &SUBCOMMAND DISPLAY

&GOTO -USEMENU

-END

&EXIT
```

A.11 TEMPHRZN

```
*********************************************************************
*
*     OPTION - TEMPORARILY CHANGE PLANNING HORIZON
*
* THIS EXEC PERMITS USER TO CHANGE NUMBER OF YEARS IN PLANNING HORIZON
* AND/OR STARTING YEAR OF THE PLANNING HORIZON
*
*********************************************************************

&TRACE OFF


*********************************************************************
* DISPLAY CURRENT SETTINGS FOR PLANNING HORIZON
*********************************************************************

EUDEXEC2
&PRESUME &SUBCOMMAND DISPLAY


-TOP


&COMMAND EXECIO 1 DISKR INIT DATA X   1 (FINIS
&READ VARS &NS &NU &NY &STYR &STYRNO


USE TEMPPLAN
MAP DATA 1 VOID 2 YEARS 3 STYEAR 4 ECODE          (LOAD UNLOAD PREVIEW
&YEARS = &NY
&STYEAR = &STYR

-ERRPLNTIME
DISPLAY


*********************************************************************
* CHECK IF USER HAS CHANGED PLANNING HORIZON
*********************************************************************

&IF &STYEAR NE &STYR &GOTO -CHSTYR
&IF &YEARS NE &NY &GOTO -CHNOYR
&GOTO -NOCHANGE


*********************************************************************
* CHANGE IN STARTING YEAR
*********************************************************************

-CHSTYR

&N = 1

-REFYRCT

&COMMAND EXECIO 1 DISKR REFYEAR DATA Z &N (FINIS
&READ VAR &NRFYR
&IF &NRFYR = &STYEAR &GOTO -CHYRCONT
&N = &N + 1
&IF &N LE 19 &GOTO -REFYRCT
&ECODE = &STRING OF INCORRECT STARTING YEAR!
SIGNAL
&GOTO -ERRPLNTIME
```

```
*********************************************************************
* CHANGE IN NUMBER OF YEARS
*********************************************************************

-CHNOYR
&N = &STYRNO

-CHYRCONT
&OL = &STYRNO
&OU = &OL + &NY - 1
&TL = &N
&TU = &TL + &YEARS - 1

&X = 0
&IF &TL LT &OL &X = &X + &OL - &TL
&IF &TU GT &OU &X = &X + &TU - &OU
&IF &TL GT &OU &X = &YEARS
&IF &TU LT &OL &X = &YEARS

&IF &X LE 0 &GOTO -CHREFYR


*********************************************************************
* WARN USER ABOUT NUMBER OF DATA ENTRIES THAT WILL BE NEEDED
*********************************************************************

USE TCHPLYR
MAP DATA 1 ENTRIES 2 ECODE                    (LOAD UNLOAD PREVIEW
&ENTRIES = &NS + &NU
&ENTRIES = &MULT OF &ENTRIES 4
&ENTRIES = &MULT OF &ENTRIES &X
&FLAG = 0
&IF &X = &YEARS &FLAG = 1
&IF &TL NE &OL &FLAG = 1
&IF &FLAG = 1 &ENTRIES = &ENTRIES + &NS

-CHKPYERR
DISPLAY
&IF &RSTATUS = PF1 &GOTO -CHREFYR
&IF &RSTATUS = PF10 &GOTO -NOCHANGE
&ECODE = &STRING OF UNDEFINED PF KEY!
SIGNAL
&GOTO -CHKPYERR


*********************************************************************
* READ ADDITIONAL DATA THAT IS NEEDED FOR NEW PLANNING HORIZON
*********************************************************************


-CHREFYR

&M = 1
&YN = &N
&COMMAND ERASE YEAR DATA X

-CREFYRCT
&COMMAND EXECIO 1 DISKR REFYEAR DATA Z &YN (FINIS
&READ VAR &YEARREAD
&STACK &YEARREAD
&COMMAND EXECIO 1 DISKW YEAR DATA X &M F 80 (FINIS
&M = &M + 1
&YN = &YN + 1
&IF &M LE &YEARS &GOTO -CREFYRCT


-DATAFILES
&STACK &NS &NU &YEARS &STYEAR &N
&COMMAND EXECIO 1 DISKW INIT DATA X 1 F 80 (FINIS
```

```
&M = 0
&Y = &NY + 1
&LOOP -SRCPLCH UNTIL &M = &NS
&L = &MULT OF &M &Y
&M = &M + 1
&COMMAND EXECIO 1 DISKR SOURCEN  DATA X &M (FINIS
&READ STRING &SNAME

&LINE = &L + 1
&IF &FLAG = 1 &GOTO -NEWSTBAL

USE TSRCBALO
MAP DATA 1 SN 2 IBAL 3 ECODE                (LOAD UNLOAD PREVIEW
&COMMAND EXECIO 1 DISKR SOURCED  DATA X &LINE (FINIS
&READ VAR &IBAL
&SN = &SNAME
DISPLAY
&IF &RSTATUS = PF10 &GOTO -QUIT
&GOTO -WRBAL

-NEWSTBAL
USE TSRCBALN
MAP DATA 1 SN 2 IBAL 3 ECODE                (LOAD UNLOAD PREVIEW
&SN = &SNAME
DISPLAY
&IF &RSTATUS = PF10 &GOTO -QUIT
&IF .&IBAL NE .&BLANK &SKIP 2
&IF .&IBAL = .&BLANK &IBAL = 0
DISPLAY
&IF &RSTATUS = PF10 &GOTO -QUIT

-WRBAL

&STACK &IBAL
&COMMAND EXECIO 1 DISKW SRCE DATA X

&I = -1
&LOOP -SRCEDATA &YEARS
&I = &I + 1
&J = &TL + &I
&IF &J GE &OL &SKIP 2
&CALL -NSRCQTR
&GOTO -SRCEDATA
&IF &J LE &OU &SKIP 2
&CALL -NSRCQTR
&GOTO -SRCEDATA
&CALL -OSRCQTR
-SRCEDATA

&COMMAND FINIS YEAR DATA X

-SRCPLCH

&COMMAND FINIS SRCE DATA X

&M = 0
&Y = &NY
&LOOP -USEPLCH UNTIL &M = &NU
&L = &MULT OF &M &Y
&LINE = &L
&M = &M + 1
&COMMAND EXECIO 1 DISKR USEN    DATA X &M (FINIS
&READ STRING &UNAME


&I = -1
&LOOP -USEDATA &YEARS
&I = &I + 1
&J = &TL + &I
&IF &J GE &OL &SKIP 2
&CALL -NUSEQTR
&GOTO -USEDATA
```

```
&IF &J LE &OU &SKIP 2
&CALL -NUSEQTR
&GOTO -USEDATA
&CALL -OUSEQTR
-USEDATA

&COMMAND FINIS YEAR DATA X

-USEPLCH

&COMMAND FINIS USE DATA X

&GOTO -UPDATE

-OSRCQTR
&LINE = &LINE + 1

USE TSRCQTRO
MAP DATA 1 SNAM 2 YEAR                    (LOAD UNLOAD PREVIEW
MAP DATA 3 QTR1 4 QTR2 5 QTR3 6 QTR4 7 ECODE   (LOAD UNLOAD PREVIEW

&COMMAND EXECIO 1 DISKR SOURCED  DATA X &LINE (FINIS
&READ VARS &QTR1 &QTR2 &QTR3 &QTR4
&COMMAND EXECIO 1 DISKR YEAR DATA X
&READ VAR &YEAR
&SNAM = &SNAME
&NB = 0
DISPLAY
&IF &RSTATUS = PF10 &GOTO -QUIT
&STACK &QTR1 &QTR2 &QTR3 &QTR4
&COMMAND EXECIO 1 DISKW SRCE DATA X
&RETURN

-NSRCQTR

USE TSRCQTRN
MAP DATA 1 SNAM 2 YEAR                    (LOAD UNLOAD PREVIEW
MAP DATA 3 QTR1 4 QTR2 5 QTR3 6 QTR4 7 ECODE   (LOAD UNLOAD PREVIEW

&QTR1 = &BLANK
&QTR2 = &BLANK
&QTR3 = &BLANK
&QTR4 = &BLANK
&COMMAND EXECIO 1 DISKR YEAR DATA X
&READ VAR &YEAR
&SNAM = &SNAME
&NB = 0
DISPLAY
&IF &RSTATUS = PF10 &GOTO -QUIT
&IF .&QTR1 EQ .&BLANK &NB = 1
&IF .&QTR2 EQ .&BLANK &NB = 1
&IF .&QTR3 EQ .&BLANK &NB = 1
&IF .&QTR4 EQ .&BLANK &NB = 1
&IF .&QTR1 EQ .&BLANK &QTR1 = 0
&IF .&QTR2 EQ .&BLANK &QTR2 = 0
&IF .&QTR3 EQ .&BLANK &QTR3 = 0
&IF .&QTR4 EQ .&BLANK &QTR4 = 0
&IF &NB = 0 &SKIP 1
DISPLAY
&IF &RSTATUS = PF10 &GOTO -QUIT
&STACK &QTR1 &QTR2 &QTR3 &QTR4
&COMMAND EXECIO 1 DISKW SRCE DATA X

&RETURN

-OUSEQTR

&LINE = &LINE + 1

USE TUSEQTRO
MAP DATA 1 UNAM 2 YEAR                    (LOAD UNLOAD PREVIEW
MAP DATA 3 QTR1 4 QTR2 5 QTR3 6 QTR4 7 ECODE   (LOAD UNLOAD PREVIEW
```

```
&COMMAND EXECIO 1 DISKR USED  DATA X &LINE (FINIS
&READ VARS &QTR1 &QTR2 &QTR3 &QTR4
&COMMAND EXECIO 1 DISKR YEAR DATA X
&READ VAR &YEAR
&UNAM = &UNAME
DISPLAY
&IF &RSTATUS = PF10 &GOTO -QUIT
&STACK &QTR1 &QTR2 &QTR3 &QTR4
&COMMAND EXECIO 1 DISKW USE DATA X

&RETURN

-NUSEQTR

USE TUSEQTRN
MAP DATA 1 UNAM 2 YEAR                    (LOAD UNLOAD PREVIEW
MAP DATA 3 QTR1 4 QTR2 5 QTR3 6 QTR4 7 ECODE   (LOAD UNLOAD PREVIEW

&QTR1 = &BLANK
&QTR2 = &BLANK
&QTR3 = &BLANK
&QTR4 = &BLANK
&COMMAND EXECIO 1 DISKR YEAR DATA X
&READ VAR &YEAR
&UNAM = &UNAME
&NB = 0
DISPLAY
&IF &RSTATUS = PF10 &GOTO -QUIT
&IF .&QTR1 EQ .&BLANK &NB = 1
&IF .&QTR2 EQ .&BLANK &NB = 1
&IF .&QTR3 EQ .&BLANK &NB = 1
&IF .&QTR4 EQ .&BLANK &NB = 1
&IF .&QTR1 EQ .&BLANK &QTR1 = 0
&IF .&QTR2 EQ .&BLANK &QTR2 = 0
&IF .&QTR3 EQ .&BLANK &QTR3 = 0
&IF .&QTR4 EQ .&BLANK &QTR4 = 0
&IF &NB = 0 &SKIP 1
DISPLAY
&IF &RSTATUS = PF10 &GOTO -QUIT
&STACK &QTR1 &QTR2 &QTR3 &QTR4
&COMMAND EXECIO 1 DISKW USE  DATA X

&RETURN

*************************************************************************
*  UPDATE DATA FILES
*************************************************************************

-UPDATE

&PRESUME &COMMAND

COPYFILE YEAR DATA X (LRECL 80 RECFM F
COPYFILE SRCE DATA X (LRECL 80 RECFM F
COPYFILE USE  DATA X (LRECL 80 RECFM F

ERASE SOURCED DATA X
ERASE USED    DATA X


&STACK &NS &NU &YEARS
EXECIO 1 DISKW TMPPLYR DATA X (FINIS
COPYFILE TMPPLYR DATA X (LRECL 80 RECFM F
FILEDEF FT01F001 DISK TMPPLYR DATA X
FILEDEF FT02F001 DISK SRCE    DATA X
FILEDEF FT03F001 DISK USE     DATA X
FILEDEF FT08F001 DISK SOURCED    DATA X
FILEDEF FT09F001 DISK USED    DATA X
PLANYEAR
COPYFILE SOURCED DATA X (LRECL 80 RECFM F
```

```
COPYFILE USED    DATA X (LRECL 80 RECFM F
ERASE TMPPLYR DATA X
ERASE SRCE    DATA X
ERASE USE     DATA X

ERASE RIGID DATA X
ERASE GOALS DATA X
ERASE GOAL1 DATA X
ERASE GOAL2 DATA X
ERASE GOAL3 DATA X
&STACK
EXECIO 1 DISKW RIGID DATA X 1 F 80 (FINIS
&STACK
EXECIO 1 DISKW GOAL1 DATA X 1 F 80 (FINIS
&STACK
EXECIO 1 DISKW GOAL2 DATA X 1 F 80 (FINIS
&STACK
EXECIO 1 DISKW GOAL3 DATA X 1 F 80 (FINIS
&STACK 1 1 1 1
EXECIO 1 DISKW GOALS DATA X 1 F 80 (FINIS

&EXIT


*********************************************************************
*  DON'T MAKE ANY CHANGES
*********************************************************************

-NOCHANGE
&PRESUME &COMMAND

&EXIT

-QUIT

&PRESUME &COMMAND

ERASE INIT DATA X
ERASE YEAR DATA X
COPY INIT PERM A INIT DATA X
COPY YEAR PERM A YEAR DATA X

ERASE TMPPLYR DATA X
ERASE SRCE    DATA X
ERASE USE     DATA X

EUDEXEC2
&PRESUME &SUBCOMMAND DISPLAY

&GOTO -TOP
```

A.12 TMPSRTSR

```
*****************************************************************
*    SORTING (TEMPORARY) OPTIONS FOR SOURCES
*****************************************************************

&TRACE OFF

EXECIO 1 DISKR INIT DATA X 1 (FINIS
&READ VAR &NS &NU &NY

EUDEXEC2
&PRESUME &SUBCOMMAND DISPLAY


-RANKSRC

USE TRANKSRC
MAP DATA 1 ECODE                    (LOAD UNLOAD PREVIEW
-ERANKSRC
DISPLAY
&IF &RSTATUS = PF1 &GOTO -RSRCOPT1
&IF &RSTATUS = PF2 &GOTO -RSRCOPT3
&IF &RSTATUS = PF3 &GOTO -RSRCOPT4
&IF &RSTATUS = PF4 &GOTO -RSRCOPT5
&IF &RSTATUS = PF5 &GOTO -RSRCOPT2
&IF &RSTATUS = PF10 &GOTO -QUIT
&ECODE = &STRING OF UNDEFINED PF KEY!
SIGNAL
&GOTO -ERANKSRC

-RSRCOPT1

&SO = 1
&GOTO -RANKSOURCE

-RSRCOPT2

USE TUSRTSRC
MAP DATA  1 SN1  2 R1  3 SN2  4 R2  5 SN3  6 R3     (LOAD UNLOAD PREVIEW
MAP DATA  7 SN4  8 R4  9 SN5 10 R5 11 SN6 12 R6     (LOAD UNLOAD PREVIEW
MAP DATA 13 SN7 14 R7 15 SN8 16 R8 17 SN9 18 R9     (LOAD UNLOAD PREVIEW
MAP DATA 19 SN10 20 R10 21 SN11 22 R11 23 SN12 24 R12 (LOAD UNLOAD PREVIEW
MAP DATA 25 SN13 26 R13 27 SN14 28 R14 29 SN15 30 R15 (LOAD UNLOAD PREVIEW
MAP DATA 31 SN16 32 R16 33 ECODE                    (LOAD UNLOAD PREVIEW

&COMMAND EXECIO &NS DISKR SOURCEN DATA X 1 (FINIS
&N = 0
&LOOP 5 &NS
&N = &N + 1
&NAME = &CONCAT OF SN &N
&READ STRING &&NAME
&&NAME = &CONCAT OF &BLANK &N . &BLANK &&NAME
&IF &N LT 10 &&NAME = &CONCAT OF &BLANK &&NAME

&N = &N + 1
&IF &N GT 16 &SKIP 3
&TEMP = &CONCAT OF R &N
SET &TEMP (PRO
&SKIP -4

-EOPT2SRCE
DISPLAY

&SUM1 = 0
&SUM2 = 0
&N = 0
&LOOP 11 &NS
&N = &N + 1
```

```
&NAME = &CONCAT OF R &N
&NAME1 = &LEFT OF &&NAME 1
&IF .&NAME1 = .&BLANK &&NAME = &RIGHT OF &&NAME 1
&IF .&&NAME NE .&BLANK &SKIP 3
&ECODE = &STRING OF BLANK ENTRY!
SIGNAL
&GOTO -EOPT2SRCE
&&NAME = &TRIM OF &&NAME
&SUM1 = &SUM1 + &N
&SUM2 = &SUM2 + &&NAME

&IF &SUM1 = &SUM2 &SKIP 3
&ECODE = &STRING OF IMPROPER ORDERING!
SIGNAL
&GOTO -EOPT2SRCE

&N = 0
&LOOP 4 &NS
&N = &N + 1
&NAME = &CONCAT OF R &N
&IF &&NAME LT 10 &&NAME = &CONCAT OF &BLANK &&NAME
&STACK &&NAME
&COMMAND EXECIO &NS DISKW SRC1 DATA X 1 (FINIS
&COMMAND COPYFILE SRC1 DATA X (LRECL 80 RECFM F

&N = 0
&LOOP 2 &NS
&N = &N + 1
&STACK &N
&COMMAND EXECIO &NS DISKW SRC2 DATA X 1 (FINIS
&COMMAND COPYFILE SRC2 DATA X (LRECL 80 RECFM F

&COMMAND SET CMSTYPE HT
&STACK 1-50 51
&COMMAND COPYFILE SRC2 DATA X SRC1 DATA X (SPECS NOPROMPT OVLY LRECL 80 RECFM F

&STACK 1 3
&COMMAND SORT SRC1 DATA X SRC DATA X

&STACK 51-52 1
&COMMAND COPYFILE SRC DATA X SRCE DATA X (SPECS NOPROMPT LRECL 80 RECFM F
&COMMAND SET CMSTYPE RT

&COMMAND ERASE SRC DATA X
&COMMAND ERASE SRC1 DATA X
&COMMAND ERASE SRC2 DATA X

&SO = 2

&GOTO -RANKSOURCE

-RSRCOPT3

&COMMAND COPYFILE SOURCEN DATA X SRC1 DATA X
&N = 0
&LOOP 2 &NS
&N = &N + 1
&STACK &N
&COMMAND EXECIO &NS DISKW SRC2 DATA X 1 (FINIS
&COMMAND COPYFILE SRC2 DATA X (LRECL 80 RECFM F

&COMMAND SET CMSTYPE HT
&STACK 1-50 51
&COMMAND COPYFILE SRC2 DATA X SRC1 DATA X (SPECS NOPROMPT OVLY LRECL 80 RECFM F

&STACK 1 20
&COMMAND SORT SRC1 DATA X SRC DATA X

&STACK 51-52 1
&COMMAND COPYFILE SRC DATA X SRCE DATA X (SPECS NOPROMPT LRECL 80 RECFM F
&COMMAND SET CMSTYPE RT
```

```
&COMMAND ERASE SRC DATA X
&COMMAND ERASE SRC1 DATA X
&COMMAND ERASE SRC2 DATA X

&SO = 3

&GOTO -RANKSOURCE

-RSRCOPT4

&SO = 4

&GOTO -RANKSOURCE

-RSRCOPT5

&SO = 5

-RANKSOURCE

&PRESUME &COMMAND

&IF &SO = 1 &GOTO -DISPSRC
&IF &SO = 2 &GOTO -RUNSRCSORT
&IF &SO = 3 &GOTO -RUNSRCSORT

&STACK &SO
&STACK &NS &NU &NY
EXECIO 2 DISKW SRC DATA X 1 (FINIS
COPYFILE SRC DATA X (LRECL 80 RECFM F

FILEDEF FT01F001 DISK SRC DATA X
FILEDEF FT02F001 DISK SOURCED DATA X
FILEDEF FT11F001 DISK SRCE   DATA X
SRCAMT

COPYFILE SRCE DATA X (LRECL 80 RECFM F
ERASE SRC  DATA X

-RUNSRCSORT

FILEDEF FT01F001 DISK INIT    DATA X
FILEDEF FT02F001 DISK SRCE    DATA X
FILEDEF FT03F001 DISK SOURCEN DATA X
FILEDEF FT04F001 DISK SOURCED DATA X
FILEDEF FT08F001 DISK CONST   DATA X
FILEDEF FT21F001 DISK RIGID   DATA X
FILEDEF FT22F001 DISK GOAL1   DATA X
FILEDEF FT23F001 DISK GOAL2   DATA X
FILEDEF FT24F001 DISK GOAL3   DATA X
FILEDEF FT11F001 DISK SN      DATA X
FILEDEF FT12F001 DISK SD      DATA X
FILEDEF FT13F001 DISK CONS    DATA X
FILEDEF FT31F001 DISK RIGID   DATA1 X
FILEDEF FT32F001 DISK GOAL1   DATA1 X
FILEDEF FT33F001 DISK GOAL2   DATA1 X
FILEDEF FT34F001 DISK GOAL3   DATA1 X
SRCSORT

ERASE SRCE    DATA X
ERASE SOURCEN DATA X
ERASE SOURCED DATA X
ERASE CONST   DATA X
COPYFILE SN   DATA X SOURCEN DATA X (LRECL 80 RECFM F
COPYFILE SD   DATA X SOURCED DATA X (LRECL 80 RECFM F
COPYFILE CONS DATA X CONST   DATA X (LRECL 80 RECFM F
ERASE SN   DATA X
ERASE SD   DATA X
ERASE CONS DATA X
ERASE RIGID   DATA X
ERASE GOAL1   DATA X
ERASE GOAL2   DATA X
```

```
ERASE GOAL3   DATA X
COPYFILE RIGID DATA1 X RIGID DATA X (LRECL 100 RECFM F
COPYFILE GOAL1 DATA1 X GOAL1 DATA X (LRECL 100 RECFM F
COPYFILE GOAL2 DATA1 X GOAL2 DATA X (LRECL 100 RECFM F
COPYFILE GOAL3 DATA1 X GOAL3 DATA X (LRECL 100 RECFM F
ERASE RIGID   DATA1 X
ERASE GOAL1   DATA1 X
ERASE GOAL2   DATA1 X
ERASE GOAL3   DATA1 X

*****************************************************************
*    DISPLAY LIST OF SORTED SOURCES
*****************************************************************

-DISPSRC

EUDEXEC2
&PRESUME &SUBCOMMAND DISPLAY

USE TSRTDSRC
MAP DATA  1 SCHEME                          (LOAD UNLOAD PREVIEW
MAP DATA  2 SN1   3 SN2   4 SN3   5 SN4   6 SN5    (LOAD UNLOAD PREVIEW
MAP DATA  7 SN6   8 SN7   9 SN8  10 SN9  11 SN10   (LOAD UNLOAD PREVIEW
MAP DATA 12 SN11 13 SN12 14 SN13 15 SN14 16 SN15   (LOAD UNLOAD PREVIEW
MAP DATA 17 SN16                            (LOAD UNLOAD PREVIEW

&IF &SO = 1 &SCHEME = &STRING OF CURRENT ORDERING
&IF &SO = 2 &SCHEME = &STRING OF USER SPECIFIED
&IF &SO = 3 &SCHEME = &STRING OF ALPHABETICAL
&IF &SO = 4 &SCHEME = &STRING OF DECREASING FUNDS
&IF &SO = 5 &SCHEME = &STRING OF INCREASING FUNDS

&COMMAND EXECIO &NS DISKR SOURCEN DATA X 1 (FINIS
&N = 0
&LOOP 5 &NS
&N = &N + 1
&NAME = &CONCAT OF SN &N
&READ STRING &&NAME
&&NAME = &CONCAT OF &BLANK &N . &BLANK &&NAME
&IF &N LT 10 &&NAME = &CONCAT OF &BLANK &&NAME

DISPLAY

&GOTO -RANKSRC

-QUIT

&PRESUME &COMMAND

&EXIT
```

A.13 TMPSRTUS

```
*****************************************************************
*    SORTING (TEMPORARY) OPTIONS FOR USES
*****************************************************************

&TRACE OFF

EXECIO 1 DISKR INIT DATA X 1 (FINIS
&READ VAR &NS &NU &NY

EUDEXEC2
&PRESUME &SUBCOMMAND DISPLAY


-RANKUSE

USE TRANKUSE
MAP DATA 1 ECODE                    (LOAD UNLOAD PREVIEW
-ERANKUSE
DISPLAY
&IF &RSTATUS = PF1 &GOTO -RUSEOPT1
&IF &RSTATUS = PF2 &GOTO -RUSEOPT3
&IF &RSTATUS = PF3 &GOTO -RUSEOPT4
&IF &RSTATUS = PF4 &GOTO -RUSEOPT5
&IF &RSTATUS = PF5 &GOTO -RUSEOPT2
&IF &RSTATUS = PF10 &GOTO -QUIT
&ECODE = &STRING OF UNDEFINED PF KEY!
SIGNAL
&GOTO -ERANKUSE

-RUSEOPT1

&UO = 1
&GOTO -RANKPROJ

-RUSEOPT2

USE TUSRTUSE
MAP DATA  1 UN1  2 R1  3 UN2  4 R2  5 UN3  6 R3    (LOAD UNLOAD PREVIEW
MAP DATA  7 UN4  8 R4  9 UN5 10 R5 11 UN6 12 R6    (LOAD UNLOAD PREVIEW
MAP DATA 13 UN7 14 R7 15 UN8 16 R8 17 UN9 18 R9    (LOAD UNLOAD PREVIEW
MAP DATA 19 UN10 20 R10 21 UN11 22 R11 23 UN12 24 R12 (LOAD UNLOAD PREVIEW
MAP DATA 25 UN13 26 R13 27 UN14 28 R14 29 UN15 30 R15 (LOAD UNLOAD PREVIEW
MAP DATA 31 UN16 32 R16 33 ECODE                   (LOAD UNLOAD PREVIEW

&COMMAND EXECIO &NU DISKR USEN    DATA X 1 (FINIS
&N = 0
&LOOP 5 &NU
&N = &N + 1
&NAME = &CONCAT OF UN &N
&READ STRING &&NAME
&&NAME = &CONCAT OF &BLANK &N . &BLANK &&NAME
&IF &N LT 10 &&NAME = &CONCAT OF &BLANK &&NAME

&N = &N + 1
&IF &N GT 16 &SKIP 3
&TEMP = &CONCAT OF R &N
SET &TEMP (PRO
&SKIP -4

-EOPT2USE
DISPLAY

&SUM1 = 0
&SUM2 = 0
&N = 0
&LOOP 11 &NU
&N = &N + 1
```

```
&NAME = &CONCAT OF R &N
&NAME1 = &LEFT OF &&NAME 1
&IF .&NAME1 = .&BLANK &&NAME = &RIGHT OF &&NAME 1
&IF .&&NAME NE .&BLANK &SKIP 3
&ECODE = &STRING OF BLANK ENTRY!
SIGNAL
&GOTO -EOPT2USE
&&NAME = &TRIM OF &&NAME
&SUM1 = &SUM1 + &N
&SUM2 = &SUM2 + &&NAME

&IF &SUM1 = &SUM2 &SKIP 3
&ECODE = &STRING OF IMPROPER ORDERING!
SIGNAL
&GOTO -EOPT2USE

&N = 0
&LOOP 4 &NU
&N = &N + 1
&NAME = &CONCAT OF R &N
&IF &&NAME LT 10 &&NAME = &CONCAT OF &BLANK &&NAME
&STACK &&NAME
&COMMAND EXECIO &NU DISKW USE1 DATA X 1 (FINIS
&COMMAND COPYFILE USE1 DATA X (LRECL 80 RECFM F

&N = 0
&LOOP 2 &NU
&N = &N + 1
&STACK &N
&COMMAND EXECIO &NU DISKW USE2 DATA X 1 (FINIS
&COMMAND COPYFILE USE2 DATA X (LRECL 80 RECFM F

&COMMAND SET CMSTYPE HT
&STACK 1-50 51
&COMMAND COPYFILE USE2 DATA X USE1 DATA X (SPECS NOPROMPT OVLY LRECL 80 RECFM F

&STACK 1 3
&COMMAND SORT USE1 DATA X USE DATA X

&STACK 51-52 1
&COMMAND COPYFILE USE DATA X USEE DATA X (SPECS NOPROMPT LRECL 80 RECFM F
&COMMAND SET CMSTYPE RT

&COMMAND ERASE USE DATA X
&COMMAND ERASE USE1 DATA X
&COMMAND ERASE USE2 DATA X

&UO = 2

&GOTO -RANKPROJ

-RUSEOPT3

&COMMAND COPYFILE USEN    DATA X USE1 DATA X
&N = 0
&LOOP 2 &NU
&N = &N + 1
&STACK &N
&COMMAND EXECIO &NU DISKW USE2 DATA X 1 (FINIS
&COMMAND COPYFILE USE2 DATA X (LRECL 80 RECFM F

&COMMAND SET CMSTYPE HT
&STACK 1-50 51
&COMMAND COPYFILE USE2 DATA X USE1 DATA X (SPECS NOPROMPT OVLY LRECL 80 RECFM F

&STACK 1 20
&COMMAND SORT USE1 DATA X USE DATA X

&STACK 51-52 1
&COMMAND COPYFILE USE DATA X USEE DATA X (SPECS NOPROMPT LRECL 80 RECFM F
&COMMAND SET CMSTYPE RT
```

```
&COMMAND ERASE USE DATA X
&COMMAND ERASE USE1 DATA X
&COMMAND ERASE USE2 DATA X

&UO = 3

&GOTO -RANKPROJ

-RUSEOPT4

&UO = 4

&GOTO -RANKPROJ

-RUSEOPT5

&UO = 5

-RANKPROJ

&PRESUME &COMMAND

&IF &UO = 1 &GOTO -DISPUSE
&IF &UO = 2 &GOTO -RUNUSESORT
&IF &UO = 3 &GOTO -RUNUSESORT

&STACK &UO
&STACK &NS &NU &NY
EXECIO 2 DISKW USE DATA X 1 (FINIS
COPYFILE USE DATA X (LRECL 80 RECFM F

FILEDEF FT01F001 DISK USE DATA X
FILEDEF FT02F001 DISK USED   DATA X
FILEDEF FT11F001 DISK USEE   DATA X
USEAMT
COPYFILE USEE DATA X (LRECL 80 RECFM F

ERASE USE  DATA X

-RUNUSESORT

FILEDEF FT01F001 DISK INIT   DATA X
FILEDEF FT02F001 DISK USEE   DATA X
FILEDEF FT03F001 DISK USEN   DATA X
FILEDEF FT04F001 DISK USED   DATA X
FILEDEF FT08F001 DISK CONST  DATA X
FILEDEF FT21F001 DISK RIGID  DATA X
FILEDEF FT22F001 DISK GOAL1  DATA X
FILEDEF FT23F001 DISK GOAL2  DATA X
FILEDEF FT24F001 DISK GOAL3  DATA X
FILEDEF FT11F001 DISK UN     DATA X
FILEDEF FT12F001 DISK UD     DATA X
FILEDEF FT13F001 DISK CONS   DATA X
FILEDEF FT31F001 DISK RIGID  DATA1 X
FILEDEF FT32F001 DISK GOAL1  DATA1 X
FILEDEF FT33F001 DISK GOAL2  DATA1 X
FILEDEF FT34F001 DISK GOAL3  DATA1 X
USESORT

ERASE USEE   DATA X
ERASE USEN   DATA X
ERASE USED   DATA X
ERASE CONST  DATA X
COPYFILE UN  DATA X USEN   DATA X (LRECL 80 RECFM F
COPYFILE UD  DATA X USED   DATA X (LRECL 80 RECFM F
COPYFILE CONS DATA X CONST  DATA X (LRECL 80 RECFM F
ERASE UN  DATA X
ERASE UD  DATA X
ERASE CONS DATA X
ERASE RIGID  DATA X
ERASE GOAL1  DATA X
ERASE GOAL2  DATA X
```

```
ERASE GOAL3   DATA X
COPYFILE RIGID DATA1 X RIGID DATA X (LRECL 100 RECFM F
COPYFILE GOAL1 DATA1 X GOAL1 DATA X (LRECL 100 RECFM F
COPYFILE GOAL2 DATA1 X GOAL2 DATA X (LRECL 100 RECFM F
COPYFILE GOAL3 DATA1 X GOAL3 DATA X (LRECL 100 RECFM F
ERASE RIGID   DATA1 X
ERASE GOAL1   DATA1 X
ERASE GOAL2   DATA1 X
ERASE GOAL3   DATA1 X

*****************************************************************
*    DISPLAY LIST OF SORTED USES
*****************************************************************


-DISPUSE

EUDEXEC2
&PRESUME &SUBCOMMAND DISPLAY

USE TSRTDUSE
MAP DATA  1 SCHEME                          (LOAD UNLOAD PREVIEW
MAP DATA  2 UN1   3 UN2   4 UN3   5 UN4   6 UN5    (LOAD UNLOAD PREVIEW
MAP DATA  7 UN6   8 UN7   9 UN8  10 UN9  11 UN10   (LOAD UNLOAD PREVIEW
MAP DATA 12 UN11 13 UN12 14 UN13 15 UN14 16 UN15   (LOAD UNLOAD PREVIEW
MAP DATA 17 UN16                            (LOAD UNLOAD PREVIEW

&IF &UO = 1 &SCHEME = &STRING OF CURRENT ORDERING
&IF &UO = 2 &SCHEME = &STRING OF USER SPECIFIED
&IF &UO = 3 &SCHEME = &STRING OF ALPHABETICAL
&IF &UO = 4 &SCHEME = &STRING OF DECREASING FUNDS
&IF &UO = 5 &SCHEME = &STRING OF INCREASING FUNDS

&COMMAND EXECIO &NU DISKR USEN    DATA X 1 (FINIS
&N = 0
&LOOP 5 &NU
&N = &N + 1
&NAME = &CONCAT OF UN &N
&READ STRING &&NAME
&&NAME = &CONCAT OF &BLANK &N . &BLANK &&NAME
&IF &N LT 10 &&NAME = &CONCAT OF &BLANK &&NAME

DISPLAY

&GOTO -RANKUSE

-QUIT

&PRESUME &COMMAND

&EXIT
```

A.14 VIEWGOAL

```
*************************************************************************
*
*       OPTION - VIEW GOALS IN THE CURRENT MODEL
*
*THIS EXEC CREATES AND DISPLAYS ALL REPORTS ASSOCIATED WITH THE OPTION
*
*************************************************************************

&TRACE OFF

FILEDEF * CLEAR

*************************************************************************
* WRITE RIGID CONSTRAINTS/GOALS FILES IN FORMATTED FORM
*************************************************************************

FILEDEF FT01F001 DISK GOAL1 DATA1 X
FILEDEF FT02F001 DISK GOAL2 DATA1 X
FILEDEF FT03F001 DISK GOAL3 DATA1 X
FILEDEF FT04F001 DISK RIGID DATA1 X
FILEDEF FT11F001 DISK G1    DATA X
FILEDEF FT12F001 DISK G2    DATA X
FILEDEF FT13F001 DISK G3    DATA X
FILEDEF FT17F001 DISK G0    DATA X
FILEDEF FT18F001 DISK NG    DATA X
FILEDEF FT19F001 DISK R     DATA X
PREVUGLS
COPYFILE NG DATA X (LRECL 80 RECFM F

EXECIO 1 DISKR NG DATA X 1 (FINIS
&READ VAR &CT1 &CT2 &CT3 &CT0 &CT

*************************************************************************
* SORT BY DECREASING ORDER OF PRIORITY
*************************************************************************

SET CMSTYPE HT
&IF &CT1 = 0 &SKIP 3
COPYFILE G1 DATA X (LRECL 80 RECFM F
&STACK 21 22 8 9
SORT G1 DATA X G11 DATA X

&IF &CT2 = 0 &SKIP 3
COPYFILE G2 DATA X (LRECL 80 RECFM F
&STACK 21 22 8 9
SORT G2 DATA X G21 DATA X

&IF &CT3 = 0 &SKIP 3
COPYFILE G3 DATA X (LRECL 80 RECFM F
&STACK 21 22 8 9
SORT G3 DATA X G31 DATA X

&IF &CT = 0 &SKIP 3
COPYFILE G0 DATA X (LRECL 80 RECFM F
&STACK 21 22 29 30 8 9
SORT G0 DATA X G01 DATA X

&IF &CT0 = 0 &SKIP 6
COPYFILE R  DATA X (LRECL 80 RECFM F
&STACK 2 3 8 9
SORT R DATA X R1  DATA X

&STACK 5 6 8 9
SORT R DATA X R2  DATA X
```

```
SET CMSTYPE RT

*********************************************************************
* GENERATE REPORTS
*********************************************************************

FILEDEF FT01F001 DISK INIT    DATA X
FILEDEF FT02F001 DISK SOURCEN DATA X
FILEDEF FT03F001 DISK USEN    DATA X
FILEDEF FT04F001 DISK NG      DATA X
FILEDEF FT09F001 DISK R1      DATA X
FILEDEF FT10F001 DISK R2      DATA X
FILEDEF FT11F001 DISK G11     DATA X
FILEDEF FT12F001 DISK G21     DATA X
FILEDEF FT13F001 DISK G31     DATA X
FILEDEF FT17F001 DISK G01     DATA X
FILEDEF FT19F001 DISK R11     DATA X
FILEDEF FT20F001 DISK R21     DATA X
FILEDEF FT21F001 DISK G13     DATA X
FILEDEF FT22F001 DISK G23     DATA X
FILEDEF FT23F001 DISK G33     DATA X
FILEDEF FT27F001 DISK G03     DATA X
VIEWGLS

&IF &CT1 = 0 &SKIP 1
COPYFILE G13 DATA X (LRECL 80 RECFM F
&IF &CT2 = 0 &SKIP 1
COPYFILE G23 DATA X (LRECL 80 RECFM F
&IF &CT3 = 0 &SKIP 1
COPYFILE G33 DATA X (LRECL 80 RECFM F
&IF &CT = 0 &SKIP 1
COPYFILE G03 DATA X (LRECL 80 RECFM F
&IF &CT0 = 0 &SKIP 2
COPYFILE R11 DATA X (LRECL 80 RECFM F
COPYFILE R21 DATA X (LRECL 80 RECFM F

ERASE G0 DATA X
ERASE G1 DATA X
ERASE G2 DATA X
ERASE G3 DATA X
ERASE R  DATA X
ERASE G01 DATA X
ERASE G11 DATA X
ERASE G21 DATA X
ERASE G31 DATA X
ERASE R1  DATA X
ERASE R2  DATA X


EUDEXEC2
&PRESUME &SUBCOMMAND DISPLAY

&COMMAND EXECIO 1 DISKR NG DATA X 1 (FINIS
&READ VAR &C2 &C3 &C4 &C1 &C

*********************************************************************
* DISPLAY MENU FOR REPORTS
*********************************************************************

-MAIN

USE PANEL9
MAP DATA 1 ECODE                    (LOAD UNLOAD PREVIEW
-ERRDIS
DISPLAY
&IF &RSTATUS = PF1 &GOTO -OPN1
&IF &RSTATUS = PF2 &GOTO -OPN2
&IF &RSTATUS = PF3 &GOTO -OPN3
&IF &RSTATUS = PF4 &GOTO -OPN4
&IF &RSTATUS = PF5 &GOTO -OPN5
```

```
&IF &RSTATUS = PF6 &GOTO -OPN6
&IF &RSTATUS = PF7 &GOTO -OPN7
&IF &RSTATUS = PF10 &GOTO -QUIT
&ECODE = &STRING OF UNDEFINED PF KEY!
SIGNAL
&GOTO -ERRDIS

*********************************************************************
* OPTION 1 - RIGID CONSTRAINTS SORTED BY SOURCES
*********************************************************************

-OPN1

&CALL -OPT1
&GOTO -MAIN

*********************************************************************
* OPTION 2 - RIGID CONSTRAINTS SORTED BY USES
*********************************************************************

-OPN2

&CALL -OPT2
&GOTO -MAIN

*********************************************************************
* OPTION 3 - GOAL I BY DCREASING ORDER OF PRIORITY
*********************************************************************

-OPN3

&CALL -OPT3
&GOTO -MAIN

*********************************************************************
* OPTION 4 - GOAL II BY DCREASING ORDER OF PRIORITY
*********************************************************************

-OPN4

&CALL -OPT4
&GOTO -MAIN

*********************************************************************
* OPTION 5 - GOAL III BY DCREASING ORDER OF PRIORITY
*********************************************************************

-OPN5

&CALL -OPT5
&GOTO -MAIN

*********************************************************************
* OPTION 6 - ALL GOALS BY DCREASING ORDER OF PRIORITY
*********************************************************************

-OPN6

&CALL -OPT6
&GOTO -MAIN

*********************************************************************
* OPTION 7 - PRINT ALL REPORTS
*********************************************************************

-OPN7
```

```
&CALL -OPT7
&GOTO -MAIN

-OPT1

&IF &C1 = 0 &SKIP 1
&COMMAND EXECIO &C1 DISKR R11 DATA X 1 (FINIS

&N = 0
&LOOP 3 &C1
&N = &N + 1
&NAME = &CONCAT OF X1 &N
&READ STRING &&NAME

USE PANEL91
MAP DATA 1 Y1 2 Y2 3 Y3 4 Y4 5 Y5          (LOAD UNLOAD PREVIEW
MAP DATA 6 Y6 7 Y7 8 Y8 9 Y9 10 Y10         (LOAD UNLOAD PREVIEW
MAP DATA 11 Y11 12 Y12 13 Y13 14 Y14 15 Y15    (LOAD UNLOAD PREVIEW
MAP DATA 16 Y16 17 Y17 18 Y18 19 ECODE        (LOAD UNLOAD PREVIEW

&SL = 0

-CONT1
&LN = &SL
&N = 0
&LOOP -RS1 18
&N = &N + 1
&NAME1 = &CONCAT OF Y &N
&&NAME1 = &BLANK
&IF &LN EQ &C1 &GOTO -RS1
&LN = &LN + 1
&NAME2 = &CONCAT OF X1 &LN
&&NAME1 = &&NAME2
-RS1

-DISP1

-ED1
DISPLAY
&ECODE = &BLANK
&IF &RSTATUS = PF7 &SKIP 6
&IF &RSTATUS = PF8 &SKIP 5
&IF &RSTATUS = PF10 &RETURN
&ECODE = &STRING OF IMPROPER PFKEY!
-GERR1
SIGNAL
&GOTO -ED1

&IF &RSTATUS = PF8 &SKIP 5
&IF &SL NE 0 &SKIP 2
&ECODE = &STRING OF NO PREVIOUS ALLOCATIONS!
&GOTO -GERR1
&SL = &SL - 18
&GOTO -CONT1
&IF &LN NE &C1 &SKIP 2
&ECODE = &STRING OF NO MORE ALLOCATIONS!
&GOTO -GERR1
&SL = &SL + 18
&GOTO -CONT1

-OPT2

&IF &C1 = 0 &SKIP 1
&COMMAND EXECIO &C1 DISKR R21 DATA X 1 (FINIS

&N = 0
&LOOP 3 &C1
&N = &N + 1
&NAME = &CONCAT OF X2 &N
&READ STRING &&NAME
```

```
USE PANEL92
MAP DATA 1 Y1 2 Y2 3 Y3 4 Y4 5 Y5            (LOAD UNLOAD PREVIEW
MAP DATA 6 Y6 7 Y7 8 Y8 9 Y9 10 Y10          (LOAD UNLOAD PREVIEW
MAP DATA 11 Y11 12 Y12 13 Y13 14 Y14 15 Y15    (LOAD UNLOAD PREVIEW
MAP DATA 16 Y16 17 Y17 18 Y18 19 ECODE        (LOAD UNLOAD PREVIEW

&SL = 0

-CONT2
&LN = &SL
&N = 0
&LOOP -RS2 18
&N = &N + 1
&NAME1 = &CONCAT OF Y &N
&&NAME1 = &BLANK
&IF &LN EQ &C1 &GOTO -RS2
&LN = &LN + 1
&NAME2 = &CONCAT OF X2 &LN
&&NAME1 = &&NAME2
-RS2

-DISP2

-ED2
DISPLAY
&ECODE = &BLANK
&IF &RSTATUS = PF7 &SKIP 6
&IF &RSTATUS = PF8 &SKIP 5
&IF &RSTATUS = PF10 &RETURN
&ECODE = &STRING OF IMPROPER PFKEY!
-GERR2
SIGNAL
&GOTO -ED2

&IF &RSTATUS = PF8 &SKIP 5
&IF &SL NE 0 &SKIP 2
&ECODE = &STRING OF NO PREVIOUS ALLOCATIONS!
&GOTO -GERR2
&SL = &SL - 18
&GOTO -CONT2
&IF &LN NE &C1 &SKIP 2
&ECODE = &STRING OF NO MORE ALLOCATIONS!
&GOTO -GERR2
&SL = &SL + 18
&GOTO -CONT2


-OPT3

&IF &C2 = 0 &SKIP 1
&COMMAND EXECIO &C2 DISKR G13 DATA X 1 (FINIS

&N = 0
&LOOP 3 &C2
&N = &N + 1
&NAME = &CONCAT OF X3 &N
&READ STRING &&NAME

USE PANEL93
MAP DATA 1 Y1 2 Y2 3 Y3 4 Y4 5 Y5            (LOAD UNLOAD PREVIEW
MAP DATA 6 Y6 7 Y7 8 Y8 9 Y9 10 Y10          (LOAD UNLOAD PREVIEW
MAP DATA 11 Y11 12 Y12 13 Y13 14 Y14 15 Y15    (LOAD UNLOAD PREVIEW
MAP DATA 16 Y16 17 Y17 18 Y18 19 ECODE        (LOAD UNLOAD PREVIEW

&SL = 0

-CONT3
&LN = &SL
&N = 0
&LOOP -RS3 18
&N = &N + 1
&NAME1 = &CONCAT OF Y &N
```

```
&&NAME1 = &BLANK
&IF &LN EQ &C2 &GOTO -RS3
&LN = &LN + 1
&NAME2 = &CONCAT OF X3 &LN
&&NAME1 = &&NAME2
-RS3

-DISP3

-ED3
DISPLAY
&ECODE = &BLANK
&IF &RSTATUS = PF7 &SKIP 6
&IF &RSTATUS = PF8 &SKIP 5
&IF &RSTATUS = PF10 &RETURN
&ECODE = &STRING OF UNDEFINED PFKEY!
-GERR3
SIGNAL
&GOTO -ED3

&IF &RSTATUS = PF8 &SKIP 5
&IF &SL NE 0 &SKIP 2
&ECODE = &STRING OF NO PREVIOUS GOALS!
&GOTO -GERR3
&SL = &SL - 18
&GOTO -CONT3
&IF &LN NE &C2 &SKIP 2
&ECODE = &STRING OF NO MORE GOALS!
&GOTO -GERR3
&SL = &SL + 18
&GOTO -CONT3


-OPT4

&IF &C3 = 0 &SKIP 1
&COMMAND EXECIO &C3 DISKR G23 DATA X 1 (FINIS

&N = 0
&LOOP 3 &C3
&N = &N + 1
&NAME = &CONCAT OF X4 &N
&READ STRING &&NAME

USE PANEL94
MAP DATA 1 Y1 2 Y2 3 Y3 4 Y4 5 Y5          (LOAD UNLOAD PREVIEW
MAP DATA 6 Y6 7 Y7 8 Y8 9 Y9 10 Y10         (LOAD UNLOAD PREVIEW
MAP DATA 11 Y11 12 Y12 13 Y13 14 Y14 15 Y15    (LOAD UNLOAD PREVIEW
MAP DATA 16 Y16 17 Y17 18 Y18 19 ECODE        (LOAD UNLOAD PREVIEW

&SL = 0

-CONT4
&LN = &SL
&N = 0
&LOOP -RS4 18
&N = &N + 1
&NAME1 = &CONCAT OF Y &N
&&NAME1 = &BLANK
&IF &LN EQ &C3 &GOTO -RS4
&LN = &LN + 1
&NAME2 = &CONCAT OF X4 &LN
&&NAME1 = &&NAME2
-RS4

-DISP4

-ED4
DISPLAY
&ECODE = &BLANK
&IF &RSTATUS = PF7 &SKIP 6
&IF &RSTATUS = PF8 &SKIP 5
```

```
&IF &RSTATUS = PF10 &RETURN
&ECODE = &STRING OF IMPROPER PFKEY!
-GERR4
SIGNAL
&GOTO -ED4

&IF &RSTATUS = PF8 &SKIP 5
&IF &SL NE 0 &SKIP 2
&ECODE = &STRING OF NO PREVIOUS GOALS!
&GOTO -GERR4
&SL = &SL - 18
&GOTO -CONT4
&IF &LN NE &C3 &SKIP 2
&ECODE = &STRING OF NO MORE GOALS!
&GOTO -GERR4
&SL = &SL + 18
&GOTO -CONT4

-OPT5

&IF &C4 = 0 &SKIP 1
&COMMAND EXECIO &C4 DISKR G33 DATA X 1 (FINIS

&N = 0
&LOOP 3 &C4
&N = &N + 1
&NAME = &CONCAT OF X5 &N
&READ STRING &&NAME

USE PANEL95
MAP DATA 1 Y1 2 Y2 3 Y3 4 Y4 5 Y5          (LOAD UNLOAD PREVIEW
MAP DATA 6 Y6 7 Y7 8 Y8 9 Y9 10 Y10         (LOAD UNLOAD PREVIEW
MAP DATA 11 Y11 12 Y12 13 Y13 14 Y14 15 Y15    (LOAD UNLOAD PREVIEW
MAP DATA 16 Y16 17 Y17 18 Y18 19 ECODE        (LOAD UNLOAD PREVIEW

&SL = 0

-CONT5
&LN = &SL
&N = 0
&LOOP -RS5 18
&N = &N + 1
&NAME1 = &CONCAT OF Y &N
&&NAME1 = &BLANK
&IF &LN EQ &C4 &GOTO -RS5
&LN = &LN + 1
&NAME2 = &CONCAT OF X5 &LN
&&NAME1 = &&NAME2
-RS5

-DISP5

-ED5
DISPLAY
&ECODE = &BLANK
&IF &RSTATUS = PF7 &SKIP 6
&IF &RSTATUS = PF8 &SKIP 5
&IF &RSTATUS = PF10 &RETURN
&ECODE = &STRING OF IMPROPER PFKEY!
-GERR5
SIGNAL
&GOTO -ED5

&IF &RSTATUS = PF8 &SKIP 5
&IF &SL NE 0 &SKIP 2
&ECODE = &STRING OF NO PREVIOUS GOALS!
&GOTO -GERR5
&SL = &SL - 18
&GOTO -CONT5
&IF &LN NE &C4 &SKIP 2
&ECODE = &STRING OF NO MORE GOALS!
&GOTO -GERR5
```

```
&SL = &SL + 18
&GOTO -CONT5

-OPT6

&IF &C = 0 &SKIP 1
&COMMAND EXECIO &C DISKR G03 DATA X 1 (FINIS

&N = 0
&LOOP 3 &C
&N = &N + 1
&NAME = &CONCAT OF X6 &N
&READ STRING &&NAME

USE PANEL96
MAP DATA 1 Y1 2 Y2 3 Y3 4 Y4 5 Y5          (LOAD UNLOAD PREVIEW
MAP DATA 6 Y6 7 Y7 8 Y8 9 Y9 10 Y10         (LOAD UNLOAD PREVIEW
MAP DATA 11 Y11 12 Y12 13 Y13 14 Y14 15 Y15    (LOAD UNLOAD PREVIEW
MAP DATA 16 Y16 17 Y17 18 Y18 19 ECODE        (LOAD UNLOAD PREVIEW

&SL = 0

-CONT6
&LN = &SL
&N = 0
&LOOP -RS6 18
&N = &N + 1
&NAME1 = &CONCAT OF Y &N
&&NAME1 = &BLANK
&IF &LN EQ &C &GOTO -RS6
&LN = &LN + 1
&NAME2 = &CONCAT OF X6 &LN
&&NAME1 = &&NAME2
-RS6

-DISP6

-ED6
DISPLAY
&ECODE = &BLANK
&IF &RSTATUS = PF7 &SKIP 6
&IF &RSTATUS = PF8 &SKIP 5
&IF &RSTATUS = PF10 &RETURN
&ECODE = &STRING OF IMPROPER PFKEY!
-GERR6
SIGNAL
&GOTO -ED6

&IF &RSTATUS = PF8 &SKIP 5
&IF &SL NE 0 &SKIP 2
&ECODE = &STRING OF NO PREVIOUS GOALS!
&GOTO -GERR6
&SL = &SL - 18
&GOTO -CONT6
&IF &LN NE &C &SKIP 2
&ECODE = &STRING OF NO MORE GOALS!
&GOTO -GERR6
&SL = &SL + 18
&GOTO -CONT6

-OPT7

&PRESUME &COMMAND

FILEDEF FT01F001 DISK NG     DATA X
FILEDEF FT11F001 DISK R11    DATA X
FILEDEF FT12F001 DISK R21    DATA X
FILEDEF FT13F001 DISK G13    DATA X
FILEDEF FT14F001 DISK G23    DATA X
FILEDEF FT15F001 DISK G33    DATA X
FILEDEF FT16F001 DISK G03    DATA X
```

```
FILEDEF FT21F001 DISK GLREPTS LISTING X (LRECL 132 BLKSIZE 132 RECFM F
PRNTGLS

PRINT GLREPTS LISTING X
ERASE GLREPTS LISTING X

EUDEXEC2
&PRESUME &SUBCOMMAND DISPLAY

USE PANEL9
MAP DATA 1 ECODE                    (LOAD UNLOAD PREVIEW
&ECODE = &STRING OF REPORTS SENT TO PRINTER
SIGNAL
&GOTO -ERRDIS


-QUIT
&PRESUME &COMMAND
ERASE RIGID DATA1 X
ERASE GOAL1 DATA1 X
ERASE GOAL2 DATA1 X
ERASE GOAL3 DATA1 X
ERASE R11   DATA  X
ERASE R21   DATA  X
ERASE G03   DATA  X
ERASE G13   DATA  X
ERASE G23   DATA  X
ERASE G33   DATA  X
ERASE NG    DATA  X

&EXIT
```

Appendix B. LISTING OF FORTRAN PROGRAMS

B.1 ADCLMTTL

```
C*********************************************************************
C    PUTS BACK THE TITLE CARD AFTER 'COLUMN' HAS BEEN SORTED
C*********************************************************************
      DIMENSION A(80)
      WRITE(11,1020)
50    READ(1,1000, END = 100) A
      WRITE(11,1000) A
      GO TO 50
100   CONTINUE
1000  FORMAT(80A1)
1020  FORMAT('COLUMNS')
      STOP
      END
```

B.2 ADDSRCE

```
C*********************************************************************
C     UPDATES THE DATABASE WHENEVER A NEW SOURCE IS CREATED
C*********************************************************************
      REAL  X(80), V(25)
      INTEGER Y(4), Z(25)
      REAL YES, NO
      DATA YES, NO/'Y','N'/
      READ(1,*) NSRCE, NUSE, NY
      K = NY + 1
      DO 30 I = 1,NSRCE
      DO 30 J = 1,K
      READ(2,100) X
      WRITE(10,100) X
30    CONTINUE
      READ(8,*) Y(1)
      WRITE(10,110) Y(1)
      DO 50 J = 1,NY
      READ(8,*) Y
      WRITE(10,110) Y
50    CONTINUE
      DO 60 I = 1,NSRCE
      READ(3,100) X
60    WRITE(11,100) X
      DO 70 J = 1,NUSE
      READ(9,10) V(J)
      IF (V(J) .EQ. NO) Z(J) = 0
70    IF (V(J) .EQ. YES) Z(J) = 1
      WRITE(11,120) (Z(J),J = 1,NUSE)
10    FORMAT(2A1)
100   FORMAT(80A1)
110   FORMAT(4I7)
120   FORMAT(40I2)
      STOP
      END
```

B.3 ADDUSE

```
C*********************************************************************
C    UPDATES THE DATABASE WHENEVER A NEW USE IS CREATED
C*********************************************************************
      REAL  X(80)
      INTEGER Y(4), Z(25)
      REAL YES, NO
      DATA YES, NO/'Y','N'/
      READ(1,*) NSRCE, NUSE, NY
      NU = NUSE + 1
      DO 30 I = 1,NUSE
      DO 30 J = 1,NY
      READ(2,100) X
      WRITE(10,100) X
30    CONTINUE
      DO 50 J = 1,NY
      READ(8,*) Y
      WRITE(10,110) Y
50    CONTINUE
      DO 80 I = 1, NSRCE
      READ(3,*) (Z(J),J = 1,NUSE)
      READ(9,10) REPLY
      IF (REPLY .EQ. NO) Z(NU) = 0
      IF (REPLY .EQ. YES) Z(NU) = 1
      WRITE(11,120) (Z(J),J = 1,NU)
80    CONTINUE
10    FORMAT(2A1)
100   FORMAT(80A1)
110   FORMAT(4I7)
120   FORMAT(30I2)
      STOP
      END
```

B.4 ALLOCATN

```
C***********************************************************************
C    READS THE VALUES OF THE DECISION VARIABLES AFTER
C    THE GP MODEL HAS BEEN SOLVED
C***********************************************************************
      REAL   Y
      INTEGER AMT
      DATA X/'X'/
100    READ(1,110, END=200) Y, QTY
      IF (Y .NE. X) GO TO 100
      AMT = QTY
      WRITE(2,120) AMT
110    FORMAT(2X,A1,8X,F10.2)
120    FORMAT(I7)
      GO TO 100
200    STOP
      END
```

B.5 CONSOL

```
C*********************************************************************
C     CONSOLIDATES THE THREE MPS FILES INTO ONE TO CREATE THE
C     MPS FORMAT INPUT FOR LINDO
C*********************************************************************
      DIMENSION A(80)
      WRITE(25,1000)
50     READ(1,1010, END=100) A
      WRITE(25,1010) A
      GO TO 50
100    CONTINUE
150    READ(2,1010, END=200) A
      WRITE(25,1010) A
      GO TO 150
200    CONTINUE
250    READ(3,1010, END=300) A
      WRITE(25,1010) A
      GO TO 250
300    WRITE(25,1020)
1000   FORMAT('NAME GP MODEL FOR SANDU')
1010   FORMAT(80A1)
1020   FORMAT('ENDATA')
      STOP
      END
```

B.6 DELSRCE

```
C***********************************************************************
C    UPDATES THE DATABASE WHENEVER A SOURCE IS DELETED
C***********************************************************************
      REAL  X(80)
      READ(1,*) NSRCE, NS, NY
      K=NY + 1
      DO 50 I = 1,NSRCE
      DO 20 J = 1,K
      READ(2,100) X
      IF (I .EQ. NS) GO TO 20
      WRITE(7,100) X
20    CONTINUE
50    CONTINUE
      DO 70 I = 1,NSRCE
      READ(3,100) X
      IF (I .EQ. NS) GO TO 70
      WRITE(8,100) X
70    CONTINUE
100   FORMAT(80A1)
      STOP
      END
```

B.7 DELUSE

```
C***********************************************************************
C    UPDATES THE DATABASE WHENEVER A USE IS DELETED
C***********************************************************************
      REAL  X(80)
      INTEGER Z(25)
      READ(1,*) NSRCE, NUSE, NU, NY
      DO 50 I = 1,NUSE
      DO 20 J = 1,NY
      READ(2,100) X
      IF (I .EQ. NU) GO TO 20
      WRITE(7,100) X
20    CONTINUE
50    CONTINUE
      K1 = NU - 1
      K2 = NU + 1
      DO 70 I = 1,NSRCE
      READ(3,*) (Z(J),J = 1,NUSE)
      IF (NU .EQ. NUSE) GO TO 60
      IF (NU .EQ. 1) GO TO 65
      WRITE(8,110) (Z(J),J = 1,K1),(Z(J),J = K2,NUSE)
      GO TO 70
60    WRITE(8,110) (Z(J),J = 1,K1)
      GO TO 70
65    WRITE(8,110) (Z(J),J = 2,NUSE)
70    CONTINUE
100   FORMAT(80A1)
110   FORMAT(30I2)
      STOP
      END
```

B.8 DLCLMTTL

```
C*********************************************************************
C    DELETES THE TITLE CARD FROM 'COLUMN' FILE
C*********************************************************************
     DIMENSION A(80)
     READ(1,1000)
50    READ(1,1000, END = 100) A
     WRITE(11,1000) A
     GO TO 50
100   CONTINUE
1000  FORMAT(80A1)
     STOP
     END
```

B.9 GAREPTS

```
C*********************************************************************
C    REWRITES THE GOAL ACHIEVEMENTS IN THE FORM OF REPORTS
C*********************************************************************
      REAL   S(25,20), U(25,20)
      REAL   L, G, E
      INTEGER C1, C2, C3
      INTEGER QTY1, DT, PR, WT, GT
      INTEGER TG, AC, AD
      INTEGER NG(3)
      DATA  L, G, E/'<','>','='/
      READ(1,*) NS, NU, NY
      QTR = NY*4
      DO 10 I = 1, NS
10    READ(2,1000) (S(I,J), J=1,20)
      DO 20 I = 1, NU
20    READ(3,1000) (U(I,J), J=1,20)
      READ(11,*)
      READ(12,*)
      READ(13,*)
      READ(4,*) C1, C2, C3
      IF (C1 .EQ. 0) GO TO 200
C*********************************************************************
C    TYPE 1 GOALS
C*********************************************************************
      IC = 0
      GT = 1
110   READ(11,1010, END=200) I,J,K,QTY1,DT,PR,WT,TG,AC,AD,PD
      N = K/4 + 1
      M = K - K/4*4
      IF (M .EQ. 0) N = N - 1
      IF (M .EQ. 0) M = 4
      IC = IC + 1
      IF (DT .EQ. 1) X = L
      IF (DT .EQ. 2) X = G
      IF (DT .EQ. 3) X = E
      WRITE(21,1100) IC, (S(I,I1),I1=1,16), (U(J,I1),I1=1,16), N,M,
     1X, PR, WT, TG, AC, AD, PD
      WRITE(27,1200) GT, (S(I,I1),I1=1,7), (U(J,I1),I1=1,7), N,M,
     1X, PR, WT, TG, AC, AD, PD
      WRITE(31,1300) IC, (S(I,I1),I1=1,20), (U(J,I1),I1=1,20), N,M,
     1X, PR, WT, TG, AC, AD, PD
      WRITE(37,1400) GT, (S(I,I1),I1=1,20), (U(J,I1),I1=1,20), N,M,
     1X, PR, WT, TG, AC, AD, PD
      GO TO 110
200   IF (C2 .EQ. 0) GO TO 300
C*********************************************************************
C    TYPE 2 GOALS
C*********************************************************************
      IC = 0
      GT = 2
210   READ(12,1020, END=300) I,J,K,QTY,DT,PR,WT,TGP,TG,ACP,AC,ADP,AD,
     1PDP, PD
      IC = IC + 1
      IF (DT .EQ. 1) X = L
      IF (DT .EQ. 2) X = G
      IF (DT .EQ. 3) X = E
      WRITE(22,1110) IC, (S(I,I1),I1=1,9), (U(J,I1),I1=1,9), K,
     1X, PR, WT, TG, TGP, AC, ACP, AD, ADP, PDP
      WRITE(27,1210) GT, (S(I,I1),I1=1,7), (U(J,I1),I1=1,7), K,
     1X, PR, WT, TG, TGP, AC, ACP, AD, ADP, PDP
      WRITE(32,1310) IC, (S(I,I1),I1=1,20), (U(J,I1),I1=1,20), K,
     1X, PR, WT, TG, TGP, AC, ACP, AD, ADP, PDP
      WRITE(37,1410) GT, (S(I,I1),I1=1,20), (U(J,I1),I1=1,20), K,
     1X, PR, WT, TG, TGP, AC, ACP, AD, ADP, PDP
      GO TO 210
300   IF (C3 .EQ. 0) GO TO 400
C*********************************************************************
```

```
C    TYPE 3 GOALS
C*****************************************************************
      IC = 0
      GT = 3
310   READ(13,1020, END=400) I,J,K,QTY,DT,PR,WT,TGP,TG,ACP,AC,ADP,AD,
     1PDP, PD
      IC = IC + 1
      IF (DT .EQ. 1) X = L
      IF (DT .EQ. 2) X = G
      IF (DT .EQ. 3) X = E
      WRITE(23,1110) IC, (S(I,I1),I1=1,9), (U(J,I1),I1=1,9), K,
     1X, PR, WT, TG, TGP, AC, ACP, AD, ADP, PDP
      WRITE(27,1210) GT, (S(I,I1),I1=1,7), (U(J,I1),I1=1,7), K,
     1X, PR, WT, TG, TGP, AC, ACP, AD, ADP, PDP
      WRITE(33,1310) IC, (S(I,I1),I1=1,20), (U(J,I1),I1=1,20), K,
     1X, PR, WT, TG, TGP, AC, ACP, AD, ADP, PDP
      WRITE(37,1410) GT, (S(I,I1),I1=1,20), (U(J,I1),I1=1,20), K,
     1X, PR, WT, TG, TGP, AC, ACP, AD, ADP, PDP
      GO TO 310
400   CONTINUE
1000  FORMAT(20A1)
1010  FORMAT(1X,I2,1X,I2,1X,I2,1X,I7,1X,I1,1X,I2,1X,I4,3(1X,I7),1X,F5.1)
1020  FORMAT(1X,I2,1X,I2,1X,I2,1X,F7.2,1X,I1,1X,I2,1X,I4,3(1X,F5.1,1X,
     1I7),1X,F5.1,1X,F5.1)
1100  FORMAT(I2,'.',1X,16A1,' ',16A1,1X,I1,'/',I1,3X,A1
     1,1X,I2,1X,I2,2(1X,I6),2X,I6,1X,F5.1)
1110  FORMAT(I2,'.',1X,9A1,' ',9A1,1X,I1,2X,A1,1X,
     1I2,1X,I2,3(1X,I6,'/',F5.1),1X,F5.1)
1200  FORMAT(I1,1X,7A1,' ',7A1,1X,I1,'/',I1,2X,A1
     1,1X,I2,1X,I2,3(1X,I6,6X),1X,F5.1)
1210  FORMAT(I1,1X,7A1,' ',7A1,1X,I1,4X,A1,
     11X,I2,1X,I2,3(1X,I6,'/',F5.1),1X,F5.1)
1300  FORMAT(11X,I2,'.',2X,20A1,' ',20A1,2X,I1,'/',I1,5X,A1
     1,2X,I2,2X,I2,2(2X,I6),3X,I6,6X,F5.1)
1310  FORMAT(6X,I2,'.',2X,20A1,' ',20A1,2X,I1,3X,A1,2X,
     1I2,2X,I2,3(2X,I6,'/',F5.1),2X,F5.1)
1400  FORMAT(I1,2X,20A1,' ',20A1,2X,I1,'/',I1,3X,A1
     1,2X,I2,2X,I2,3(2X,I6,6X),2X,F5.1)
1410  FORMAT(I1,2X,20A1,' ',20A1,2X,I1,5X,A1,
     12X,I2,2X,I2,3(2X,I6,'/',F5.1),2X,F5.1)
      STOP
      END
```

B.10 GLACHMNT

```
C*********************************************************************
C    COMPUTES GOAL ACHIEVEMENTS AFTER THE GP MODEL HAS BEEN SOLVED
C*********************************************************************
      INTEGER S(25,20), U(25,20), X(25,25,20)
      INTEGER ROW, QTR, DT, QTY1, PR, WT, TG, AC, AD
      INTEGER SUM1, SUM2, GT
      REAL   QTY
      READ(1,*) NS, NU, NY
      NSRC = NS + 1
      QTR = NY*4
      DO 20 I = 1, NS
      READ(2,1005) IBAL
      READ(2,1005) (S(I,J),J=1,QTR)
      S(I,1) = S(I,1) + IBAL
20    CONTINUE
      DO 40 I = 1, NU
      READ(3,1005) (U(I,J),J=1,QTR)
40    CONTINUE
      DO 60 I = 1, NSRC
      DO 60 J = 1, NU
      DO 60 K = 1, QTR
60    READ(4,1005) X(I,J,K)
      WRITE(11,*)
      WRITE(12,*)
      WRITE(13,*)
C*********************************************************************
C    TYPE 1 GOALS
C*********************************************************************
      IC1 = 0
      GT = 1
410   READ(17,1000, END=500) I, J, K, QTY1, DT, PR, WT
      IC1 = IC1 + 1
      TG = QTY1
      AC = X(I,J,K)
      AD = AC - TG
      IF (AD .EQ. 0) GO TO 450
      IF (AD .GT. 0) GO TO 430
      AD = AD*(-1)
      IF (DT .EQ. 1) AD = 0
      GO TO 450
430   IF (DT .EQ. 2) AD = 0
450   IF (TG .NE. 0) GO TO 455
      IF (AD .NE. 0) PD = 100.0
      IF (AD .EQ. 0) PD = 0.0
      GO TO 458
455   PD = AD*100.0/TG
458   WRITE(11,1100) I, J, K, QTY1, DT, PR, WT, TG, AC, AD, PD
      WRITE(14,1100) I, J, K, QTY1, DT, PR, WT, TG, AC, AD, PD
      GO TO 410
500   CONTINUE
C*********************************************************************
C    TYPE 2 GOALS
C*********************************************************************
      IC2 = 0
      GT = 2
510   READ(18,1010, END=600) I, J, K, QTY, DT, PR, WT
      IC2 = IC2 + 1
      M = (K-1)*4
      SUM1 = S(I,M+1) + S(I,M+2) + S(I,M+3) + S(I,M+4)
      SUM2 = X(I,J,M+1) + X(I,J,M+2) + X(I,J,M+3) + X(I,J,M+4)
      TG = SUM1*QTY/100.0
      TGP = QTY
      AC = SUM2
      IF (SUM1 .NE. 0) ACP = SUM2*100.0/SUM1
      IF (SUM1 .EQ. 0) ACP = 100.0
      AD = AC - TG
      ADP = ACP - TGP
```

```
      IF (ADP .LT. 0) ADP = ADP*(-1)
      IF (AD .EQ. 0) GO TO 550
      IF (AD .GT. 0) GO TO 530
      AD = AD*(-1)
      IF (DT .EQ. 1) AD = 0
      GO TO 550
530   IF (DT .EQ. 2) AD = 0
550   IF (TG .NE. 0) GO TO 555
      IF (AD .NE. 0) PD = 100.0
      IF (AD .EQ. 0) PD = 0.0
      GO TO 560
555   PD = AD*100.0/TG
560   IF (TGP .NE. 0.0) GO TO 565
      IF (ADP .NE. 0.0) PDP = 100.0
      IF (ADP .EQ. 0.0) PDP = 0.0
      GO TO 570
565   PDP = ADP*100.0/TGP
570   WRITE(12,1110) I, J, K, QTY, DT, PR, WT,TGP,TG,ACP,AC,ADP,AD,
     1PDP, PD
      WRITE(14,1110) I, J, K, QTY, DT, PR, WT,TGP,TG,ACP,AC,ADP,AD,
     1PDP, PD
      GO TO 510
600   CONTINUE
C*********************************************************************
C     TYPE 3 GOALS
C*********************************************************************
      IC3 = 0
      GT = 3
610   READ(19,1010, END=700) I, J, K, QTY, DT, PR, WT
      IC3 = IC3 + 1
      M = (K-1)*4
      SUM1 = U(I,M+1) + U(I,M+2) + U(I,M+3) + U(I,M+4)
      SUM2 = X(I,J,M+1) + X(I,J,M+2) + X(I,J,M+3) + X(I,J,M+4)
      TG = SUM1*QTY/100.0
      TGP = QTY
      AC = SUM2
      IF (SUM1 .NE. 0) ACP = SUM2*100.0/SUM1
      IF (SUM1 .EQ. 0) ACP = 100.0
      AD = AC - TG
      ADP = ACP - TGP
      IF (ADP .LT. 0) ADP = ADP*(-1)
      IF (AD .EQ. 0) GO TO 650
      IF (AD .GT. 0) GO TO 630
      AD = AD*(-1)
      IF (DT .EQ. 1) AD = 0
      GO TO 650
630   IF (DT .EQ. 2) AD = 0
650   IF (TG .NE. 0) GO TO 655
      IF (AD .NE. 0) PD = 100.0
      IF (AD .EQ. 0) PD = 0.0
      GO TO 660
655   PD = AD*100.0/TG
660   IF (TGP .NE. 0.0) GO TO 665
      IF (ADP .NE. 0.0) PDP = 100.0
      IF (ADP .EQ. 0.0) PDP = 0.0
      GO TO 670
665   PDP = ADP*100.0/TGP
670   WRITE(13,1110) I, J, K, QTY, DT, PR, WT,TGP,TG,ACP,AC,ADP,AD,
     1PDP, PD
      WRITE(14,1110) I, J, K, QTY, DT, PR, WT,TGP,TG,ACP,AC,ADP,AD,
     1PDP, PD
      GO TO 610
700   CONTINUE
1005  FORMAT(4I7)
1000  FORMAT(1X,I2,1X,I2,1X,I2,1X,I7,1X,I1,1X,I2,1X,I4)
1010  FORMAT(1X,I2,1X,I2,1X,I2,1X,F7.2,1X,I1,1X,I2,1X,I4)
1100  FORMAT(1X,I2,1X,I2,1X,I2,1X,I7,1X,I1,1X,I2,1X,I4,3(1X,I7),
     11X,F5.1)
1110  FORMAT(1X,I2,1X,I2,1X,I2,1X,F7.2,1X,I1,1X,I2,1X,I4,3(1X,F5.1,1X,
     1I7),1X,F5.1,1X,F5.1)
      STOP
      END
```

B.11 MODSRCE

```
C*********************************************************************
C    UPDATES THE DATABASE WHENEVER A SOURCE IS MODIFIED
C*********************************************************************
      REAL  X(80), V(25)
      INTEGER Y(4), Z(25)
      REAL YES, NO
      DATA YES, NO/'Y','N'/
      READ(1,*) NSRCE, NUSE, NS, NY
      K = NY + 1
      DO 50 I = 1,NSRCE
      IF (I .NE. NS) GO TO 30
      READ(2,*)
      READ(8,*) Y(1)
      WRITE(10,110) Y(1)
      DO 20 J = 1,NY
      READ(2,*)
      READ(8,*) Y
      WRITE(10,110) Y
20    CONTINUE
      GO TO 50
30    DO 40 J = 1,K
      READ(2,100) X
      WRITE(10,100) X
40    CONTINUE
50    CONTINUE
      DO 90 I = 1,NSRCE
      IF (I .NE. NS) GO TO 80
      READ(3,*)
      DO 60 J = 1,NUSE
      READ(9,10) V(J)
      IF (V(J) .EQ. NO) Z(J) = 0
60    IF (V(J) .EQ. YES) Z(J) = 1
      WRITE(11,120) (Z(J),J = 1,NUSE)
      GO TO 90
80    READ(3,100) X
      WRITE(11,100) X
90    CONTINUE
10    FORMAT(2A1)
100   FORMAT(80A1)
110   FORMAT(4I7)
120   FORMAT(40I2)
      STOP
      END
```

B.12 MODUSE

```
C*********************************************************************
C    UPDATES THE DATABASE WHENEVER A USE IS MODIFIED
C*********************************************************************
      REAL  X(80)
      INTEGER Y(4), Z(25)
      REAL YES, NO
      DATA YES, NO/'Y','N'/
      READ(1,*) NSRCE, NUSE, NU, NY
      DO 50 I = 1,NUSE
      IF (I .NE. NU) GO TO 30
      DO 20 J = 1,NY
      READ(2,*)
      READ(8,*) Y
      WRITE(10,110) Y
20    CONTINUE
      GO TO 50
30    DO 40 J = 1,NY
      READ(2,100) X
      WRITE(10,100) X
40    CONTINUE
50    CONTINUE
      DO 80 I = 1, NSRCE
      READ(3,*) (Z(J),J = 1,NUSE)
      READ(9,10) REPLY
      IF (REPLY .EQ. NO) Z(NU) = 0
      IF (REPLY .EQ. YES) Z(NU) = 1
      WRITE(11,120) (Z(J),J = 1,NUSE)
80    CONTINUE
10    FORMAT(2A1)
100   FORMAT(80A1)
110   FORMAT(4I7)
120   FORMAT(30I2)
      STOP
      END
```

B.13 MPSFILES

```
C*********************************************************************
C    CREATES THREE FILES WHICH ARE LATER ON USED TO FORM THE
C    MPS FORMAT INPUT FOR LINDO. THESE FILES CONTAIN:
C        ROW     - THE CONSTRAINT TYPE (<,=,>)
C        COLUMN  - EACH TERM IN THE CONSTRAINT (EXCEPT THE RHS)
C        RHS     - RHS FOR EACH CONSTRAINT
C        BOUNDS  - UPPER BOUNDS ON VARIABLES
C*********************************************************************
      INTEGER S(25,20), CS(25,20), U(25,20), C(25,25)
      INTEGER ROW, QTR, DT, QTY1
      REAL   QTY
      REAL   N, L, G, E, BLANK
      REAL   SIGN
      READ(1,*) NS, NU, NY
      NSRC = NS + 1
      QTR = NY*4
      DATA N, L, G, E, BLANK/'N','L','G','E',' '/
      DO 20 I = 1, NS
      READ(2,1005) IBAL
      READ(2,1005) (S(I,J),J=1,QTR)
      S(I,1) = S(I,1) + IBAL
20    CONTINUE
      DO 40 I = 1, NU
      READ(3,1005) (U(I,J),J=1,QTR)
40    CONTINUE
      DO 50 I = 1, NS
      READ(4,1010) (C(I,J),J=1,NU)
50    CONTINUE
      DO 60 J = 1, NU
      C(NSRC,J) = 1
60    CONTINUE
C*********************************************************************
C    SYSTEM CONSTRAINTS
C*********************************************************************
C
C    DELETE TITLE CARDS FROM INPUT FILES
C
      READ(16,*)
      READ(17,*)
      READ(18,*)
      READ(19,*)
C
C    TITLE CARD FOR ROW, COLUMN AND RHS FILES
C
      WRITE(11,1015)
      WRITE(12,1020)
      WRITE(13,1025)
      WRITE(14,1028)
C
C    OBJECTIVE FUNCTION
C
      ROW = 1
      SIGN = N
      WRITE(11,1030) SIGN, ROW
      CO = 1.0
      WRITE(12,1035) ROW, CO
C
C    'CONSTRAINT MATRIX' CONSTRAINTS
C
      CO = 0.0
      DO 100 I=1,NS
      DO  90 J=1,NU
      IF (C(I,J) .EQ. 1) GO TO 90
      DO  80 K=1,QTR
      IF (I .GE. 10) GO TO 75
      IF (J .GE. 10) GO TO 72
      IF (K .GE. 10) GO TO 71
```

```
      WRITE(14,1540) I, J, K, CO
      GO TO 80
71     WRITE(14,1541) I, J, K, CO
      GO TO 80
72     IF (K .GE. 10) GO TO 73
      WRITE(14,1542) I, J, K, CO
      GO TO 80
73     WRITE(14,1543) I, J, K, CO
      GO TO 80
75     IF (J .GE. 10) GO TO 77
      IF (K .GE. 10) GO TO 76
      WRITE(14,1544) I, J, K, CO
      GO TO 80
76     WRITE(14,1545) I, J, K, CO
      GO TO 80
77     IF (K .GE. 10) GO TO 78
      WRITE(14,1546) I, J, K, CO
      GO TO 80
78     WRITE(14,1547) I, J, K, CO
80     CONTINUE
90     CONTINUE
100    CONTINUE
C
C     FUNDS REQUIREMENT CONSTRAINTS
C
      SIGN = E
      CO = 1.0
      DO 200 J = 1, NU
      DO 190 K = 1, QTR
      ROW = ROW + 1
      WRITE(11,1030) SIGN, ROW
      DO 150 I = 1, NSRC
      IF (I .GE. 10) GO TO 125
      IF (J .GE. 10) GO TO 122
      IF (K .GE. 10) GO TO 121
      WRITE(12,1040) I, J, K, ROW, CO
      GO TO 150
121    WRITE(12,1041) I, J, K, ROW, CO
      GO TO 150
122    IF (K .GE. 10) GO TO 123
      WRITE(12,1042) I, J, K, ROW, CO
      GO TO 150
123    WRITE(12,1043) I, J, K, ROW, CO
      GO TO 150
125    IF (J .GE. 10) GO TO 127
      IF (K .GE. 10) GO TO 126
      WRITE(12,1044) I, J, K, ROW, CO
      GO TO 150
126    WRITE(12,1045) I, J, K, ROW, CO
      GO TO 150
127    IF (K .GE. 10) GO TO 128
      WRITE(12,1046) I, J, K, ROW, CO
      GO TO 150
128    WRITE(12,1047) I, J, K, ROW, CO
150    CONTINUE
      RHS = U(J,K)
      WRITE(13,1050) ROW, RHS
190    CONTINUE
200    CONTINUE
C
C     FUNDS AVAILABILITY CONSTRAINTS
C
      DO 210 I= 1, NS
      CS(I,1) = S(I,1)
      DO 210 K= 2, QTR
210    CS(I,K) = CS(I,K-1) + S(I,K)
      SIGN = L
      CO = 1.0
      DO 300 I = 1, NS
      DO 290 M = 1, QTR
      ROW = ROW + 1
      WRITE(11,1030) SIGN, ROW
```

```
      DO 250 K = 1, M
      DO 240 J = 1, NU
      IF (I .GE. 10) GO TO 225
      IF (J .GE. 10) GO TO 222
      IF (K .GE. 10) GO TO 221
      WRITE(12,1040) I, J, K, ROW, CO
      GO TO 240
221   WRITE(12,1041) I, J, K, ROW, CO
      GO TO 240
222   IF (K .GE. 10) GO TO 223
      WRITE(12,1042) I, J, K, ROW, CO
      GO TO 240
223   WRITE(12,1043) I, J, K, ROW, CO
      GO TO 240
225   IF (J .GE. 10) GO TO 227
      IF (K .GE. 10) GO TO 226
      WRITE(12,1044) I, J, K, ROW, CO
      GO TO 240
226   WRITE(12,1045) I, J, K, ROW, CO
      GO TO 240
227   IF (K .GE. 10) GO TO 228
      WRITE(12,1046) I, J, K, ROW, CO
      GO TO 240
228   WRITE(12,1047) I, J, K, ROW, CO
240   CONTINUE
250   CONTINUE
      RHS = CS(I,M)
      WRITE(13,1050) ROW, RHS
290   CONTINUE
300   CONTINUE
C*********************************************************************
C     RIGID CONSTRAINTS
C*********************************************************************
      SIGN = E
      CO = 1.0
310   READ(16,*, END=400) I, J, K, QTY1
      ROW = ROW + 1
      WRITE(11,1030) SIGN, ROW
      IF (I .GE. 10) GO TO 325
      IF (J .GE. 10) GO TO 322
      IF (K .GE. 10) GO TO 321
      WRITE(12,1040) I, J, K, ROW, CO
      GO TO 350
321   WRITE(12,1041) I, J, K, ROW, CO
      GO TO 350
322   IF (K .GE. 10) GO TO 323
      WRITE(12,1042) I, J, K, ROW, CO
      GO TO 350
323   WRITE(12,1043) I, J, K, ROW, CO
      GO TO 350
325   IF (J .GE. 10) GO TO 327
      IF (K .GE. 10) GO TO 326
      WRITE(12,1044) I, J, K, ROW, CO
      GO TO 350
326   WRITE(12,1045) I, J, K, ROW, CO
      GO TO 350
327   IF (K .GE. 10) GO TO 328
      WRITE(12,1046) I, J, K, ROW, CO
      GO TO 350
328   WRITE(12,1047) I, J, K, ROW, CO
350   CONTINUE
      RHS = QTY1
      WRITE(13,1050) ROW, RHS
      GO TO 310
400   CONTINUE
C*********************************************************************
C     TYPE 1 GOALS
C*********************************************************************
      SIGN = E
410   READ(17,*, END=500) I, J, K, QTY1, DT
      CO = 1.0
      ROW = ROW + 1
```

```
      WRITE(11,1030) SIGN, ROW
      IF (I .GE. 10) GO TO 425
      IF (J .GE. 10) GO TO 422
      IF (K .GE. 10) GO TO 421
      WRITE(12,1040) I, J, K, ROW, CO
      GO TO 430
421   WRITE(12,1041) I, J, K, ROW, CO
      GO TO 430
422   IF (K .GE. 10) GO TO 423
      WRITE(12,1042) I, J, K, ROW, CO
      GO TO 430
423   WRITE(12,1043) I, J, K, ROW, CO
      GO TO 430
425   IF (J .GE. 10) GO TO 427
      IF (K .GE. 10) GO TO 426
      WRITE(12,1044) I, J, K, ROW, CO
      GO TO 430
426   WRITE(12,1045) I, J, K, ROW, CO
      GO TO 430
427   IF (K .GE. 10) GO TO 428
      WRITE(12,1046) I, J, K, ROW, CO
      GO TO 430
428   WRITE(12,1047) I, J, K, ROW, CO
430   CONTINUE
      IF (DT .EQ. 2) GO TO 455
      CO = 1.0
      IF (I .GE. 10) GO TO 445
      IF (J .GE. 10) GO TO 442
      IF (K .GE. 10) GO TO 441
      WRITE(12,1240) I, J, K, ROW, CO
      GO TO 450
441   WRITE(12,1241) I, J, K, ROW, CO
      GO TO 450
442   IF (K .GE. 10) GO TO 443
      WRITE(12,1242) I, J, K, ROW, CO
      GO TO 450
443   WRITE(12,1243) I, J, K, ROW, CO
      GO TO 450
445   IF (J .GE. 10) GO TO 447
      IF (K .GE. 10) GO TO 446
      WRITE(12,1244) I, J, K, ROW, CO
      GO TO 450
446   WRITE(12,1245) I, J, K, ROW, CO
      GO TO 450
447   IF (K .GE. 10) GO TO 448
      WRITE(12,1246) I, J, K, ROW, CO
      GO TO 450
448   WRITE(12,1247) I, J, K, ROW, CO
450   CONTINUE
455   IF (DT .EQ. 1) GO TO 470
      CO = -1.0
      IF (I .GE. 10) GO TO 465
      IF (J .GE. 10) GO TO 462
      IF (K .GE. 10) GO TO 461
      WRITE(12,1280) I, J, K, ROW, CO
      GO TO 470
461   WRITE(12,1281) I, J, K, ROW, CO
      GO TO 470
462   IF (K .GE. 10) GO TO 463
      WRITE(12,1282) I, J, K, ROW, CO
      GO TO 470
463   WRITE(12,1283) I, J, K, ROW, CO
      GO TO 470
465   IF (J .GE. 10) GO TO 467
      IF (K .GE. 10) GO TO 466
      WRITE(12,1284) I, J, K, ROW, CO
      GO TO 470
466   WRITE(12,1285) I, J, K, ROW, CO
      GO TO 470
467   IF (K .GE. 10) GO TO 468
      WRITE(12,1286) I, J, K, ROW, CO
```

```
      GO TO 470
468   WRITE(12,1287) I, J, K, ROW, CO
470   CONTINUE
      RHS = QTY1
      WRITE(13,1050) ROW, RHS
      GO TO 410
500   CONTINUE
C*********************************************************************
C     TYPE 2 GOALS
C*********************************************************************
      SIGN = E
510   READ(18,*, END=600) I, J, M, QTY, DT
      CO = 1.0
      ROW = ROW + 1
      WRITE(11,1030) SIGN, ROW
      K1 = (M-1)*4 + 1
      K2 = K1 + 3
      DO 535 K = K1, K2
      IF (I .GE. 10) GO TO 525
      IF (J .GE. 10) GO TO 522
      IF (K .GE. 10) GO TO 521
      WRITE(12,1040) I, J, K, ROW, CO
      GO TO 530
521   WRITE(12,1041) I, J, K, ROW, CO
      GO TO 530
522   IF (K .GE. 10) GO TO 523
      WRITE(12,1042) I, J, K, ROW, CO
      GO TO 530
523   WRITE(12,1043) I, J, K, ROW, CO
      GO TO 530
525   IF (J .GE. 10) GO TO 527
      IF (K .GE. 10) GO TO 526
      WRITE(12,1044) I, J, K, ROW, CO
      GO TO 530
526   WRITE(12,1045) I, J, K, ROW, CO
      GO TO 530
527   IF (K .GE. 10) GO TO 528
      WRITE(12,1046) I, J, K, ROW, CO
      GO TO 530
528   WRITE(12,1047) I, J, K, ROW, CO
530   CONTINUE
535   CONTINUE
      K = M
      IF (DT .EQ. 2) GO TO 555
      CO = 1.0
      IF (I .GE. 10) GO TO 545
      IF (J .GE. 10) GO TO 542
      IF (K .GE. 10) GO TO 541
      WRITE(12,1340) I, J, K, ROW, CO
      GO TO 550
541   WRITE(12,1341) I, J, K, ROW, CO
      GO TO 550
542   IF (K .GE. 10) GO TO 543
      WRITE(12,1342) I, J, K, ROW, CO
      GO TO 550
543   WRITE(12,1343) I, J, K, ROW, CO
      GO TO 550
545   IF (J .GE. 10) GO TO 547
      IF (K .GE. 10) GO TO 546
      WRITE(12,1344) I, J, K, ROW, CO
      GO TO 550
546   WRITE(12,1345) I, J, K, ROW, CO
      GO TO 550
547   IF (K .GE. 10) GO TO 548
      WRITE(12,1346) I, J, K, ROW, CO
      GO TO 550
548   WRITE(12,1347) I, J, K, ROW, CO
550   CONTINUE
555   IF (DT .EQ. 1) GO TO 570
      CO = -1.0
      IF (I .GE. 10) GO TO 565
      IF (J .GE. 10) GO TO 562
```

```
      IF (K .GE. 10) GO TO 561
      WRITE(12,1380) I, J, K, ROW, CO
      GO TO 570
561   WRITE(12,1381) I, J, K, ROW, CO
      GO TO 570
562   IF (K .GE. 10) GO TO 563
      WRITE(12,1382) I, J, K, ROW, CO
      GO TO 570
563   WRITE(12,1383) I, J, K, ROW, CO
      GO TO 570
565   IF (J .GE. 10) GO TO 567
      IF (K .GE. 10) GO TO 566
      WRITE(12,1384) I, J, K, ROW, CO
      GO TO 570
566   WRITE(12,1385) I, J, K, ROW, CO
      GO TO 570
567   IF (K .GE. 10) GO TO 568
      WRITE(12,1386) I, J, K, ROW, CO
      GO TO 570
568   WRITE(12,1387) I, J, K, ROW, CO
570   CONTINUE
      IRHS = 0
      DO 580 K=K1, K2
580   IRHS = IRHS + S(I,K)
      IRHS = IRHS*QTY/100.0 + .5
      RHS = IRHS
      WRITE(13,1050) ROW, RHS
      GO TO 510
600   CONTINUE
C*********************************************************************
C     TYPE 3 GOALS
C*********************************************************************
      SIGN = E
610   READ(19,*, END=700) I, J, M, QTY, DT
      CO = 1.0
      ROW = ROW + 1
      WRITE(11,1030) SIGN, ROW
      K1 = (M-1)*4 + 1
      K2 = K1 + 3
      DO 635 K = K1, K2
      IF (I .GE. 10) GO TO 625
      IF (J .GE. 10) GO TO 622
      IF (K .GE. 10) GO TO 621
      WRITE(12,1040) I, J, K, ROW, CO
      GO TO 630
621   WRITE(12,1041) I, J, K, ROW, CO
      GO TO 630
622   IF (K .GE. 10) GO TO 623
      WRITE(12,1042) I, J, K, ROW, CO
      GO TO 630
623   WRITE(12,1043) I, J, K, ROW, CO
      GO TO 630
625   IF (J .GE. 10) GO TO 627
      IF (K .GE. 10) GO TO 626
      WRITE(12,1044) I, J, K, ROW, CO
      GO TO 630
626   WRITE(12,1045) I, J, K, ROW, CO
      GO TO 630
627   IF (K .GE. 10) GO TO 628
      WRITE(12,1046) I, J, K, ROW, CO
      GO TO 630
628   WRITE(12,1047) I, J, K, ROW, CO
630   CONTINUE
635   CONTINUE
      K = M
      IF (DT .EQ. 2) GO TO 655
      CO = 1.0
      IF (I .GE. 10) GO TO 645
      IF (J .GE. 10) GO TO 642
      IF (K .GE. 10) GO TO 641
      WRITE(12,1440) I, J, K, ROW, CO
```

```
      GO TO 650
641   WRITE(12,1441) I, J, K, ROW, CO
      GO TO 650
642   IF (K .GE. 10) GO TO 643
      WRITE(12,1442) I, J, K, ROW, CO
      GO TO 650
643   WRITE(12,1443) I, J, K, ROW, CO
      GO TO 650
645   IF (J .GE. 10) GO TO 647
      IF (K .GE. 10) GO TO 646
      WRITE(12,1444) I, J, K, ROW, CO
      GO TO 650
646   WRITE(12,1445) I, J, K, ROW, CO
      GO TO 650
647   IF (K .GE. 10) GO TO 648
      WRITE(12,1446) I, J, K, ROW, CO
      GO TO 650
648   WRITE(12,1447) I, J, K, ROW, CO
650   CONTINUE
655   IF (DT .EQ. 1) GO TO 670
      CO = -1.0
      IF (I .GE. 10) GO TO 665
      IF (J .GE. 10) GO TO 662
      IF (K .GE. 10) GO TO 661
      WRITE(12,1480) I, J, K, ROW, CO
      GO TO 670
661   WRITE(12,1481) I, J, K, ROW, CO
      GO TO 670
662   IF (K .GE. 10) GO TO 663
      WRITE(12,1482) I, J, K, ROW, CO
      GO TO 670
663   WRITE(12,1483) I, J, K, ROW, CO
      GO TO 670
665   IF (J .GE. 10) GO TO 667
      IF (K .GE. 10) GO TO 666
      WRITE(12,1484) I, J, K, ROW, CO
      GO TO 670
666   WRITE(12,1485) I, J, K, ROW, CO
      GO TO 670
667   IF (K .GE. 10) GO TO 668
      WRITE(12,1486) I, J, K, ROW, CO
      GO TO 670
668   WRITE(12,1487) I, J, K, ROW, CO
670   CONTINUE
      IRHS = 0
      DO 680 K=K1, K2
680   IRHS = IRHS + U(J,K)
      IRHS = IRHS*QTY/100.0 + .5
      RHS = IRHS
      WRITE(13,1050) ROW, RHS
      GO TO 610
700   CONTINUE
C*********************************************************************
C     GOAL TO MINIMIZE DEFICITS
C*********************************************************************
      SIGN = E
      CO = 1.0
      ROW = ROW + 1
      WRITE(11,1030) SIGN, ROW
      I = NSRC
      DO 730 J = 1, NU
      DO 730 K = 1, QTR
      IF (I .GE. 10) GO TO 725
      IF (J .GE. 10) GO TO 722
      IF (K .GE. 10) GO TO 721
      WRITE(12,1040) I, J, K, ROW, CO
      GO TO 730
721   WRITE(12,1041) I, J, K, ROW, CO
      GO TO 730
722   IF (K .GE. 10) GO TO 723
      WRITE(12,1042) I, J, K, ROW, CO
```

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      GO TO 730
723   WRITE(12,1043) I, J, K, ROW, CO
      GO TO 730
725   IF (J .GE. 10) GO TO 727
      IF (K .GE. 10) GO TO 726
      WRITE(12,1044) I, J, K, ROW, CO
      GO TO 730
726   WRITE(12,1045) I, J, K, ROW, CO
      GO TO 730
727   IF (K .GE. 10) GO TO 728
      WRITE(12,1046) I, J, K, ROW, CO
      GO TO 730
728   WRITE(12,1047) I, J, K, ROW, CO
730   CONTINUE
      CO = 1.0
      WRITE(12,1610) ROW, CO
      CO = -1.0
      WRITE(12,1620) ROW, CO
      RHS = 0.0
      WRITE(13,1050) ROW, RHS
C
1000  FORMAT(5A1)
1005  FORMAT(4I7)
1010  FORMAT(4012)
1015  FORMAT('ROWS')
1020  FORMAT('COLUMNS')
1025  FORMAT('RHS')
1028  FORMAT('BOUNDS')
1030  FORMAT(2X,A1,1X,I8)
1035  FORMAT(4X,'DUMMY',5X,I8,4X,F10.2)
1040  FORMAT(4X,'X','0',I1,'0',I1,'0',I1,3X,I8,4X,F10.2)
1041  FORMAT(4X,'X','0',I1,'0',I1,I2,3X,I8,4X,F10.2)
1042  FORMAT(4X,'X','0',I1,I2,'0',I1,3X,I8,4X,F10.2)
1043  FORMAT(4X,'X','0',I1,I2,I2,3X,I8,4X,F10.2)
1044  FORMAT(4X,'X',I2,'0',I1,'0',I1,3X,I8,4X,F10.2)
1045  FORMAT(4X,'X',I2,'0',I1,I2,3X,I8,4X,F10.2)
1046  FORMAT(4X,'X',I2,I2,'0',I1,3X,I8,4X,F10.2)
1047  FORMAT(4X,'X',I2,I2,I2,3X,I8,4X,F10.2)
1050  FORMAT(4X,'RHS',7X,I8,4X,F10.2)
1240  FORMAT(4X,'D','0',I1,'0',I1,'0',I1,'M',2X,I8,4X,F10.2)
1241  FORMAT(4X,'D','0',I1,'0',I1,I2,'M',2X,I8,4X,F10.2)
1242  FORMAT(4X,'D','0',I1,I2,'0',I1,'M',2X,I8,4X,F10.2)
1243  FORMAT(4X,'D','0',I1,I2,I2,'M',2X,I8,4X,F10.2)
1244  FORMAT(4X,'D',I2,'0',I1,'0',I1,'M',2X,I8,4X,F10.2)
1245  FORMAT(4X,'D',I2,'0',I1,I2,'M',2X,I8,4X,F10.2)
1246  FORMAT(4X,'D',I2,I2,'0',I1,'M',2X,I8,4X,F10.2)
1247  FORMAT(4X,'D',I2,I2,I2,'M',2X,I8,4X,F10.2)
1280  FORMAT(4X,'D','0',I1,'0',I1,'0',I1,'P',2X,I8,4X,F10.2)
1281  FORMAT(4X,'D','0',I1,'0',I1,I2,'P',2X,I8,4X,F10.2)
1282  FORMAT(4X,'D','0',I1,I2,'0',I1,'P',2X,I8,4X,F10.2)
1283  FORMAT(4X,'D','0',I1,I2,I2,'P',2X,I8,4X,F10.2)
1284  FORMAT(4X,'D',I2,'0',I1,'0',I1,'P',2X,I8,4X,F10.2)
1285  FORMAT(4X,'D',I2,'0',I1,I2,'P',2X,I8,4X,F10.2)
1286  FORMAT(4X,'D',I2,I2,'0',I1,'P',2X,I8,4X,F10.2)
1287  FORMAT(4X,'D',I2,I2,I2,'P',2X,I8,4X,F10.2)
1340  FORMAT(4X,'E','0',I1,'0',I1,'0',I1,'M',2X,I8,4X,F10.2)
1341  FORMAT(4X,'E','0',I1,'0',I1,I2,'M',2X,I8,4X,F10.2)
1342  FORMAT(4X,'E','0',I1,I2,'0',I1,'M',2X,I8,4X,F10.2)
1343  FORMAT(4X,'E','0',I1,I2,I2,'M',2X,I8,4X,F10.2)
1344  FORMAT(4X,'E',I2,'0',I1,'0',I1,'M',2X,I8,4X,F10.2)
1345  FORMAT(4X,'E',I2,'0',I1,I2,'M',2X,I8,4X,F10.2)
1346  FORMAT(4X,'E',I2,I2,'0',I1,'M',2X,I8,4X,F10.2)
1347  FORMAT(4X,'E',I2,I2,I2,'M',2X,I8,4X,F10.2)
1380  FORMAT(4X,'E','0',I1,'0',I1,'0',I1,'P',2X,I8,4X,F10.2)
1381  FORMAT(4X,'E','0',I1,'0',I1,I2,'P',2X,I8,4X,F10.2)
1382  FORMAT(4X,'E','0',I1,I2,'0',I1,'P',2X,I8,4X,F10.2)
1383  FORMAT(4X,'E','0',I1,I2,I2,'P',2X,I8,4X,F10.2)
1384  FORMAT(4X,'E',I2,'0',I1,'0',I1,'P',2X,I8,4X,F10.2)
1385  FORMAT(4X,'E',I2,'0',I1,I2,'P',2X,I8,4X,F10.2)
1386  FORMAT(4X,'E',I2,I2,'0',I1,'P',2X,I8,4X,F10.2)
1387  FORMAT(4X,'E',I2,I2,I2,'P',2X,I8,4X,F10.2)
1440  FORMAT(4X,'F','0',I1,'0',I1,'0',I1,'M',2X,I8,4X,F10.2)
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1441  FORMAT(4X,'F','0',I1,'0',I1,I2,'M',2X,I8,4X,F10.2)
1442  FORMAT(4X,'F','0',I1,I2,'0',I1,'M',2X,I8,4X,F10.2)
1443  FORMAT(4X,'F','0',I1,I2,I2,'M',2X,I8,4X,F10.2)
1444  FORMAT(4X,'F',I2,'0',I1,'0',I1,'M',2X,I8,4X,F10.2)
1445  FORMAT(4X,'F',I2,'0',I1,I2,'M',2X,I8,4X,F10.2)
1446  FORMAT(4X,'F',I2,I2,'0',I1,'M',2X,I8,4X,F10.2)
1447  FORMAT(4X,'F',I2,I2,I2,'M',2X,I8,4X,F10.2)
1480  FORMAT(4X,'F','0',I1,'0',I1,'0',I1,'P',2X,I8,4X,F10.2)
1481  FORMAT(4X,'F','0',I1,'0',I1,I2,'P',2X,I8,4X,F10.2)
1482  FORMAT(4X,'F','0',I1,I2,'0',I1,'P',2X,I8,4X,F10.2)
1483  FORMAT(4X,'F','0',I1,I2,I2,'P',2X,I8,4X,F10.2)
1484  FORMAT(4X,'F',I2,'0',I1,'0',I1,'P',2X,I8,4X,F10.2)
1485  FORMAT(4X,'F',I2,'0',I1,I2,'P',2X,I8,4X,F10.2)
1486  FORMAT(4X,'F',I2,I2,'0',I1,'P',2X,I8,4X,F10.2)
1487  FORMAT(4X,'F',I2,I2,I2,'P',2X,I8,4X,F10.2)
1540  FORMAT(1X,'UP BOUNDNAM',2X,'X','0',I1,'0',I1,'0',I1,1X,F10.2)
1541  FORMAT(1X,'UP BOUNDNAM',2X,'X','0',I1,'0',I1,I2,1X,F10.2)
1542  FORMAT(1X,'UP BOUNDNAM',2X,'X','0',I1,I2,'0',I1,1X,F10.2)
1543  FORMAT(1X,'UP BOUNDNAM',2X,'X','0',I1,I2,I2,1X,F10.2)
1544  FORMAT(1X,'UP BOUNDNAM',2X,'X',I2,'0',I1,'0',I1,1X,F10.2)
1545  FORMAT(1X,'UP BOUNDNAM',2X,'X',I2,'0',I1,I2,1X,F10.2)
1546  FORMAT(1X,'UP BOUNDNAM',2X,'X',I2,I2,'0',I1,1X,F10.2)
1547  FORMAT(1X,'UP BOUNDNAM',2X,'X',I2,I2,I2,1X,F10.2)
1610  FORMAT(4X,'G','M',8X,I8,4X,F10.2)
1620  FORMAT(4X,'G','P',8X,I8,4X,F10.2)
      STOP
      END
```

B.14 ORDGARPT

```
C*********************************************************************
C    SORT 'ALL GOAL ACHIEVEMENTS' FILE BY PRIORITY
C*********************************************************************
      REAL   X(76)
      IC = 0
50    READ(1,1000, END = 100) X
      IC = IC + 1
      WRITE(2,1100) IC,X
      GO TO 50
100   CONTINUE
1000  FORMAT(76A1)
1100  FORMAT(I2,'. ',76A1)
      STOP
      END
```

B.15 PLANYEAR

```
C***********************************************************************
C    MODIFIES THE DATABASE ACCORDINGLY WHEN THE PLANNING HORIZON
C    IS CHANGED
C***********************************************************************
      INTEGER Y(4)
      READ(1,*) NSRCE, NUSE, NY
      DO 50 I = 1,NSRCE
      READ(2,*) Y(1)
      WRITE(8,110) Y(1)
      DO 20 J=1,NY
      READ(2,*) Y
      WRITE(8,110) Y
20     CONTINUE
50     CONTINUE
      DO 80 I = 1,NUSE
      DO 60 J=1,NY
      READ(3,*) Y
      WRITE(9,110) Y
60     CONTINUE
80     CONTINUE
110    FORMAT(4I7)
      STOP
      END
```

B.16 PREGLACH

```
C*********************************************************************
C     REWRITES THE THREE GOAL FILES IN FORMATTED FORMS WHICH
C     WILL LATER BE USED TO CREATE "GOAL ACHIEVEMENT" REPORTS
C*********************************************************************
      INTEGER QTY1, DT, PR, WT, GT, CTR1, CTR2, CTR3, CTR0, CTR
      REAL QTY
      READ(1,*)
      READ(2,*)
      READ(3,*)
      READ(4,*)
      CTR1 = 0
      CTR2 = 0
      CTR3 = 0
      CTR = 0
      GT = 1
50    READ(1,*, END=90) I, J, K, QTY1, DT, PR, WT
      WRITE(11,1000) I, J, K, QTY1, DT, PR, WT, GT
      QTY = QTY1
      WRITE(17,1010) I, J, K, QTY, DT, PR, WT, GT
      CTR1 = CTR1 + 1
      GO TO 50
90    GT = 2
100   READ(2,*, END=190) I, J, K, QTY, DT, PR, WT
      CTR2 = CTR2 + 1
      WRITE(12,1010) I, J, K, QTY, DT, PR, WT, GT
      WRITE(17,1010) I, J, K, QTY, DT, PR, WT, GT
      GO TO 100
190   GT = 3
200   READ(3,*, END=300) I, J, K, QTY, DT, PR, WT
      CTR3 = CTR3 + 1
      WRITE(13,1010) I, J, K, QTY, DT, PR, WT, GT
      WRITE(17,1010) I, J, K, QTY, DT, PR, WT, GT
      GO TO 200
300   CTR0 = CTR1 + CTR2 + CTR3
      WRITE(18,*) CTR1, CTR2, CTR3, CTR0
      WRITE(14,*)
400   READ(4,*, END=500) I, J, K, QTY1
      CTR = CTR + 1
      WRITE(14,1000) I, J, K, QTY1
      GO TO 400
500   WRITE(19,*) CTR
1000  FORMAT(1X,I2,1X,I2,1X,I2,1X,I7,1X,I1,1X,I2,1X,I4,1X,I1)
1010  FORMAT(1X,I2,1X,I2,1X,I2,1X,F7.2,1X,I1,1X,I2,1X,I4,1X,I1)
      STOP
      END
```

B.17 PREPRIOR

```
C***********************************************************************
C     READS THE THREE GOALS FILES IN UNFORMATTED MODE AND
C     WRITES THEM IN FORMATTED FORM WHICH WILL LATER BE
C     USED TO CREATE THE ACHIEVEMENT FUNCTION FILE
C***********************************************************************
      INTEGER QTY1, DT, PR, WT, GT, CTR1, CTR2, CTR3, CTR
      REAL QTY
      READ(1,*)
      READ(2,*)
      READ(3,*)
      CTR1 = 1
      CTR2 = 1
      CTR3 = 1
      CTR = 0
      GT = 1
50    READ(1,*, END=90) I, J, K, QTY1, DT, PR, WT
      WRITE(11,1000) I, J, K, QTY1, DT, PR, WT, GT
      CTR1 = CTR1 + 1
      GO TO 50
90    GT = 2
100   READ(2,*, END=190) I, J, K, QTY, DT, PR, WT
      CTR2 = CTR2 + 1
      WRITE(11,1010) I, J, K, QTY, DT, PR, WT, GT
      GO TO 100
190   GT = 3
200   READ(3,*, END=300) I, J, K, QTY, DT, PR, WT
      CTR3 = CTR3 + 1
      WRITE(11,1010) I, J, K, QTY, DT, PR, WT, GT
      GO TO 200
300   CONTINUE
      CTR = CTR1 + CTR2 + CTR3 - 3
      WRITE(12,*) CTR
      WRITE(13,*) CTR1, CTR2, CTR3
1000  FORMAT(1X,I2,1X,I2,1X,I2,1X,I7,1X,I1,1X,I2,1X,I4,1X,I1)
1010  FORMAT(1X,I2,1X,I2,1X,I2,1X,F7.2,1X,I1,1X,I2,1X,I4,1X,I1)
      STOP
      END
```

B.18 PREVUGLS

```
C*********************************************************************
C    REWRITES THE THREE GOAL FILES IN FORMATTED FORMS
C    WHICH WILL LATER BE USED TO CREATE "VIEW GOAL" REPORTS
C*********************************************************************
      INTEGER QTY1, DT, PR, WT, GT, CTR1, CTR2, CTR3, CTR4, CTR
      REAL QTY
      READ(1,*)
      READ(2,*)
      READ(3,*)
      READ(4,*)
      CTR1 = 0
      CTR2 = 0
      CTR3 = 0
      CTR4 = 0
      GT = 1
50    READ(1,*, END=90) I, J, K, QTY1, DT, PR, WT
      WRITE(11,1000) I, J, K, QTY1, DT, PR, WT, GT
      QTY = QTY1
      WRITE(17,1010) I, J, K, QTY, DT, PR, WT, GT
      CTR1 = CTR1 + 1
      GO TO 50
90    GT = 2
100   READ(2,*, END=190) I, J, K, QTY, DT, PR, WT
      CTR2 = CTR2 + 1
      WRITE(12,1010) I, J, K, QTY, DT, PR, WT, GT
      WRITE(17,1010) I, J, K, QTY, DT, PR, WT, GT
      GO TO 100
190   GT = 3
200   READ(3,*, END=300) I, J, K, QTY, DT, PR, WT
      CTR3 = CTR3 + 1
      WRITE(13,1010) I, J, K, QTY, DT, PR, WT, GT
      WRITE(17,1010) I, J, K, QTY, DT, PR, WT, GT
      GO TO 200
300   READ(4,*, END=400) I, J, K, QTY1
      CTR4 = CTR4 + 1
      WRITE(19,1000) I, J, K, QTY1
      GO TO 300
400   CONTINUE
      CTR = CTR1 + CTR2 + CTR3
      WRITE(18,*) CTR1, CTR2, CTR3, CTR4, CTR
1000  FORMAT(1X,I2,1X,I2,1X,I2,1X,I7,1X,I1,1X,I2,1X,I4,1X,I1)
1010  FORMAT(1X,I2,1X,I2,1X,I2,1X,F7.2,1X,I1,1X,I2,1X,I4,1X,I1)
      STOP
      END
```

B.19 PRIOR

```
C*********************************************************************
C    CREATES THE PRIORITY STRUCTURE FOR LINDO USING THE
C    THREE GOALS FILES
C*********************************************************************
      DIMENSION CODE(200,6), VAR(20,200,8), WT(20,200)
      INTEGER   DT(200), PR(200), W(200), GT(200)
      INTEGER   PCTR(20), SP(20)
      INTEGER   CTR
      REAL    D, E, F, M, P, Z, B, DV, G
      DATA  D, E, F, M, P, Z, G, B/'D','E','F','M','P','0','G',' '/
      READ(1,*) NG
      DO 50 I = 1, NG
      READ(2,1100) (CODE(I,J),J=1,6), DT(I), PR(I), W(I), GT(I)
      DO 40 J=1,6
40    IF (CODE(I,J) .EQ. B) CODE(I,J) = Z
50    CONTINUE
      DO 60 I=1,20
60    PCTR(I) = 0
      DO 300 I=1,NG
      DV = B
      J=PR(I)
      IF (GT(I) .EQ. 1) DV = D
      IF (GT(I) .EQ. 2) DV = E
      IF (GT(I) .EQ. 3) DV = F
100   IF (DT(I) .EQ. 2) GO TO 200
      PCTR(J)=PCTR(J)+1
      N=PCTR(J)
      VAR(J,N,1)=DV
      VAR(J,N,2)=CODE(I,1)
      VAR(J,N,3)=CODE(I,2)
      VAR(J,N,4)=CODE(I,3)
      VAR(J,N,5)=CODE(I,4)
      VAR(J,N,6)=CODE(I,5)
      VAR(J,N,7)=CODE(I,6)
      VAR(J,N,8)=M
      WT(J,N)=W(I)
200   IF (DT(I) .EQ. 1) GO TO 300
      PCTR(J)=PCTR(J)+1
      N=PCTR(J)
      VAR(J,N,1)=DV
      VAR(J,N,2)=CODE(I,1)
      VAR(J,N,3)=CODE(I,2)
      VAR(J,N,4)=CODE(I,3)
      VAR(J,N,5)=CODE(I,4)
      VAR(J,N,6)=CODE(I,5)
      VAR(J,N,7)=CODE(I,6)
      VAR(J,N,8)=P
      WT(J,N)=W(I)
300   CONTINUE
      J=20
      PCTR(J)=PCTR(J) + 1
      N = PCTR(J)
      VAR(J,N,1)=G
      VAR(J,N,2)=M
      VAR(J,N,3)=B
      VAR(J,N,4)=B
      VAR(J,N,5)=B
      VAR(J,N,6)=B
      VAR(J,N,7)=B
      VAR(J,N,8)=B
      WT(J,N)=1.0
      J=20
      PCTR(J)=PCTR(J) + 1
      N = PCTR(J)
      VAR(J,N,1)=G
      VAR(J,N,2)=P
      VAR(J,N,3)=B
```

```
      VAR(J,N,4) = B
      VAR(J,N,5) = B
      VAR(J,N,6) = B
      VAR(J,N,7) = B
      VAR(J,N,8) = B
      WT(J,N) = 1.0
C
      CTR = 0
      DO 350 K = 1,20
      IF (PCTR(K) .EQ. 0) GO TO 350
      CTR = CTR + 1
      SP(CTR) = K
350   CONTINUE
C
C     ***************************************************************
C
      WRITE(75,500)
500   FORMAT('1111111122222222333333334444444455555555666666667777777788
     1888888')
      WRITE(75,1200) CTR
      WRITE(75,1210) (PCTR(SP(I)),I = 1,CTR)
      DO 600 I = 1,CTR
      M = SP(I)
      L = PCTR(M)
      WRITE(75,1220) ((VAR(M,J,K),K = 1,8),J = 1,L)
      WRITE(75,1230) (WT(M,J),J = 1,L)
600   CONTINUE
1000  FORMAT(10A1)
1100  FORMAT(1X,2A1,1X,2A1,1X,2A1,9X,I1,1X,I2,1X,I4,1X,I1)
1200  FORMAT(I2,' SANDU GP MODEL')
1210  FORMAT(I2,20(2X,I2))
1220  FORMAT(8(8A1))
1230  FORMAT(8(F8.2))
      STOP
      END
```

B.20 PRNTGARP

```
C*********************************************************************
C     PRINT GOAL ACHIEVEMENT REPORTS
C*********************************************************************
      DIMENSION S(20), U(20), X(120)
      READ(1,*) I1, I2, I3, I0
C*********************************************************************
C     PRINT TITLE
C*********************************************************************
      WRITE(11,1000)
C*********************************************************************
C     GOAL ACHIEVEMENT REPORT - TYPE I GOALS
C*********************************************************************
      WRITE(11,1100)
      WRITE(11,1110)
      IF (I1 .EQ. 0) GO TO 100
50    READ(31,1500, END=100) X
      WRITE(11,1500) X
      GO TO 50
100   CONTINUE
C*********************************************************************
C     GOAL ACHIEVEMENT REPORT - TYPE II GOALS
C*********************************************************************
      WRITE(11,1200)
      WRITE(11,1205)
      WRITE(11,1210)
      IF (I2 .EQ. 0) GO TO 200
150   READ(32,1500, END=200) X
      WRITE(11,1500) X
      GO TO 150
200   CONTINUE
C*********************************************************************
C     GOAL ACHIEVEMENT REPORT - TYPE III GOALS
C*********************************************************************
      WRITE(11,1203)
      WRITE(11,1205)
      WRITE(11,1210)
      IF (I3 .EQ. 0) GO TO 300
250   READ(33,1500, END=300) X
      WRITE(11,1500) X
      GO TO 250
300   CONTINUE
C*********************************************************************
C     GOAL ACHIEVEMENT REPORT - ALL GOALS
C*********************************************************************
      WRITE(11,1300)
      WRITE(11,1305)
      WRITE(11,1310)
      IC = 0
350   READ(37,1500, END=400) X
      IC = IC + 1
      WRITE(11,1550) IC, X
      GO TO 350
400   CONTINUE
1000  FORMAT('1',////////////////,49X,'GOAL ACHIEVEMENT REPORTS')
1100  FORMAT('1',////,47X,
     1'GOAL 1 : SPECIFIC ALLOCATION')
1110  FORMAT(/,11X,'      SOURCE            USE           YR/QT
     1R TY  PR  WT TARGET  ACHVED  ABS-DEV  PRCNT-DEV')
1200  FORMAT('1',////,40X,
     1'GOAL 2 : ALLOCATE PERCENTAGE OF SOURCE TO USE')
1203  FORMAT('1',////,39X,
     1'GOAL 3 : ALLOCATE PERCENTAGE OF USE FROM SOURCE')
1205  FORMAT(/,6X,'
     1          TARGET     ACHIEVED    DEVIATION    PRCNT')
1210  FORMAT(6X,'      SOURCE            USE           YR TY
     1PR  WT DOLLAR/PRCNT DOLLAR/PRCNT DOLLAR/PRCNT DEVTN')
1300  FORMAT('1',////,52X,
```

```
   1'ALL GOALS : BY PRIORITY')
1305  FORMAT(/,6X,'
   1            TARGET     ACHIEVED    DEVIATION   PRCNT')
1310  FORMAT(6X,' GT    SOURCE          USE          Y/Q  T
   1Y  PR  WT  DOLLAR/PRCNT  DOLLAR/PRCNT  DOLLAR/PRCNT  DEVTN')
1500  FORMAT(120A1)
1550  FORMAT(4X,I2,'.',2X,120A1)
    STOP
    END
```

B.21 PRNTGLS

```
C*********************************************************************
C    PRINT "CURRENT GOALS" REPORTS
C*********************************************************************
      REAL X(80)
      READ(1,*) N1, N2, N3, NR, N0
      WRITE(21,105)
C
C    RIGID ALLOCATIONS (SORTED BY SOURCE)
C
      IF (NR .EQ. 0) GO TO 25
      WRITE(21,110)
      WRITE(21,115)
      DO 10 I = 1,NR
      READ(11,100) X
10    WRITE(21,200) X
C
C    RIGID ALLOCATIONS (SORTED BY USE)
C
      WRITE(21,120)
      WRITE(21,125)
      DO 20 I = 1,NR
      READ(12,100) X
20    WRITE(21,200) X
C
C    GOAL 1 : SPECIFIC ALLOCATION
C
25    IF (N1 .EQ. 0) GO TO 35
      WRITE(21,130)
      WRITE(21,135)
      DO 30 I = 1,N1
      READ(13,100) X
30    WRITE(21,200) X
C
C    GOAL 2 : ALLOCATE PERCENTAGE OF SOURCE TO USE
C
35    IF (N2 .EQ. 0) GO TO 45
      WRITE(21,140)
      WRITE(21,145)
      DO 40 I = 1,N2
      READ(14,100) X
40    WRITE(21,200) X
C
C    GOAL 3 : ALLOCATE PERCENTAGE OF USE FROM SOURCE
C
45    IF (N3 .EQ. 0) GO TO 55
      WRITE(21,150)
      WRITE(21,155)
      DO 50 I = 1,N3
      READ(15,100) X
50    WRITE(21,200) X
C
C    GOAL 3 : ALLOCATE PERCENTAGE OF USE FROM SOURCE
C
55    IF (N0 .EQ. 0) GO TO 80
      WRITE(21,160)
      WRITE(21,165)
      DO 60 I = 1,N0
      READ(16,100) X
60    WRITE(21,200) X
80    CONTINUE
100   FORMAT(80A1)
105   FORMAT(//////////////,20X,22X,
     1'VIEW GP MODEL GOALS/RIGID ALLOCATIONS')
110   FORMAT('1',/////,20X,25X,
     1'RIGID ALLOCATIONS (BY SOURCE)')
115   FORMAT(/,20X,10X,
```

```
   1'SOURCE            USE            YR/QTR      AMOUNT')
120  FORMAT('1',/////,20X,27X,
   1'RIGID ALLOCATIONS (BY USE)')
125  FORMAT(/,20X,10X,
   1'SOURCE            USE            YR/QTR      AMOUNT')
130  FORMAT('1',/////,20X,26X,
   1'GOAL 1 : SPECIFIC ALLOCATION')
135  FORMAT(/,20X,11X,
   1'SOURCE            USE          YR/QTR  AMOUNT  TYPE  PR
   1 WT')
140  FORMAT('1',/////,20X,17X,
   1'GOAL 2 : ALLOCATE PERCENTAGE OF SOURCE TO USE')
145  FORMAT(/,20X,11X,
   1'SOURCE            USE          YEAR   PERCENT  TYPE  PR
   1 WT')
150  FORMAT('1',/////,20X,16X,
   1'GOAL 3 : ALLOCATE PERCENTAGE OF USE FROM SOURCE')
155  FORMAT(/,20X,11X,
   1'SOURCE            USE          YEAR   PERCENT  TYPE  PR
   1 WT')
160  FORMAT('1',/////,20X,28X,
   1'ALL GOALS : BY PRIORITY')
165  FORMAT(/,20X,5X,
   1'GT    SOURCE            USE          YR/QTR  TARGET  TYPE
   1  PR   WT')
200  FORMAT(20X,80A1)
     STOP
     END
```

B.22 PRNTRPTS

```
C*********************************************************************
C    PRINT ALLOCATION REPORTS
C*********************************************************************
      REAL     S(25,20), U(25,20), YR(5,7), HY(6), TOTAL(20), EQ(6)
      REAL     DEF(20)
      INTEGER DATA(7), C(25)
      READ(1,*) NS, NU, NY
      DATA  HY/6*'-'/
      DATA  EQ/6*'='/
      DATA  TOTAL/'T','O','T','A','L',15*' '/
      DATA  DEF/'D','E','F','I','C','I','T',13*' '/
      NSRC = NS + 1
      DO 50  I=1,NS
50    READ(2,1010) (S(I,J),J=1,20)
      DO 55 J=1,20
55    S(NSRC,J)=DEF(J)
      DO 60  I=1,NU
60    READ(3,1010) (U(I,J),J=1,20)
      DO 70  I=1,NY
70    READ(4,1010) (YR(I,J),J=1,7)
      WRITE(21,1005)
C*********************************************************************
C    GENERATE REPORT - FUNDS AVAILABILITY BY SOURCE
C*********************************************************************
C
C    FIRST YEAR
C
      WRITE(21,1110) (YR(1,J),J=1,7)
      WRITE(21,1120)
      DO 140 I=1,NSRC
      READ(11,1000) (DATA(J),J=1,7)
140   WRITE(21,1130) (S(I,K),K=1,20),(DATA(J),J=1,7)
      WRITE(21,1140) HY,HY,HY,HY,HY,HY,HY
      READ(11,1000) (DATA(J),J=1,7)
      WRITE(21,1130) TOTAL, (DATA(J),J=1,7)
C
C    SUCCEEDING YEARS
C
      IF (NY .EQ. 1) GO TO 200
      DO 180 N = 2, NY
      WRITE(21,1110) (YR(N,J),J=1,7)
      WRITE(21,1150) N
      DO 160 I=1,NSRC
      READ(11,1000) (DATA(J),J=1,7)
160   WRITE(21,1130) (S(I,K),K=1,20),(DATA(J),J=1,7)
      WRITE(21,1140) HY,HY,HY,HY,HY,HY,HY
      READ(11,1000) (DATA(J),J=1,7)
      WRITE(21,1130) TOTAL, (DATA(J),J=1,7)
180   CONTINUE
200   CONTINUE
C*********************************************************************
C    GENERATE REPORT - FUNDS REQUIREMENT BY USE
C*********************************************************************
C
C    FIRST YEAR
C
      WRITE(21,1210) (YR(1,J),J=1,7)
      WRITE(21,1220)
      DO 240 I=1,NU
      READ(12,1000) (DATA(J),J=1,6)
240   WRITE(21,1230) (U(I,K),K=1,20),(DATA(J),J=1,6)
      WRITE(21,1240) HY,HY,HY,HY,HY,HY
      READ(12,1000) (DATA(J),J=1,6)
      WRITE(21,1230) TOTAL, (DATA(J),J=1,6)
C
C    SUCCEEDING YEARS
C
```

```
      IF (NY .EQ. 1) GO TO 300
      DO 280 N = 2, NY
      WRITE(21,1210) (YR(N,J),J = 1,7)
      WRITE(21,1250) N
      DO 260 I = 1,NU
      READ(12,1000) (DATA(J),J = 1,7)
260   WRITE(21,1260) (U(I,K),K = 1,20),(DATA(J),J = 1,7)
      WRITE(21,1270) HY,HY,HY,HY,HY,HY,HY
      READ(12,1000) (DATA(J),J = 1,7)
      WRITE(21,1260) TOTAL, (DATA(J),J = 1,7)
280   CONTINUE
300   CONTINUE
C*********************************************************************
C     GENERATE REPORT - SOURCE EXPENDITURES
C*********************************************************************
C
C     FIRST YEAR
C
      DO 400 I = 1,NSRC
      DO 310 L = 1,NU
310   C(L) = 1
      WRITE(21,1310) (S(I,J),J = 1,20), (YR(1,K),K = 1,7)
      WRITE(21,1315)
      READ(13,1000)  (DATA(J),J = 1,5)
      WRITE(21,1320) (DATA(J),J = 1,5)
      READ(13,1000)  (DATA(J),J = 1,5)
      WRITE(21,1325) (DATA(J),J = 1,5)
      WRITE(21,1330) HY, HY,HY,HY,HY
      READ(13,1000)  (DATA(J),J = 1,5)
      WRITE(21,1335) (DATA(J),J = 1,5)
      WRITE(21,1340)
      DO 330 M = 1,NU
      READ(13,1000)  (DATA(J),J = 1,6)
      IF (DATA(1) .EQ. 0) C(M) = 0
      IF (C(M) .EQ. 0) GO TO 330
      WRITE(21,1345) (U(M,K),K = 1,20),(DATA(J),J = 1,6)
330   CONTINUE
      WRITE(21,1347) HY,HY,HY,HY,HY,HY
      READ(13,1000)  (DATA(J),J = 1,6)
      WRITE(21,1345) TOTAL,(DATA(J),J = 1,6)
      WRITE(21,1347) EQ,EQ,EQ,EQ,EQ
      READ(13,1000)  (DATA(J),J = 1,5)
      WRITE(21,1350) (DATA(J),J = 1,5)
C
C     SUCCEEDING YEARS
C
      IF (NY .EQ. 1) GO TO 400
      DO 380 N = 2, NY
      WRITE(21,1360) (S(I,J),J = 1,20), (YR(N,K),K = 1,7)
      WRITE(21,1365)
      READ(13,1000)  (DATA(J),J = 1,5)
      WRITE(21,1370) (DATA(J),J = 1,5)
      READ(13,1000)  (DATA(J),J = 1,5)
      WRITE(21,1375) (DATA(J),J = 1,5)
      WRITE(21,1380) HY, HY,HY,HY,HY
      READ(13,1000)  (DATA(J),J = 1,5)
      WRITE(21,1385) (DATA(J),J = 1,5)
      WRITE(21,1390) N
      DO 370 M = 1,NU
      READ(13,1000)  (DATA(J),J = 1,7)
      IF (C(M) .EQ. 0) GO TO 370
      WRITE(21,1395) (U(M,K),K = 1,20),(DATA(J),J = 1,7)
370   CONTINUE
      WRITE(21,1397) HY,HY,HY,HY,HY,HY,HY
      READ(13,1000)  (DATA(J),J = 1,7)
      WRITE(21,1395) TOTAL,(DATA(J),J = 1,7)
      WRITE(21,1380) EQ,EQ,EQ,EQ,EQ
      READ(13,1000)  (DATA(J),J = 1,5)
      WRITE(21,1399) (DATA(J),J = 1,5)
380   CONTINUE
400   CONTINUE
C*********************************************************************
```

```
C     GENERATE REPORT - EXPENDITURE SOURCES
C*********************************************************************
C
C     FIRST YEAR
C
      DO 500 I = 1,NU
      DO 410 L = 1,NSRC
410   C(L) = 1
      WRITE(21,1410) (U(I,J),J = 1,20), (YR(1,K),K = 1,7)
      WRITE(21,1420)
      DO 430 M = 1,NSRC
      READ(14,1000)  (DATA(J),J = 1,6)
      IF (DATA(1) .EQ. 0) C(M) = 0
      IF (C(M) .EQ. 0) GO TO 430
      WRITE(21,1430) (S(M,K),K = 1,20),(DATA(J),J = 1,6)
430   CONTINUE
      WRITE(21,1440) HY,HY,HY,HY,HY,HY
      READ(14,1000)  (DATA(J),J = 1,6)
      WRITE(21,1430) TOTAL,(DATA(J),J = 1,6)
C
C     SUCCEEDING YEARS
C
      IF (NY .EQ. 1) GO TO 500
      DO 480 N = 2, NY
      WRITE(21,1450) (U(I,J),J = 1,20), (YR(N,K),K = 1,7)
      WRITE(21,1460) N
      DO 470 M = 1,NSRC
      READ(14,1000)  (DATA(J),J = 1,7)
      IF (C(M) .EQ. 0) GO TO 470
      WRITE(21,1470) (S(M,K),K = 1,20),(DATA(J),J = 1,7)
470   CONTINUE
      WRITE(21,1480) HY,HY,HY,HY,HY,HY,HY
      READ(14,1000)  (DATA(J),J = 1,7)
      WRITE(21,1470) TOTAL,(DATA(J),J = 1,7)
480   CONTINUE
500   CONTINUE
C*********************************************************************
C     GENERATE REPORT - SOURCE EXPENDITURES THROUGH TIME
C*********************************************************************
C
C     FIRST YEAR
C
      WRITE(21,1510) (YR(1,J),J = 1,7)
      WRITE(21,1520)
      DO 540 I = 1,NSRC
      READ(15,1000) (DATA(J),J = 1,7)
540   WRITE(21,1530) (S(I,K),K = 1,20),(DATA(J),J = 1,7)
      WRITE(21,1540) HY,HY,HY,HY,HY,HY,HY
      READ(15,1000) (DATA(J),J = 1,7)
      WRITE(21,1530) TOTAL, (DATA(J),J = 1,7)
C
C     SUCCEEDING YEARS
C
      IF (NY .EQ. 1) GO TO 600
      DO 580 N = 2, NY
      WRITE(21,1510) (YR(N,J),J = 1,7)
      WRITE(21,1550) N
      DO 560 I = 1,NSRC
      READ(15,1000) (DATA(J),J = 1,7)
560   WRITE(21,1530) (S(I,K),K = 1,20),(DATA(J),J = 1,7)
      WRITE(21,1540) HY,HY,HY,HY,HY,HY,HY
      READ(15,1000) (DATA(J),J = 1,7)
      WRITE(21,1530) TOTAL, (DATA(J),J = 1,7)
580   CONTINUE
600   CONTINUE
1000  FORMAT(10I7)
1005  FORMAT(/////////////////,20X,32X,
     1'ALLOCATION REPORTS')
1010  FORMAT(20A1)
1110  FORMAT('1',/////,20X,21X,'FUNDS AVAILABILITY BY SOURCE - ',7A1)
1120  FORMAT(/,20X,8X,
     1'FUND          TOTAL  BAL FWD  1ST QT  2ND QT  3RD QT  4TH QT
```

```
   1 YEAR')
1130 FORMAT(1X,20X,20A1,2X,I6,3X,I6,4(2X,I6),3X,I6)
1140 FORMAT(20X,23X,6A1,3X,6A1,4(2X,6A1),3X,6A1)
1150 FORMAT(/,20X,8X,
   1'FUND          CUM   1ST QT  2ND QT  3RD QT  4TH QT    YEAR  T
   1OT',1X,I1,'YR')
1210 FORMAT('1',/////,20X,23X,'FUNDS REQUIREMENT BY USE - ',7A1)
1220 FORMAT(/,20X,12X,
   1'USE          TOTAL   1ST QT  2ND QT  3RD QT  4TH QT    YEAR')
1230 FORMAT(1X,20X,4X,20A1,2X,I6,3X,I6,4(2X,I6))
1240 FORMAT(1X,20X,26X,6A1,3X,6A1,4(2X,6A1))
1250 FORMAT(/,20X,8X,
   1'USE          CUM   1ST QT  2ND QT  3RD QT  4TH QT    YEAR  T
   1OT',1X,I1,'YR')
1260 FORMAT(1X,20X,20A1,2X,I6,3X,I6,4(2X,I6),3X,I6)
1270 FORMAT(20X,23X,6A1,3X,6A1,4(2X,6A1),3X,6A1)
1310 FORMAT('1',/////,20X,5X,20A1,11X,'EXPENDITURES BY USE - ',7A1)
1315 FORMAT(/,20X,36X,'1ST QT  2ND QT  3RD QT  4TH QT    YEAR')
1320 FORMAT(1X,20X,4X,'BALANCE FORWARD',14X,5(2X,I6))
1325 FORMAT(1X,20X,4X,'QTRLY ADDITIONS',14X,5(2X,I6))
1330 FORMAT(1X,20X,4X,15X,14X,5(2X,6A1))
1335 FORMAT(1X,20X,4X,'TOTAL FUNDS AVAILABLE',8X,5(2X,I6))
1340 FORMAT(1X,20X,4X,'EXPENDITURES',11X,'TOTAL')
1345 FORMAT(1X,20X,4X,20A1,2X,I6,3X,I6,4(2X,I6))
1347 FORMAT(1X,20X,26X,6A1,3X,6A1,4(2X,6A1))
1350 FORMAT(1X,20X,4X,'ENDING BALANCE',15X,5(2X,I6))
1360 FORMAT('1',/////,20X,20A1,11X,'EXPENDITURES BY USE - ',7A1)
1365 FORMAT(/,20X,32X,'1ST QT  2ND QT  3RD QT  4TH QT    CUM')
1370 FORMAT(1X,20X,'BALANCE FORWARD',14X,5(2X,I6))
1375 FORMAT(1X,20X,'QTRLY ADDITIONS',14X,5(2X,I6))
1380 FORMAT(1X,20X,15X,14X,5(2X,6A1))
1385 FORMAT(1X,20X,'TOTAL FUNDS AVAILABLE',8X,5(2X,I6))
1390 FORMAT(1X,20X,'EXPENDITURES',13X,'CUM',43X,'TOT',1X,I1,'YR')
1395 FORMAT(1X,20X,20A1,2X,I6,3X,I6,4(2X,I6),3X,I6)
1397 FORMAT(1X,20X,22X,6A1,3X,6A1,4(2X,6A1),3X,6A1)
1399 FORMAT(1X,20X,'ENDING BALANCE',15X,5(2X,I6))
1410 FORMAT('1',/////,20X,5X,20A1,5X,'EXPENDITURES BY SOURCES - ',7A1)
1420 FORMAT(/,20X,10X,
   1'SOURCE          TOTAL   1ST QT  2ND QT  3RD QT  4TH QT    YEAR')
   1)
1430 FORMAT(1X,20X,4X,20A1,2X,I6,3X,I6,4(2X,I6))
1440 FORMAT(1X,20X,26X,6A1,3X,6A1,4(2X,6A1))
1450 FORMAT('1',/////,20X,1X,20A1,11X,'EXPENDITURES BY SOURCES - ',7A1)
1460 FORMAT(/,20X,6X,
   1'SOURCE          CUM   1ST QT  2ND QT  3RD QT  4TH QT    YEAR
   1 TOT',1X,I1,'YR')
1470 FORMAT(1X,20X,20A1,2X,I6,3X,I6,4(2X,I6),3X,I6)
1480 FORMAT(20X,23X,6A1,3X,6A1,4(2X,6A1),3X,6A1)
1510 FORMAT('1',/////,20X,19X,'SOURCE EXPENDITURES THROUGH TIME - ',
   17A1)
1520 FORMAT(/,20X,7X,
   1'SOURCE          AVAIL    USED  1ST QT  2ND QT  3RD QT  4TH QT
   1  YEAR')
1530 FORMAT(1X,20X,20A1,2X,I6,3X,I6,4(2X,I6),3X,I6)
1540 FORMAT(20X,23X,6A1,3X,6A1,4(2X,6A1),3X,6A1)
1550 FORMAT(/,20X,7X,
   1'SOURCE          CUM   1ST QT  2ND QT  3RD QT  4TH QT    YEAR
   1TOT',1X,I1,'YR')
    STOP
    END
```

B.23 REPORTS

```
C*********************************************************************
C    CREATES FILES FOR THE SOLUTION REPORTS
C*********************************************************************
      INTEGER S(25,5,4)
      INTEGER U(25,5,4), UI(25,5,4)
      INTEGER C(25,25), X(25,25,5,4)
      INTEGER SY(25,5),SYC(25,5),ST(25),SQT(5,4),SYT(5),SYCT(5),STOTAL
      INTEGER UY(25,5),UYC(25,5),UT(25),UQT(5,4),UYT(5),UYCT(5),UTOTAL
      INTEGER STBAL
      INTEGER IBAL(25), ISUM(25)
      INTEGER SUY(25,25,5), SUYC(25,25,5)
      INTEGER SUQ(25,5,4), SUT(25,5), SUTC(25,5)
      INTEGER USY(25,25,5), USYC(25,25,5)
      INTEGER USQ(25,5,4), UST(25,5), USTC(25,5)
      INTEGER SQBF(25,5,4), SQEB(25,5,4), SQFA(25,5,4)
      INTEGER SYBF(25,5), SYA(25,5), SYEB(25,5), SYFA(25,5)
      INTEGER SQE(5,4), SYE(5), SYCE(5)
      READ(1,*) NS, NU, NY
      NSRC = NS + 1
      DO 20 I = 1, NS
      READ(2,1000) IBAL(I)
      DO 10 J = 1, NY
      READ(2,1000) (S(I,J,K),K=1,4)
10    CONTINUE
20    CONTINUE
      DO 40 I = 1, NU
      DO 30 J = 1, NY
      READ(3,1000) (U(I,J,K),K=1,4)
30    CONTINUE
40    CONTINUE
      DO 45 J = 1, NU
      DO 45 N = 1, NY
      DO 45 K = 1, 4
45    UI(J,N,K) = U(J,N,K)
      DO 50 I = 1, NS
      READ(4,1010) (C(I,J),J=1,NU)
50    CONTINUE
      DO 60 J = 1, NU
      C(NSRC,J) = 1
60    CONTINUE
      DO 70 N=1,NY
      DO 70 K=1,4
      DO 70 J=1,NU
      DO 70 I=1,NSRC
70    X(I,J,N,K) = 0
C*********************************************************************
C    READ ALLOCATIONS
C*********************************************************************
      DO 200 I = 1,NSRC
      DO 200 J = 1,NU
      DO 200 K = 1,NY
      DO 200 N = 1,4
200   READ(20,1000) X(I,J,K,N)
      IBAL(NSRC) = 0
      DO 210 N = 1,NY
      DO 210 K = 1,4
210   S(NSRC,N,K) = 0
      DO 220 N = 1,NY
      DO 220 K = 1,4
      DO 220 J = 1,NU
220   S(NSRC,N,K) = S(NSRC,N,K) + X(NSRC,J,N,K)
C
C*********************************************************************
C    OPTION 1 - FUNDS AVAILABILITY
C*********************************************************************
C    SY(I,N) : INDIVIDUAL YEARLY
C    SYC(I,N) : INDIVIDUAL YEARLY CUMMULATIVE
```

```
C     ST(I)    : INDIVIDUAL TOTAL
C     SQT(N,K) : QUARTERLY TOTALS
C     SYT(N)   : YEARLY TOTALS
C     SYCT(N)  : YEARLY CUMMULATIVE TOTALS
C     STOTAL   : TOTAL
C*********************************************************************
      DO 301 I=1,NSRC
      ST(I)=0
      DO 300 N=1,NY
      SYC(I,N)=0
300   SY(I,N)=0
301   SY(I,1)=IBAL(I)
      DO 305 N=1,NY
      SYT(N)=0
      SYCT(N)=0
      DO 305 K=1,4
305   SQT(N,K)=0
      STOTAL=0
      STBAL=0
      DO 315 I=1,NSRC
      DO 313 N=1,NY
      DO 310 K=1,4
310   SY(I,N)=SY(I,N) + S(I,N,K)
313   ST(I)=ST(I) + SY(I,N)
315   STOTAL=STOTAL + ST(I)
      DO 320 I=1,NSRC
      SYC(I,1)=SY(I,1)
      DO 320 N=2,NY
      M=N-1
320   SYC(I,N)=SYC(I,M)+SY(I,N)
      DO 325 N=1,NY
      DO 325 I=1,NSRC
325   SYT(N)=SYT(N) + SY(I,N)
      SYCT(1)=SYT(1)
      DO 330 N=2,NY
      M=N-1
330   SYCT(N)=SYCT(M)+SYT(N)
      DO 340 N=1,NY
      DO 340 K=1,4
      DO 340 I=1,NSRC
340   SQT(N,K)=SQT(N,K) + S(I,N,K)
      DO 345 I=1,NSRC
345   STBAL=STBAL + IBAL(I)
      N=1
      DO 350 I=1,NSRC
350   WRITE(11,1020) ST(I), IBAL(I), (S(I,N,K),K=1,4), SY(I,N)
      WRITE(11,1020) STOTAL, STBAL, (SQT(N,K),K=1,4), SYT(N)
      DO 370 N=2,NY
      DO 360 I=1,NSRC
      M=N-1
360   WRITE(11,1020) SYC(I,M), (S(I,N,K),K=1,4), SY(I,N), SYC(I,N)
      WRITE(11,1020) SYCT(M), (SQT(N,K),K=1,4), SYT(N), SYCT(N)
370   CONTINUE
C*********************************************************************
C     OPTION 2 - FUND  REQUIREMENTS
C*********************************************************************
C     UY(I,N)  : INDIVIDUAL YEARLY
C     UYC(J,N) : INDIVIDUAL YEARLY CUMMULATIVE
C     UT(J)    : INDIVIDUAL TOTAL
C     UQT(N,K) : QUARTERLY TOTALS
C     UYT(N)   : YEARLY TOTALS
C     UYCT(N)  : YEARLY CUMMULATIVE TOTALS
C     UTOTAL   : TOTAL
C*********************************************************************
      DO 400 J=1,NU
      UT(J)=0
      DO 400 N=1,NY
      UYC(J,N)=0
400   UY(J,N)=0
      DO 405 N=1,NY
      UYT(N)=0
      UYCT(N)=0
```

```
      DO 405 K=1,4
405   UQT(N,K)=0
      UTOTAL=0
      DO 415 J=1,NU
      DO 413 N=1,NY
      DO 410 K=1,4
410   UY(J,N)=UY(J,N) + U(J,N,K)
413   UT(J)=UT(J) + UY(J,N)
415   UTOTAL=UTOTAL + UT(J)
      DO 420 J=1,NU
      UYC(J,1)=UY(J,1)
      DO 420 N=2,NY
      M=N-1
420   UYC(J,N)=UYC(J,M)+UY(J,N)
      DO 425 N=1,NY
      DO 425 J=1,NU
425   UYT(N)=UYT(N) + UY(J,N)
      UYCT(1)=UYT(1)
      DO 430 N=2,NY
      M=N-1
430   UYCT(N)=UYCT(M)+UYT(N)
      DO 440 N=1,NY
      DO 440 K=1,4
      DO 440 J=1,NU
440   UQT(N,K)=UQT(N,K) + U(J,N,K)
      N=1
      DO 450 J=1,NU
450   WRITE(12,1020) UT(J), (U(J,N,K),K=1,4), UY(J,N)
      WRITE(12,1020) UTOTAL, (UQT(N,K),K=1,4), UYT(N)
      DO 470 N=2,NY
      DO 460 J=1,NU
      M=N-1
460   WRITE(12,1020) UYC(J,M), (U(J,N,K),K=1,4), UY(J,N), UYC(J,N)
      WRITE(12,1020) UYCT(M), (UQT(N,K),K=1,4), UYT(N), UYCT(N)
470   CONTINUE
C*********************************************************************
C     OPTION 3 - EXPENDITURES BY USE
C*********************************************************************
C     SUY(I,J,N)  : YEARLY ALLOCATIONS
C     SUYC(I,J,N) : YEARLY ALLOCATIONS CUMMULATIVE
C     SUQ(I,N,K)  : QUARTERLY ALLOCATIONS
C     SUT(I,N)    : YEARLY TOTAL ALLOCATIONS
C     SUTC(I,N)   : YEARLY TOTAL ALLOCATIONS CUMMULATIVE
C*********************************************************************
      DO 500 I=1,NSRC
      DO 500 J=1,NU
      DO 500 N=1,NY
      SUY(I,J,N)=0
500   SUYC(I,J,N)=0
      DO 505 I=1,NSRC
      DO 505 N=1,NY
      SUT(I,N)=0
      SUTC(I,N)=0
      DO 505 K=1,4
505   SUQ(I,N,K)=0
      DO 510 I=1,NSRC
      DO 510 J=1,NU
      DO 510 N=1,NY
      DO 510 K=1,4
510   SUY(I,J,N)=SUY(I,J,N) + X(I,J,N,K)
      DO 520 I=1,NSRC
      DO 520 J=1,NU
      SUYC(I,J,1)=SUY(I,J,1)
      DO 520 N=2,NY
      M=N-1
520   SUYC(I,J,N)=SUYC(I,J,M)+SUY(I,J,N)
      DO 525 I=1,NSRC
      DO 525 N=1,NY
      DO 525 J=1,NU
525   SUT(I,N)=SUT(I,N) + SUY(I,J,N)
      DO 530 I=1,NSRC
      SUTC(I,1)=SUT(I,1)
```

```
      DO 530 N=2,NY
      M=N-1
530   SUTC(I,N)=SUTC(I,M)+SUT(I,N)
      DO 540 I=1,NSRC
      DO 540 N=1,NY
      DO 540 K=1,4
      DO 540 J=1,NU
540   SUQ(I,N,K)=SUQ(I,N,K) + X(I,J,N,K)
      DO 560 I=1,NSRC
      DO 560 N=1,NY
      IF (N .GT. 1) GO TO 545
      SQBF(I,N,1)=IBAL(I)
      GO TO 550
545   M=N-1
      SQBF(I,N,1)=SQBF(I,M,4) + S(I,M,4) - SUQ(I,M,4)
550   DO 560 K=2,4
      L=K-1
560   SQBF(I,N,K)=SQBF(I,N,L) + S(I,N,L) - SUQ(I,N,L)
      DO 565 I=1,NSRC
      DO 565 N=1,NY
      DO 565 K=1,4
      SQFA(I,N,K)=SQBF(I,N,K) + S(I,N,K)
565   SQEB(I,N,K)=SQFA(I,N,K) - SUQ(I,N,K)
      DO 568 I=1,NSRC
      DO 568 N=1,NY
      SYA(I,N)=0
      SYBF(I,N)=0
      SYFA(I,N)=0
568   SYEB(I,N)=0
      DO 570 I=1,NSRC
      DO 570 N=1,NY
      SYBF(I,N)=SQBF(I,N,1)
      DO 570 K=1,4
      SYA(I,N)=SYA(I,N) + S(I,N,K)
      SYFA(I,N)=SYBF(I,N) + SYA(I,N)
570   SYEB(I,N)=SYFA(I,N) - SUT(I,N)
      DO 590 I=1,NSRC
      N=1
      WRITE(13,1020) (SQBF(I,N,K),K=1,4), SYBF(I,N)
      WRITE(13,1020) (S(I,N,K),K=1,4), SYA(I,N)
      WRITE(13,1020) (SQFA(I,N,K),K=1,4), SYFA(I,N)
      DO 575 J=1,NU
575   WRITE(13,1020) SUYC(I,J,NY), (X(I,J,N,K),K=1,4), SUY(I,J,N)
      WRITE(13,1020) SUTC(I,NY), (SUQ(I,N,K),K=1,4), SUT(I,N)
      WRITE(13,1020) (SQEB(I,N,K),K=1,4), SYEB(I,N)
      DO 585 N=2,NY
      M=N-1
      WRITE(13,1020) (SQBF(I,N,K),K=1,4), SYBF(I,N)
      WRITE(13,1020) (S(I,N,K),K=1,4), SYA(I,N)
      WRITE(13,1020) (SQFA(I,N,K),K=1,4), SYFA(I,N)
      DO 580 J=1,NU
580   WRITE(13,1020) SUYC(I,J,M),(X(I,J,N,K),K=1,4),SUY(I,J,N),
     1SUYC(I,J,N)
      WRITE(13,1020) SUTC(I,M),(SUQ(I,N,K),K=1,4),SUT(I,N),SUTC(I,N)
      WRITE(13,1020) (SQEB(I,N,K),K=1,4), SYEB(I,N)
585   CONTINUE
590   CONTINUE
C*********************************************************************
C     OPTION 4 - EXPENDITURES BY SOURCE
C*********************************************************************
C     USY(I,J,N)   : YEARLY ALLOCATIONS
C     USYC(I,J,N)  : YEARLY ALLOCATIONS CUMMULATIVE
C     USQ(J,N,K)   : QUARTERLY ALLOCATIONS
C     UST(J,N)     : YEARLY TOTAL ALLOCATIONS
C     USTC(J,N)    : YEARLY TOTAL ALLOCATIONS CUMMULATIVE
C*********************************************************************
      DO 600 I=1,NSRC
      DO 600 J=1,NU
      DO 600 N=1,NY
      USY(I,J,N)=0
600   USYC(I,J,N)=0
      DO 605 J=1,NU
```

```
      DO 605 N=1,NY
      UST(J,N)=0
      USTC(J,N)=0
      DO 605 K=1,4
605   USQ(J,N,K)=0
      DO 610 I=1,NSRC
      DO 610 J=1,NU
      DO 610 N=1,NY
      DO 610 K=1,4
610   USY(I,J,N)=USY(I,J,N) + X(I,J,N,K)
      DO 620 I=1,NSRC
      DO 620 J=1,NU
      USYC(I,J,1)=USY(I,J,1)
      DO 620 N=2,NY
      M=N-1
620   USYC(I,J,N)=USYC(I,J,M)+USY(I,J,N)
      DO 625 J=1,NU
      DO 625 N=1,NY
      DO 625 I=1,NSRC
625   UST(J,N)=UST(J,N) + USY(I,J,N)
      DO 630 J=1,NU
      USTC(J,1)=UST(J,1)
      DO 630 N=2,NY
      M=N-1
630   USTC(J,N)=USTC(J,M)+UST(J,N)
      DO 640 J=1,NU
      DO 640 N=1,NY
      DO 640 K=1,4
      DO 640 I=1,NSRC
640   USQ(J,N,K)=USQ(J,N,K) + X(I,J,N,K)
      DO 690 J=1,NU
      N=1
      DO 675 I=1,NSRC
675   WRITE(14,1020) USYC(I,J,NY), (X(I,J,N,K),K=1,4), USY(I,J,N)
      WRITE(14,1020) USTC(J,NY), (USQ(J,N,K),K=1,4), UST(J,N)
      DO 685 N=2,NY
      M=N-1
      DO 680 I=1,NSRC
680   WRITE(14,1020) USYC(I,J,M), (X(I,J,N,K),K=1,4), USY(I,J,N),
     1USYC(I,J,N)
      WRITE(14,1020) USTC(J,M),(USQ(J,N,K),K=1,4),UST(J,N),USTC(J,N)
685   CONTINUE
690   CONTINUE
C*******************************************************************
C     OPTION 5 - SOURCE EXPENDITURES THRU TIME
C*******************************************************************
C     ST(I)    : INDIVIDUAL TOTAL
C     SUQ(I,N,K)  : QUARTERLY ALLOCATIONS
C     SUT(I,N)    : YEARLY TOTAL ALLOCATIONS
C     SUTC(I,N)   : YEARLY TOTAL ALLOCATIONS CUMMULATIVE
C     SQE(N,K)    : TOTAL QUARTERLY EXPENDITURE
C     SYE(N)      : TOTAL YEARLY EXPENDITURE
C     SYCE(N)     : TOTAL YEARLY EXPENDITURE
C*******************************************************************
      DO 700 N=1,NY
      SYE(N)=0
      SYCE(N)=0
      DO 700 K=1,4
700   SQE(N,K)=0
      DO 710 N=1,NY
      DO 710 K=1,4
      DO 710 I=1,NSRC
710   SQE(N,K)=SQE(N,K)+SUQ(I,N,K)
      DO 720 N=1,NY
      DO 720 K=1,4
720   SYE(N)=SYE(N)+SQE(N,K)
      SYCE(1)=SYE(1)
      DO 730 N=2,NY
      M=N-1
730   SYCE(N)=SYCE(M)+SYE(N)
      N=1
```

```
      DO 750 I = 1,NSRC
750   WRITE(18,1020) ST(I), SUTC(I,NY), (SUQ(I,N,K),K = 1,4), SUT(I,N)
      WRITE(18,1020) STOTAL, SYCE(NY), (SQE(N,K),K = 1,4), SYE(N)
      DO 790 N = 2,NY
      M = N-1
      DO 770 I = 1,NSRC
770   WRITE(18,1020) SUTC(I,M), (SUQ(I,N,K),K = 1,4), SUT(I,N),SUTC(I,N)
      WRITE(18,1020) SYCE(M), (SQE(N,K),K = 1,4), SYE(N), SYCE(N)
790   CONTINUE
1000  FORMAT(4I7)
1010  FORMAT(40I2)
1020  FORMAT(7I7)
      STOP
      END
```

B.24 RETSRCE

```
C*********************************************************************
C     RETRIEVES 'CURRENT' DATA FOR A SOURCE WHEN THAT SOURCE
C     IS TO BE MODIFIED
C*********************************************************************
      REAL  X(80), Z(25)
      INTEGER Y(25)
      REAL YES, NO
      DATA YES, NO/'Y','N'/
      READ(1,*) NSRCE, NUSE, NS, NY
      K=NY + 1
      DO 50 I = 1,NSRCE
      DO 20 J = 1,K
      READ(2,100) X
      IF (I .NE. NS) GO TO 20
      WRITE(7,100) X
20     CONTINUE
50     CONTINUE
      DO 70 I = 1,NSRCE
      IF (I .NE. NS) GO TO 60
      READ(3,*) (Y(J),J=1,NUSE)
      DO 55 J=1,NUSE
      IF (Y(J) .EQ. 0) Z(J) = NO
      IF (Y(J) .EQ. 1) Z(J) = YES
      WRITE(8,10) Z(J)
55     CONTINUE
      GO TO 70
60     READ(3,100) X
70     CONTINUE
10     FORMAT(2A1)
100    FORMAT(80A1)
      STOP
      END
```

B.25 RETUSE

```
C*********************************************************************
C     RETRIEVES 'CURRENT' DATA FOR A USE WHEN THAT USE
C     IS TO BE MODIFIED
C*********************************************************************
      REAL  X(80)
      INTEGER Z(25)
      REAL YES, NO
      DATA YES, NO/'Y','N'/
      READ(1,*) NSRCE, NUSE, NU, NY
      DO 50 I = 1,NUSE
      DO 20 J = 1,NY
      READ(2,100) X
      IF (I .NE. NU) GO TO 20
      WRITE(7,100) X
20    CONTINUE
50    CONTINUE
      DO 80 I = 1,NSRCE
      READ(3,*) (Z(J),J = 1,NUSE)
      IF (Z(NU) .EQ. 0) Y = NO
      IF (Z(NU) .EQ. 1) Y = YES
      WRITE(8,110) Y
80    CONTINUE
10    FORMAT(2A1)
100   FORMAT(80A1)
110   FORMAT(A1)
      STOP
      END
```

B.26 SRCAMT

```
C*********************************************************************
C    GETS A LISTED OF SOURCES SORTED BY DECREASING OR INCREASING
C    (AS REQUIRED) AMOUNT OF FUNDS
C*********************************************************************
      INTEGER Y(25),Z(25), X(4), SO, HI
      READ(1,*) SO
      READ(1,*) NSRCE, NUSE, NY
      DO 10 I = 1,NSRCE
10     Z(I) = 0
      DO 30 I = 1,NSRCE
      READ(2,110) X(1)
      Z(I) = Z(I) + X(1)
      DO 30 J = 1, NY
      READ(2,110) X
      Z(I) = Z(I) + X(1) + X(2) + X(3) + X(4)
30     CONTINUE
      DO 60 I = 1,NSRCE
      Y(I) = 1
      HI = Z(1)
      DO 50 J = 2,NSRCE
      IF (HI .GE. Z(J)) GO TO 50
      HI = Z(J)
      Y(I) = J
50     CONTINUE
      K = Y(I)
      Z(K) = -100
60     CONTINUE
      IF (SO .EQ. 5) GO TO 80
      DO 70 I = 1,NSRCE
70     WRITE(11,*) Y(I)
      GO TO 100
80     DO 90 I = 1,NSRCE
      J = NSRCE + 1 - I
90     WRITE(11,*) Y(J)
100    CONTINUE
110    FORMAT(4I7)
      STOP
      END
```

B.27 SRCSORT

```
C*********************************************************************
C     MODIFIES THE DATABASE TO REFLECT THE NEW SORTING SCHEME
C     FOR SOURCES
C*********************************************************************
      REAL   X(25,5,80), SN(25,25), C(25,80)
      INTEGER SO(25)
      INTEGER Y(4), Z(25)
      READ(1,*) NSRCE, NUSE, NY
      DO 10 I = 1,NSRCE
      READ(2,*) SO(I)
10     READ(3,130) (SN(I,J),J = 1,25)
      K = NY + 1
      DO 50 I = 1,NSRCE
      DO 40 J = 1,K
40     READ(4,100) (X(I,J,M),M = 1,80)
      READ(8,100) (C(I,M),M = 1,80)
50     CONTINUE
      DO 80 I = 1,NSRCE
      M = SO(I)
      WRITE(11,130) (SN(M,J),J = 1,25)
      WRITE(13,100) (C(M,J),J = 1,80)
      DO 80 N = 1,K
      WRITE(12,100) (X(M,N,J),J = 1,80)
80     CONTINUE
100    FORMAT(80A1)
130    FORMAT(25A1)
      STOP
      END
```

B.28 USEAMT

```
C*********************************************************************
C     GETS A LIST OF USES SORTED BY DECREASING OR INCREASING
C     (AS REQUIRED) AMOUNT FO FUNDS
C*********************************************************************
      INTEGER Y(25),Z(25), X(4), UO, HI
      READ(1,*) UO
      READ(1,*) NSRCE, NUSE, NY
      DO 10 I = 1,NUSE
10     Z(I) = 0
      DO 30 I = 1,NUSE
      DO 30 J = 1, NY
      READ(2,110) X
      Z(I) = Z(I) + X(1) + X(2) + X(3) + X(4)
30     CONTINUE
      DO 60 I = 1,NUSE
      Y(I) = 1
      HI = Z(1)
      DO 50 J = 2,NUSE
      IF (HI .GE. Z(J)) GO TO 50
      HI = Z(J)
      Y(I) = J
50     CONTINUE
      K = Y(I)
      Z(K) = -100
60     CONTINUE
      IF (UO .EQ. 5) GO TO 80
      DO 70 I = 1,NUSE
70     WRITE(11,*) Y(I)
      GO TO 100
80     DO 90 I = 1,NUSE
      J = NUSE + 1 - I
90     WRITE(11,*) Y(J)
100    CONTINUE
110    FORMAT(4I7)
      STOP
      END
```

B.29 USESORT

```
C*********************************************************************
C     MODIFIES THE DATABASE TO REFLECT THE NEW SORTING SCHEME
C     FOR USES
C*********************************************************************
      REAL   X(25,5,80), UN(25,25)
      INTEGER UO(25), C(25,25), NC(25,25)
      INTEGER Y(4), Z(25)
      READ(1,*) NSRCE, NUSE, NY
      DO 10 I = 1,NUSE
      READ(2,*) UO(I)
10     READ(3,130) (UN(I,J),J = 1,25)
      DO 40 I = 1,NUSE
      DO 40 J = 1,NY
40     READ(4,100) (X(I,J,M),M = 1,80)
      DO 50 I = 1,NSRCE
      READ(8,110) (C(I,J),J = 1,NUSE)
50     CONTINUE
      DO 60 I = 1,NSRCE
      DO 60 J = 1,NUSE
      M = UO(J)
60     NC(I,J) = C(I,M)
      DO 80 I = 1,NUSE
      M = UO(I)
      WRITE(11,130) (UN(M,J),J = 1,25)
      DO 80 N = 1,NY
      WRITE(12,100) (X(M,N,J),J = 1,80)
80     CONTINUE
      DO 90 I = 1,NSRCE
      WRITE(13,110) (NC(I,J),J = 1,NUSE)
90     CONTINUE
100    FORMAT(80A1)
110    FORMAT(40I2)
130    FORMAT(25A1)
      STOP
      END
```

B.30 VIEWGLS

```
C*********************************************************************
C    CREATES RELEVANT FILES FOR THE OPTION - VIEW CURRENT GOALS
C*********************************************************************
      REAL   S(25,20), U(25,20)
      REAL   L, G, E
      INTEGER C1, C2, C3, C4, C
      INTEGER QTY1, DT, PR, WT, GT
      INTEGER NG(3)
      DATA  L, G, E/'<','>','='/
      READ(1,*) NS, NU, NY
      QTR = NY*4
      DO 10 I = 1, NS
10    READ(2,1000) (S(I,J), J=1,20)
      DO 20 I = 1, NU
20    READ(3,1000) (U(I,J), J=1,20)
      READ(4,*) C1, C2, C3, C4, C
      IF (C1 .EQ. 0) GO TO 200
C*********************************************************************
C    TYPE 1 GOALS
C*********************************************************************
      IC = 0
110   READ(11,1010, END=200) I, J, K, QTY1, DT, PR, WT
      N = K/4 + 1
      M = K - K/4*4
      IF (M .EQ. 0) N = N - 1
      IF (M .EQ. 0) M = 4
      IC = IC + 1
      IF (DT .EQ. 1) X = L
      IF (DT .EQ. 2) X = G
      IF (DT .EQ. 3) X = E
      WRITE(21,1100) IC, (S(I,I1),I1=1,18), (U(J,I1),I1=1,18), N,M,QTY1,
     1X, PR, WT
      GO TO 110
200   IF (C2 .EQ. 0) GO TO 300
C*********************************************************************
C    TYPE 2 GOALS
C*********************************************************************
      IC = 0
210   READ(12,1020, END=300) I, J, K, QTY, DT, PR, WT
      IC = IC + 1
      IF (DT .EQ. 1) X = L
      IF (DT .EQ. 2) X = G
      IF (DT .EQ. 3) X = E
      WRITE(22,1110) IC, (S(I,I1),I1=1,18), (U(J,I1),I1=1,18), K, QTY,
     1X, PR, WT
      GO TO 210
300   IF (C3 .EQ. 0) GO TO 400
C*********************************************************************
C    TYPE 3 GOALS
C*********************************************************************
      IC = 0
310   READ(13,1020, END=400) I, J, K, QTY, DT, PR, WT
      IC = IC + 1
      IF (DT .EQ. 1) X = L
      IF (DT .EQ. 2) X = G
      IF (DT .EQ. 3) X = E
      WRITE(23,1110) IC, (S(I,I1),I1=1,18), (U(J,I1),I1=1,18), K, QTY,
     1X, PR, WT
      GO TO 310
400   IF (C .EQ. 0) GO TO 500
C*********************************************************************
C    TYPE 3 GOALS
C*********************************************************************
      IC = 0
410   READ(17,1020, END=500) I, J, K, QTY, DT, PR, WT, GT
      IC = IC + 1
      IF (DT .EQ. 1) X = L
```

```
      IF (DT .EQ. 2) X = G
      IF (DT .EQ. 3) X = E
      IF (GT .NE. 1) GO TO 420
      QTY1 = QTY
      N = K/4 + 1
      M = K - K/4*4
      IF (M .EQ. 0) N = N - 1
      IF (M .EQ. 0) M = 4
      WRITE(27,1105) IC,GT,(S(I,I1),I1 = 1,18),(U(J,I1),I1 = 1,18),N,M,QTY1,
     1X, PR, WT
      GO TO 430
420   WRITE(27,1106) IC,GT,(S(I,I1),I1 = 1,18),(U(J,I1),I1 = 1,18), K, QTY,
     1X, PR, WT
430   GO TO 410
C00   IF (C .EQ. 0) GO TO 500
C*********************************************************************
C     ALL GOALS
C*********************************************************************
C     NG(1) = 0
C     NG(2) = 0
C     NG(3) = 0
C     READ(17,1020, END = 500) I, J, K, QTY, DT, PR, WT, GT
C     IP = PR
C     NP = 1
C     IC = 0
C02   NG(GT) = NG(GT) + 1
C     IC = IC + 1
C     IF (DT .EQ. 1) X = L
C     IF (DT .EQ. 2) X = G
C     IF (DT .EQ. 3) X = E
C     IF (GT .NE. 1) GO TO 405
C     N = K/4 + 1
C     M = K - K/4*4
C     IF (M .EQ. 0) N = N - 1
C     IF (M .EQ. 0) M = 4
C     WRITE(27,1100) IC, (S(I,I1),I1 = 1,20), (U(J,I1),I1 = 1,20), N,M,QTY1,
C    1X, PR, WT
C     GO TO 410
C05   WRITE(27,1110) IC, (S(I,I1),I1 = 1,20), (U(J,I1),I1 = 1,20), K, QTY,
C    1X, PR, WT
C10   READ(17,1020, END = 500) I, J, K, QTY, DT, PR, WT, GT
C     IF (PR .EQ. IP) GO TO 402
C     NP = NP + 1
C     WRITE(31,*) IP, NG
C     NG(1) = 0
C     NG(2) = 0
C     NG(3) = 0
C     IP = PR
C     IC = 0
C     GO TO 402
C00   WRITE(31,*) IP, NG
C     WRITE(32,*) NP
500   CONTINUE
C*********************************************************************
C     RIGID CONSTRAINTS
C*********************************************************************
      IF (C4 .EQ. 0) GO TO 600
      IC = 0
510   READ(9,1010, END = 600) I, J, K, QTY1
      IC = IC + 1
      N = K/4 + 1
      M = K - K/4*4
      IF (M .EQ. 0) N = N - 1
      IF (M .EQ. 0) M = 4
      WRITE(19,1120) IC, (S(I,I1),I1 = 1,18), (U(J,I1),I1 = 1,18), N, M,QTY1
      READ(10,1010, END = 400) I, J, K, QTY1
      N = K/4 + 1
      M = K - K/4*4
      IF (M .EQ. 0) N = N - 1
      IF (M .EQ. 0) M = 4
      WRITE(20,1120) IC, (S(I,I1),I1 = 1,18), (U(J,I1),I1 = 1,18), N, M,QTY1
```

```
      GO TO 510
600   CONTINUE
1000  FORMAT(20A1)
1010  FORMAT(1X,I2,1X,I2,1X,I2,1X,I7,1X,I1,1X,I2,1X,I4,1X,I1)
1020  FORMAT(1X,I2,1X,I2,1X,I2,1X,F7.2,1X,I1,1X,I2,1X,I4,1X,I1)
1100  FORMAT(I3,'.',4X,18A1,'  ',18A1,1X,I1,'/',I1,5X,I6,4X,A1
     1,5X,I2,2X,I3)
1105  FORMAT(I3,'.',1X,I1,2X,18A1,'  ',18A1,1X,I1,'/',I1,5X,I6,4X,A1
     1,5X,I2,2X,I3)
1110  FORMAT(I3,'.',4X,18A1,'  ',18A1,2X,I1,6X,F6.2,4X,A1,5X,
     1I2,2X,I3)
1106  FORMAT(I3,'.',1X,I1,2X,18A1,'  ',18A1,1X,I1,7X,F6.2,4X,A1,5X,
     1I2,2X,I3)
1120  FORMAT(I3,'.',3X,18A1,'  ',18A1,5X,I1,'/',I1,10X,I6)
      STOP
      END
```

Appendix C. LISTING OF DMS (DISPLAY MANAGEMENT SYSTEM) PANELS

C.1 INTRO

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                                                                           *
*          SSSSSSSSSSSSS  OOOOOOO  UU   UU   RRRRRRR   CCCCCC  EEEEEE  SSSSSS  *
*         SSSSSSSSSSSSS  OO   OO  UU   UU   RR   RR   CC      EE      SS      *
*        SSSS           OO   OO  UU   UU   RRRRRRR   CC      EEEEEE  SSSSSS  *
*       SSSSSSSSSSSS   OO   OO  UU   UU   RR  RR    CC      EE          SS  *
*       SSSSSSSSSSSS  OOOOOOO  UUUUUUU   RR    RR  CCCCCC  EEEEEE  SSSSSS  *
*           SSSSS                                                           *
*     SSSSSSSSSSSS          AAAAAAAAA     NNN   NN  DDDDDDDD                *
*     SSSSSSSSSSS          AAAAAAAAAAAA   NNNN  NN  DD    DD                *
*                         AAAA    AAAA   NN NN NN  DD    DD                 *
*                        AAAA    AAAA   NN  NNNN  DD    DD                  *
*                       AAAAAAAAAAAA   NN   NNN  DDDDDDDD                   *
*                      AAAAAAAAAAAA                                         *
*                     AAAA    AAAA         UUUU    UUUU   SSSSSS  EEEEEE  SSSSSS  *
*                    AAAA    AAAA         UUUU    UUUU   SS      EE      SS  *
*                                        UUUU    UUUU   SSSSSS  EEEEEE  SSSSSS  *
*                                       UUUU    UUUU       SS  EE          SS  *
*          VIRGINIA TECH               UUUU    UUUU   SSSSSS  EEEEEE  SSSSSS  *
*       FINANCIAL PLANNING            UUUU    UUUU                          *
*       AND CONTROL SYSTEM           UUUUUUUUUUUU                           *
*                                   UUUUUUUUUUUU                            *
*                                                                           *
*                                                                           *
*                              PRESS ENTER TO CONTINUE                      *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.2 MAINMENU

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                    FUND SOURCES AND USES MODEL                LEVEL 1     *
*                                                                           *
*                                                                           *
*                         SOURCES AND USES                                  *
*                                                                           *
*                                                                           *
*                PF1   VIEW RESULTS OF EXISTING MODEL                       *
*                                                                           *
*                PF2   MAKE TEMPORARY CHANGES (WHAT-IF ANALYSES) TO DATA    *
*                                                                           *
*                PF3   RELOAD ORIGINAL (PERMANENT) DATA                     *
*                                                                           *
*                PF4   MAKE TEMPORARY DATA CHANGES PERMANENT                *
*                                                                           *
*                PF5   MAKE PERMANENT CHANGES TO DATA                       *
*                                                                           *
*                PF6   RUN A MODEL                                          *
*                                                                           *
*                PF10  QUIT                                                 *
*                                                                           *
*                                                                           *
*                          SELECT PF KEY                                    *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.3 SELOUT

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                          OUTPUT SELECTION                                 *
*                                                                           *
*                                                                           *
*                   PF1   FUND AVAILABILITY BY SOURCE                       *
*                                                                           *
*                   PF2   FUNDING REQUIREMENTS BY USE                       *
*                                                                           *
*                   PF3   SOURCE EXPENDITURES                               *
*                                                                           *
*                   PF4   EXPENDITURE SOURCES                               *
*                                                                           *
*                   PF5   FUNDS USE THROUGH TIME                            *
*                                                                           *
*                   PF6   ALL THE ABOVE                                     *
*                                                                           *
*                   PF7   PRINT ALL THESE REPORTS                           *
*                                                                           *
*                                                                           *
*                   PF10  QUIT                                              *
*                                                                           *
*                                                                           *
*                                                                           *
*                          SELECT PF KEY                                    *
*                                                                           *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.4 FUNSRC1

FUNDS AVAILABILITY BY SOURCE - 1985-86

FUND	TOTAL	BAL FWD	1ST QT	2ND QT	3RD QT	4TH QT	YEAR
GENERAL FUND	84527	84527	0	0	0	0	84527
TUITION	53135	0	13915	4667	18262	16291	53135
FEES	20931	0	4307	4681	6075	5868	20931
LOCAL FUND	16385	0	682	3834	5617	6252	16385
SALES AND SERVICES	13021	0	2736	2895	3805	3585	13021
PRIVATE MONEY	4411	0	431	479	1718	1783	4411
FEDERAL MONEY	3386	0	680	512	880	1314	3386
STATE NON-GF	2459	0	42	384	1692	341	2459
RESERVES	2210	1698	0	177	335	0	2210
OTHER	533	0	529	2	2	0	533
OVERHEAD	419	0	248	0	0	171	419
DEBT	0	0	0	0	0	0	0
DEFICIT	43699	0	43699	0	0	0	43699
TOTAL	245116	86225	67269	17631	38386	35605	245116

PRESS ENTER TO CONTINUE

C.5 FUNUSE1

FUNDS REQUIREMENT BY USE - 1985-86

USE	TOTAL	1ST QT	2ND QT	3RD QT	4TH QT	YEAR
E AND G	142085	37176	26270	40174	38465	142085
CAPITAL OUTLAY	52962	44667	3274	2137	2884	52962
SPONSORED PROGRAMS	4556	962	667	1425	1502	4556
OTHER	182	182	0	0	0	182
AUXILIARIES	0	0	0	0	0	0
STUDENT FINANCL ASSI	0	0	0	0	0	0
TOTAL	199785	82987	30211	43736	42851	199785

PRESS ENTER TO CONTINUE

C.6 SELSRC

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                              SELECT SOURCE                                *
*                                                                           *
*                                                                           *
*              GENERAL FUND                      TUITION                    *
*                                                                           *
*              FEES                              LOCAL FUND                 *
*                                                                           *
*              SALES AND SERVICES                PRIVATE MONEY              *
*                                                                           *
*              FEDERAL MONEY                     STATE NON-GF               *
*                                                                           *
*              RESERVES                          OTHER                      *
*                                                                           *
*              OVERHEAD                          DEBT                       *
*                                                                           *
*              DEFICIT                           ALL SOURCES                *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                              PF10  QUIT                                   *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.7 EXPUSE1

```
*****************************************************************************
*                                                                           *
*                                                                           *
*        GENERAL FUND                EXPENDITURES BY USE - 1985-86          *
*                                                                           *
*                                    1ST QT  2ND QT  3RD QT  4TH QT   YEAR  *
*       BALANCE FORWARD               84527   54527   54527   30000  84527 *
*       QTRLY ADDITIONS                   0       0       0       0      0 *
*                                    ------  ------  ------  ------ ------ *
*       TOTAL FUNDS AVAILABLE         84527   54527   54527   30000  84527 *
*       EXPENDITURES          TOTAL                                         *
*       E AND G               84527   30000       0   24527   30000  84527 *
*                            ------  ------  ------  ------  ------ ------ *
*       TOTAL                 84527   30000       0   24527   30000  84527 *
*                                    ======  ======  ======  ====== ====== *
*       ENDING BALANCE                54527   54527   30000       0      0 *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                         PRESS ENTER TO CONTINUE          PF10  QUIT       *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.8 SELUSE

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                              SELECT USE                                   *
*                                                                           *
*                                                                           *
*          E AND G                          CAPITAL OUTLAY                 *
*                                                                           *
*          SPONSORED PROGRAMS               OTHER                          *
*                                                                           *
*          AUXILIARIES                      STUDENT FINANCL ASS            *
*                                                                           *
*          ALL USES                                                        *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                              PF10  QUIT                                   *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.9 EXPSRC1

```
*****************************************************************************
*                                                                           *
*                                                                           *
*        E AND G                EXPENDITURES BY SOURCES - 1985-86          *
*                                                                           *
*            SOURCE            TOTAL   1ST QT  2ND QT  3RD QT  4TH QT   YEAR *
*       GENERAL FUND           84527    30000       0   24527   30000  84527 *
*       TUITION                42694        0   18582   15647    8465  42694 *
*       FEES                    8988     4307    4681       0       0   8988 *
*       LOCAL FUND              1242      682     560       0       0   1242 *
*       SALES AND SERVICES      4634     2187    2447       0       0   4634 *
*                              ------   ------  ------  ------  ------ ------ *
*       TOTAL                 142085    37176   26270   40174   38465 142085 *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                          PRESS ENTER TO CONTINUE          PF10  QUIT     *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.10 SRCEXP1

SOURCE EXPENDITURES THROUGH TIME - 1985-86

SOURCE	AVAIL	USED	1ST QT	2ND QT	3RD QT	4TH QT	YEAR
GENERAL FUND	84527	84527	30000	0	24527	30000	84527
TUITION	53135	42694	0	18582	15647	8465	42694
FEES	20931	14009	4307	4681	2137	2884	14009
LOCAL FUND	16385	4516	682	3834	0	0	4516
SALES AND SERVICES	13021	4634	2187	2447	0	0	4634
PRIVATE MONEY	4411	3837	431	479	1425	1502	3837
FEDERAL MONEY	3386	868	680	188	0	0	868
STATE NON-GF	2459	42	42	0	0	0	42
RESERVES	2210	182	182	0	0	0	182
OTHER	533	529	529	0	0	0	529
OVERHEAD	419	248	248	0	0	0	248
DEBT	0	0	0	0	0	0	0
DEFICIT	43699	43699	43699	0	0	0	43699
TOTAL	245116	199785	82987	30211	43736	42851	199785

PRESS ENTER TO CONTINUE

C.11 TEMPPLAN

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                                                                LEVEL 2    *
*                        MAKE TEMPORARY CHANGES                             *
*                                                                           *
*                                                                           *
*                        MODEL PLANNING HORIZON                             *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                      PLANNING PERIOD?  2 YEAR(S)                          *
*                                                                           *
*                                                                           *
*                         FIRST YEAR?    1985-86                            *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                         PRESS ENTER TO CONTINUE                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.12 TSRCBALO

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                TEMPORARILY CHANGE PLANNING PERIOD              LEVEL 2    *
*                                                                           *
*                                                                           *
*                SOURCE : GENERAL FUND                                      *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                INITIAL BALANCE          84527                             *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                      PRESS ENTER TO CONTINUE       PF10  QUIT             *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.13 TSRCQTRO

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                TEMPORARILY CHANGE PLANNING PERIOD              LEVEL 2    *
*                                                                           *
*                                                                           *
*                SOURCE: GENERAL FUND                                       *
*                                                                           *
*                YEAR  : 1985-86                                            *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                FIRST  QUARTER          0                                  *
*                                                                           *
*                SECOND QUARTER          0                                  *
*                                                                           *
*                THIRD  QUARTER          0                                  *
*                                                                           *
*                FOURTH QUARTER          0                                  *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                      PRESS ENTER TO CONTINUE       PF10  QUIT             *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.14 TSRCQTRN

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                TEMPORARILY CHANGE PLANNING PERIOD              LEVEL 2    *
*                                                                           *
*                                                                           *
*                SOURCE: GENERAL FUND                                       *
*                                                                           *
*                YEAR  : 1986-87                                            *
*                                                                           *
*                                                                           *
*                LEAVE BLANK IF NO FUNDS AVAILABLE                          *
*                                                                           *
*                                                                           *
*                FIRST  QUARTER          10000                              *
*                                                                           *
*                SECOND QUARTER          10000                              *
*                                                                           *
*                THIRD  QUARTER          10000                              *
*                                                                           *
*                FOURTH QUARTER          10000                              *
*                                                                           *
*                                                                           *
*                                                                           *
*                       PRESS ENTER TO CONTINUE       PF10  QUIT           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.15 TUSEQTRO

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                    TEMPORARILY CHANGE PLANNING PERIOD            LEVEL 2  *
*                                                                           *
*                                                                           *
*                    USE    : E AND G                                      *
*                                                                           *
*                    YEAR   : 1985-86                                      *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                    FIRST  QUARTER          37176                          *
*                                                                           *
*                    SECOND QUARTER          26270                          *
*                                                                           *
*                    THIRD  QUARTER          40174                          *
*                                                                           *
*                    FOURTH QUARTER          38465                          *
*                                                                           *
*                                                                           *
*                                                                           *
*                           PRESS ENTER TO CONTINUE      PF10  QUIT        *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.16 TUSEQTRN

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                TEMPORARILY CHANGE PLANNING PERIOD              LEVEL 2    *
*                                                                           *
*                                                                           *
*                USE    : E AND G                                           *
*                                                                           *
*                YEAR   : 1986-87                                           *
*                                                                           *
*                                                                           *
*                LEAVE BLANK IF NO FUNDS REQUIRED                           *
*                                                                           *
*                                                                           *
*                FIRST  QUARTER          2000                               *
*                                                                           *
*                SECOND QUARTER          2000                               *
*                                                                           *
*                THIRD  QUARTER          4000                               *
*                                                                           *
*                FOURTH QUARTER          4000                               *
*                                                                           *
*                                                                           *
*                                                                           *
*                       PRESS ENTER TO CONTINUE       PF10  QUIT           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.17 TCHPLYR

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                  TEMPORARILY CHANGE PLANNING PERIOD              LEVEL 2  *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*        WARNING: IF YOU CHANGE THE PLANNING PERIOD, YOU WILL BE            *
*                 REQUIRED TO MAKE  72  ADDITIONAL DATA ENTRIES.            *
*                                                                           *
*           DO YOU STILL WISH TO CHANGE THE PLANNING PERIOD?                *
*                                                                           *
*                                                                           *
*                          PF1   YES                                        *
*                                                                           *
*                          PF10  NO                                         *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                           SELECT PF KEY                                   *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.18 TEMPMAIN

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                                                              LEVEL 2      *
*                                                                           *
*                                                                           *
*                          TEMPORARY CHANGES                                *
*                                                                           *
*                                                                           *
*                                                                           *
*                     PF1   MAKE TEMPORARY CHANGES TO SOURCES               *
*                                                                           *
*                     PF2   MAKE TEMPORARY CHANGES TO USES                  *
*                                                                           *
*                     PF10  QUIT                                            *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                           SELECT PF KEY                                   *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.19 TSRCOPTN

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                                                              LEVEL 3      *
*                        TEMPORARY CHANGES TO SOURCES                       *
*                                                                           *
*                                                                           *
*                                                                           *
*                        PF1   MODIFY AN EXISTING SOURCE                    *
*                                                                           *
*                        PF2   DELETE A SOURCE                              *
*                                                                           *
*                        PF3   CREATE A NEW SOURCE                          *
*                                                                           *
*                        PF4   SORT SOURCES                                 *
*                                                                           *
*                                                                           *
*                        PF10  QUIT                                         *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                            SELECT PF KEY                                  *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.20 TMPSRCEM

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                        TEMPORARILY MODIFY A SOURCE              LEVEL 4   *
*                                                                           *
*                                                                           *
*              1. GENERAL FUND                  2. TUITION                  *
*                                                                           *
*              3. FEES                          4. LOCAL FUND               *
*                                                                           *
*              5. SALES AND SERVICES            6. PRIVATE MONEY            *
*                                                                           *
*              7. FEDERAL MONEY                 8. STATE NON-GF             *
*                                                                           *
*              9. RESERVES                     10. OTHER                    *
*                                                                           *
*             11. OVERHEAD                     12. DEBT                     *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                PF10  QUIT                                 *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.21 TMSRCBAL

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                    TEMPORARILY MODIFY A SOURCE                LEVEL 4     *
*                                                                           *
*                                                                           *
*                    SOURCE: GENERAL FUND                                   *
*                                                                           *
*                                                                           *
*                                                  *                        *
*                              CURRENT          NEW                         *
*                                                                           *
*          INITIAL BALANCE     84527            80000                       *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*          * LEAVE BLANK TO RETAIN CURRENT VALUE                            *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                       PRESS ENTER TO CONTINUE                             *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.22 TMSRCQTR

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                    TEMPORARILY MODIFY A SOURCE                LEVEL 4     *
*                                                                           *
*                                                                           *
*                    SOURCE: GENERAL FUND                                   *
*                                                                           *
*                    YEAR  : 1985-86                                        *
*                                                                           *
*                                                  *                        *
*                              CURRENT            NEW                       *
*                                                                           *
*        FIRST  QUARTER        0                  5000                      *
*                                                                           *
*        SECOND QUARTER        0                  5000                      *
*                                                                           *
*        THIRD  QUARTER        0                  5000                      *
*                                                                           *
*        FOURTH QUARTER        0                  5000                      *
*                                                                           *
*                                                                           *
*        * LEAVE BLANK TO RETAIN CURRENT VALUE                              *
*                                                                           *
*                         PRESS ENTER TO CONTINUE                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.23 TSRCLIST

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                    TEMPORARILY MODIFY A SOURCE                LEVEL 4     *
*                                                                           *
*                                                                           *
*                                                                           *
*                    SOURCE :  GENERAL FUND                                 *
*                                                                           *
*                                                                           *
*                                                                           *
*              DO YOU WANT TO CHANGE THE LIST OF USES THAT ARE              *
*                                                                           *
*              ELIGIBLE TO RECEIVE FUNDS FROM THIS SOURCE ?                 *
*                                                                           *
*                                                                           *
*                                                                           *
*                         ENTER Y/N  y                                      *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                      PRESS ENTER TO CONTINUE                              *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.24 TMCKSRC

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                    TEMPORARILY MODIFY A NEW SOURCE            LEVEL 4     *
*                                                                           *
*                    SOURCE :  GENERAL FUND                                 *
*                                                                           *
*              USE                              ELIGIBLE?                   *
*                                                                           *
*          E AND G                                  Y                       *
*          CAPITAL OUTLAY                           Y                       *
*          SPONSORED PROGRAMS                       N                       *
*          OTHER                                    N                       *
*          AUXILIARIES                              N                       *
*          STUDENT FINANCL ASSISTNCE                Y                       *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                     PRESS ENTER TO CONTINUE                               *
*                                                                           *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.25 TMPSRCED

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                    TEMPORARILY DELETE A SOURCE                LEVEL 4     *
*                                                                           *
*                                                                           *
*          1. GENERAL FUND                  2. TUITION                     *
*                                                                           *
*          3. FEES                          4. LOCAL FUND                  *
*                                                                           *
*          5. SALES AND SERVICES            6. PRIVATE MONEY               *
*                                                                           *
*          7. FEDERAL MONEY                 8. STATE NON-GF                *
*                                                                           *
*          9. RESERVES                     10. OTHER                       *
*                                                                           *
*         11. OVERHEAD                     12. DEBT                        *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                          PF10  QUIT                                       *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.26 TSRCDCK

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                    TEMPORARILY DELETE A SOURCE                LEVEL 4     *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                    SOURCE :  GENERAL FUND                                 *
*                                                                           *
*                                                                           *
*                                                                           *
*              ARE YOU SURE YOU WANT TO DELETE THIS SOURCE ?                *
*                                                                           *
*                                                                           *
*                          ENTER Y/N  Y                                     *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                      PRESS ENTER TO CONTINUE                              *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.27 TMPSRCDL

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                        TEMPORARILY DELETE A SOURCE              LEVEL 4   *
*                                                                           *
*                                                                           *
*        NEW LIST OF SOURCES AFTER DELETING SOURCE: GENERAL FUND            *
*                                                                           *
*                                                                           *
*              1. TUITION                    2. FEES                        *
*                                                                           *
*              3. LOCAL FUND                 4. SALES AND SERVICES          *
*                                                                           *
*              5. PRIVATE MONEY              6. FEDERAL MONEY               *
*                                                                           *
*              7. STATE NON-GF               8. RESERVES                    *
*                                                                           *
*              9. OTHER                     10. OVERHEAD                    *
*                                                                           *
*             11. DEBT                                                      *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                        PRESS ENTER TO CONTINUE                            *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.28 TNSRCBAL

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                                                                LEVEL 4    *
*                    TEMPORARILY CREATE A NEW SOURCE                        *
*                                                                           *
*                                                                           *
*                                                                           *
*                 SOURCE NAME :  NEW SOURCE                                 *
*                                                                           *
*                                                                           *
*               INITIAL BALANCE :  1000                                     *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                    PRESS ENTER TO CONTINUE                                *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.29 TNSRCQTR

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                  TEMPORARILY CREATE A NEW SOURCE              LEVEL 4     *
*                                                                           *
*                  SOURCE: NEW SOURCE                                       *
*                                                                           *
*                  YEAR  : 1985-86                                          *
*                                                                           *
*                                                                           *
*               LEAVE BLANK IF NO FUNDS AVAILABLE                           *
*                                                                           *
*                                                                           *
*                 FIRST  QUARTER :     2000                                 *
*                                                                           *
*                 SECOND QUARTER :     0                                    *
*                                                                           *
*                 THIRD  QUARTER :     2000                                 *
*                                                                           *
*                 FOURTH QUARTER :     0                                    *
*                                                                           *
*                                                                           *
*                                                                           *
*                    PRESS ENTER TO CONTINUE                                *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.30 TNCKSRC

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                    TEMPORARILY CREATE A NEW SOURCE            LEVEL 4     *
*                                                                           *
*                    SOURCE :  NEW SOURCE                                   *
*                                                                           *
*              USE                              ELIGIBLE?                   *
*                                                                           *
*          E AND G                                 Y                        *
*          CAPITAL OUTLAY                          Y                        *
*          SPONSORED PROGRAMS                      N                        *
*          OTHER                                   N                        *
*          AUXILIARIES                             N                        *
*          STUDENT FINANCL ASSISTNCE               N                        *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                     PRESS ENTER TO CONTINUE                               *
*                                                                           *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.31 TMPSRCNL

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                    TEMPORARILY CREATE A NEW SOURCE              LEVEL 4   *
*                                                                           *
*                                                                           *
*        NEW LIST OF SOURCES AFTER ADDING SOURCE: NEW SOURCE                *
*                                                                           *
*                                                                           *
*             1. TUITION                    2. FEES                         *
*                                                                           *
*             3. LOCAL FUND                 4. SALES AND SERVICES           *
*                                                                           *
*             5. PRIVATE MONEY              6. FEDERAL MONEY                *
*                                                                           *
*             7. STATE NON-GF               8. RESERVES                     *
*                                                                           *
*             9. OTHER                     10. OVERHEAD                     *
*                                                                           *
*            11. DEBT                      12. NEW SOURCE                  *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                          PRESS ENTER TO CONTINUE                          *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.32 TUSEOPTN

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                                                              LEVEL 3      *
*                    TEMPORARY CHANGES TO USES                              *
*                                                                           *
*                                                                           *
*                                                                           *
*                    PF1   MODIFY AN EXISTING USE                           *
*                                                                           *
*                    PF2   DELETE A USE                                     *
*                                                                           *
*                    PF3   CREATE A NEW USE                                 *
*                                                                           *
*                    PF4   SORT USES                                        *
*                                                                           *
*                                                                           *
*                    PF10  QUIT                                             *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                         SELECT PF KEY                                     *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.33 TMPUSEM

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                    TEMPORARILY MODIFY A USE                   LEVEL 4     *
*                                                                           *
*                                                                           *
*          1. E AND G                    2. CAPITAL OUTLAY                  *
*                                                                           *
*          3. SPONSORED PROGRAMS         4. OTHER                           *
*                                                                           *
*          5. AUXILIARIES                6. STUDENT FINANCL ASSI            *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
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*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.34 TMUSEQTR

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                          TEMPORARILY MODIFY A USE                LEVEL 4  *
*                                                                           *
*                                                                           *
*                          USE  : E AND G                                   *
*                                                                           *
*                          YEAR : 1985-86                                   *
*                                                                           *
*                                                        *                  *
*                                   CURRENT          NEW                    *
*                                                                           *
*             FIRST  QUARTER        37176            25000                  *
*                                                                           *
*             SECOND QUARTER        26270            25000                  *
*                                                                           *
*             THIRD  QUARTER        40174            25000                  *
*                                                                           *
*             FOURTH QUARTER        38465            25000                  *
*                                                                           *
*                                                                           *
*             * LEAVE BLANK TO RETAIN CURRENT VALUE                         *
*                                                                           *
*                              PRESS ENTER TO CONTINUE                      *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.35 TUSELIST

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                    TEMPORARILY MODIFY A USE                  LEVEL 4      *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                    USE :  E AND G                                         *
*                                                                           *
*                                                                           *
*                                                                           *
*              DO YOU WANT TO CHANGE THE LIST OF SOURCES THAT               *
*                                                                           *
*               ARE  ELIGIBLE TO PROVIDE FUNDS TO THIS USE ?                *
*                                                                           *
*                                                                           *
*                                                                           *
*                          ENTER Y/N  y                                     *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                      PRESS ENTER TO CONTINUE                              *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.36 TMCKUSE

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                    TEMPORARILY MODIFY A USE                  LEVEL 4      *
*                                                                           *
*                    USE :  E AND G                                         *
*                                                                           *
*              SOURCE                          ELIGIBLE?                    *
*                                                                           *
*        GENERAL FUND                              Y                        *
*        TUITION                                   Y                        *
*        FEES                                      Y                        *
*        LOCAL FUND                                Y                        *
*        SALES AND SERVICES                        Y                        *
*        PRIVATE MONEY                             Y                        *
*        FEDERAL MONEY                             Y                        *
*        STATE NON-GF                              Y                        *
*        RESERVES                                  N                        *
*        OTHER                                     Y                        *
*        OVERHEAD                                  Y                        *
*        DEBT                                      Y                        *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                    PRESS ENTER TO CONTINUE                                *
*                                                                           *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.37 TMPUSED

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                    TEMPORARILY DELETE A USE                  LEVEL 4      *
*                                                                           *
*                                                                           *
*          1. E AND G                    2. CAPITAL OUTLAY                 *
*                                                                           *
*          3. SPONSORED PROGRAMS         4. OTHER                          *
*                                                                           *
*          5. AUXILIARIES                6. STUDENT FINANCL ASSI           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                PF10  QUIT                                 *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.38 TUSEDCK

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                    TEMPORARILY DELETE A USE                   LEVEL 4     *
*                                                                           *
*                                                                           *
*                                                                           *
*                    USE :  E AND G                                         *
*                                                                           *
*                                                                           *
*                                                                           *
*              ARE YOU SURE YOU WANT TO DELETE THIS USE ?                   *
*                                                                           *
*                                                                           *
*                         ENTER Y/N  y                                      *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                      PRESS ENTER TO CONTINUE                              *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.39 TMPUSEDL

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                          TEMPORARILY DELETE A USE                LEVEL 4  *
*                                                                           *
*                                                                           *
*            NEW LIST OF USES AFTER DELETING USE: E AND G                   *
*                                                                           *
*                                                                           *
*              1. CAPITAL OUTLAY                2. SPONSORED PROGRAMS      *
*                                                                           *
*              3. OTHER                         4. AUXILIARIES             *
*                                                                           *
*              5. STUDENT FINANCL ASSI                                     *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                          PRESS ENTER TO CONTINUE                          *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.40 TNUSEBAL

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                                                              LEVEL 4      *
*                    TEMPORARILY CREATE A NEW USE                           *
*                                                                           *
*                                                                           *
*                    USE NAME :  NEW USE                                    *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                       PRESS ENTER TO CONTINUE                             *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.41 TNUSEQTR

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                TEMPORARILY CREATE A NEW USE                LEVEL 4        *
*                                                                           *
*                USE : NEW USE                                              *
*                                                                           *
*                YEAR: 1985-86                                              *
*                                                                           *
*                                                                           *
*             LEAVE BLANK IF NO FUNDS AVAILABLE                             *
*                                                                           *
*                                                                           *
*               FIRST  QUARTER :     10000                                  *
*                                                                           *
*               SECOND QUARTER :     5000                                   *
*                                                                           *
*               THIRD  QUARTER :     5000                                   *
*                                                                           *
*               FOURTH QUARTER :     5000                                   *
*                                                                           *
*                                                                           *
*                                                                           *
*                  PRESS ENTER TO CONTINUE                                  *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.42 TNCKUSE

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                    TEMPORARILY CREATE A NEW USE              LEVEL 4      *
*                                                                           *
*                    USE :  NEW USE                                         *
*                                                                           *
*              SOURCE                          ELIGIBLE?                    *
*                                                                           *
*          GENERAL FUND                            Y                        *
*          TUITION                                 Y                        *
*          FEES                                    N                        *
*          LOCAL FUND                              N                        *
*          SALES AND SERVICES                      N                        *
*          PRIVATE MONEY                           N                        *
*          FEDERAL MONEY                           N                        *
*          STATE NON-GF                            N                        *
*          RESERVES                                N                        *
*          OTHER                                   Y                        *
*          OVERHEAD                                Y                        *
*          DEBT                                    Y                        *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                    PRESS ENTER TO CONTINUE                                *
*                                                                           *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.43 TMPUSENL

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                    TEMPORARILY CREATE A NEW USE                LEVEL 4    *
*                                                                           *
*                                                                           *
*          NEW LIST OF USES AFTER ADDING USE: NEW USE                       *
*                                                                           *
*                                                                           *
*            1. CAPITAL OUTLAY              2. SPONSORED PROGRAMS          *
*                                                                           *
*            3. OTHER                       4. AUXILIARIES                 *
*                                                                           *
*            5. STUDENT FINANCL ASSI        6. NEW USE                     *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                      PRESS ENTER TO CONTINUE                              *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.44 TRANKSRC

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                    TEMPORARILY SORT SOURCES                LEVEL 4        *
*                                                                           *
*                                                                           *
*                   SORTING SCHEME FOR SOURCES                              *
*                                                                           *
*                                                                           *
*                 PF1   DISPLAY CURRENT SORTING SCHEME                      *
*                                                                           *
*                 PF2   ALPHABETICALLY                                      *
*                                                                           *
*                 PF3   DECREASING AMOUNT OF FUNDS                          *
*                                                                           *
*                 PF4   INCREASING AMOUNT OF FUNDS                          *
*                                                                           *
*                 PF5   USER SPECIFIED                                      *
*                                                                           *
*                                                                           *
*                 PF10  QUIT                                                *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                       SELECT PF KEY                                       *
*                                                                           *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.45 TUSRTSRC

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                    TEMPORARILY SORT SOURCES                   LEVEL 5     *
*                                                                           *
*                    SORTING OF SOURCES BY USER                             *
*                                                                           *
*                 SOURCES                          RANK                     *
*                                                                           *
*              1. DEBT                              4                       *
*              2. OVERHEAD                          5                       *
*              3. OTHER                             8                       *
*              4. RESERVES                          7                       *
*              5. STATE NON-GF                      9                       *
*              6. FEDERAL MONEY                     10                      *
*              7. PRIVATE MONEY                     6                       *
*              8. SALES AND SERVICES                11                      *
*              9. LOCAL FUND                        12                      *
*             10. FEES                              1                       *
*             11. TUITION                           2                       *
*             12. GENERAL FUND                      3                       *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                     PRESS ENTER TO CONTINUE                               *
*                                                                           *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.46 TSRTDSRC

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                    TEMPORARILY SORT SOURCES                  LEVEL 5      *
*                                                                           *
*                    SORTED LIST OF SOURCES                                 *
*                                                                           *
*               SORTING SCHEME : USER SPECIFIED                             *
*                                                                           *
*                                                                           *
*          1. FEES                        2. TUITION                       *
*                                                                           *
*          3. GENERAL FUND                4. DEBT                          *
*                                                                           *
*          5. OVERHEAD                    6. PRIVATE MONEY                 *
*                                                                           *
*          7. RESERVES                    8. OTHER                         *
*                                                                           *
*          9. STATE NON-GF               10. FEDERAL MONEY                 *
*                                                                           *
*         11. SALES AND SERVICES         12. LOCAL FUND                    *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                    PRESS ENTER TO CONTINUE                                *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.47 TRANKUSE

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                    TEMPORARILY SORT USES                   LEVEL 4        *
*                                                                           *
*                                                                           *
*                    SORTING SCHEME FOR USES                                *
*                                                                           *
*                                                                           *
*                 PF1   DISPLAY CURRENT SORTING SCHEME                      *
*                                                                           *
*                 PF2   ALPHABETICALLY                                      *
*                                                                           *
*                 PF3   DECREASING AMOUNT OF FUNDS                          *
*                                                                           *
*                 PF4   INCREASING AMOUNT OF FUNDS                          *
*                                                                           *
*                 PF5   USER SPECIFIED                                      *
*                                                                           *
*                                                                           *
*                 PF10  QUIT                                                *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                       SELECT PF KEY                                       *
*                                                                           *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.48 TSRTDUSE

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                    TEMPORARILY SORT USES                     LEVEL 5      *
*                                                                           *
*                     SORTED LIST OF USES                                   *
*                                                                           *
*              SORTING SCHEME : ALPHABETICAL                                *
*                                                                           *
*                                                                           *
*        1. AUXILIARIES                  2. CAPITAL OUTLAY                  *
*                                                                           *
*        3. E AND G                      4. OTHER                           *
*                                                                           *
*        5. SPONSORED PROGRAMS           6. STUDENT FINANCL ASSI            *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                     PRESS ENTER TO CONTINUE                               *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.49 TEMPPERM

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                MAKE TEMPORARY CHANGES TO DATA PERMANENT          LEVEL 2  *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*        ARE YOU SURE YOU WANT TO MAKE TEMPORARY CHANGES PERMANENT ?        *
*                                                                           *
*                                                                           *
*                                                                           *
*                              PF1   YES                                    *
*                                                                           *
*                              PF10  NO                                     *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                              SELECT PF KEY                                *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.50 PERMPLAN

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                                                              LEVEL 2      *
*                    MAKE PERMANENT CHANGES                                 *
*                                                                           *
*                                                                           *
*                    MODEL PLANNING HORIZON                                 *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                  PLANNING PERIOD?  2 YEAR(S)                              *
*                                                                           *
*                                                                           *
*                     FIRST YEAR?    1985-86                                *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                     PRESS ENTER TO CONTINUE                               *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.51 PCHPLYR

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                  PERMANENTLY CHANGE PLANNING PERIOD              LEVEL 2  *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*          WARNING: IF YOU CHANGE THE PLANNING PERIOD, YOU WILL BE          *
*                   REQUIRED TO MAKE  72  ADDITIONAL DATA ENTRIES.          *
*                                                                           *
*              DO YOU STILL WISH TO CHANGE THE PLANNING PERIOD?             *
*                                                                           *
*                                                                           *
*                              PF1   YES                                    *
*                                                                           *
*                              PF10  NO                                     *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                               SELECT PF KEY                               *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.52 PSRCBALO

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                PERMANENTLY CHANGE PLANNING PERIOD              LEVEL 2    *
*                                                                           *
*                                                                           *
*                                                                           *
*                SOURCE : GENERAL FUND                                      *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                INITIAL BALANCE          84527                             *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                      PRESS ENTER TO CONTINUE       PF10  QUIT             *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.53 PSRCQTRO

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                PERMANENTLY CHANGE PLANNING PERIOD              LEVEL 2    *
*                                                                           *
*                                                                           *
*                SOURCE: GENERAL FUND                                       *
*                                                                           *
*                YEAR  : 1985-86                                            *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                FIRST  QUARTER          0                                  *
*                                                                           *
*                SECOND QUARTER          0                                  *
*                                                                           *
*                THIRD  QUARTER          0                                  *
*                                                                           *
*                FOURTH QUARTER          0                                  *
*                                                                           *
*                                                                           *
*                                                                           *
*                       PRESS ENTER TO CONTINUE      PF10  QUIT             *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.54 PSRCQTRN

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                PERMANENTLY CHANGE PLANNING PERIOD              LEVEL 2    *
*                                                                           *
*                                                                           *
*                SOURCE: GENERAL FUND                                       *
*                                                                           *
*                YEAR  : 1986-87                                            *
*                                                                           *
*                                                                           *
*                LEAVE BLANK IF NO FUNDS AVAILABLE                          *
*                                                                           *
*                                                                           *
*                FIRST  QUARTER          10000                              *
*                                                                           *
*                SECOND QUARTER          10000                              *
*                                                                           *
*                THIRD  QUARTER          10000                              *
*                                                                           *
*                FOURTH QUARTER          10000                              *
*                                                                           *
*                                                                           *
*                                                                           *
*                       PRESS ENTER TO CONTINUE       PF10  QUIT           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.55 PUSEQTRO

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                PERMANENTLY CHANGE PLANNING PERIOD              LEVEL 2    *
*                                                                           *
*                                                                           *
*                USE    : E AND G                                           *
*                                                                           *
*                YEAR   : 1985-86                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                FIRST  QUARTER          37176                              *
*                                                                           *
*                SECOND QUARTER          26270                              *
*                                                                           *
*                THIRD  QUARTER          40174                              *
*                                                                           *
*                FOURTH QUARTER          38465                              *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                       PRESS ENTER TO CONTINUE       PF10  QUIT            *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.56 PUSEQTRN

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                PERMANENTLY CHANGE PLANNING PERIOD              LEVEL 2    *
*                                                                           *
*                                                                           *
*                USE    : E AND G                                           *
*                                                                           *
*                YEAR   : 1986-87                                           *
*                                                                           *
*                                                                           *
*                LEAVE BLANK IF NO FUNDS REQUIRED                           *
*                                                                           *
*                                                                           *
*                FIRST  QUARTER          2000                               *
*                                                                           *
*                SECOND QUARTER          2000                               *
*                                                                           *
*                THIRD  QUARTER          4000                               *
*                                                                           *
*                FOURTH QUARTER          4000                               *
*                                                                           *
*                                                                           *
*                       PRESS ENTER TO CONTINUE       PF10  QUIT           *
*                                                                           *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.57 PERMMAIN

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                                                              LEVEL 2      *
*                                                                           *
*                                                                           *
*                          PERMANENT CHANGES                                *
*                                                                           *
*                                                                           *
*                                                                           *
*                   PF1   MAKE PERMANENT CHANGES TO SOURCES                 *
*                                                                           *
*                   PF2   MAKE PERMANENT CHANGES TO USES                    *
*                                                                           *
*                   PF10  QUIT                                              *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                           SELECT PF KEY                                   *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.58 PSRCOPTN

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                                                              LEVEL 3      *
*                    PERMANENT CHANGES TO SOURCES                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                    PF1   MODIFY AN EXISTING SOURCE                        *
*                                                                           *
*                    PF2   DELETE A SOURCE                                  *
*                                                                           *
*                    PF3   CREATE A NEW SOURCE                              *
*                                                                           *
*                    PF4   SORT SOURCES                                     *
*                                                                           *
*                                                                           *
*                    PF10  QUIT                                             *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                         SELECT PF KEY                                     *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.59 PMTSRCEM

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                    PERMANENTLY MODIFY A SOURCE                LEVEL 4     *
*                                                                           *
*                                                                           *
*          1. GENERAL FUND                  2. TUITION                     *
*                                                                           *
*          3. FEES                          4. LOCAL FUND                  *
*                                                                           *
*          5. SALES AND SERVICES            6. PRIVATE MONEY               *
*                                                                           *
*          7. FEDERAL MONEY                 8. STATE NON-GF                *
*                                                                           *
*          9. RESERVES                     10. OTHER                       *
*                                                                           *
*         11. OVERHEAD                     12. DEBT                        *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                          PF10  QUIT                                       *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.60 PMSRCBAL

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                    PERMANENTLY MODIFY A SOURCE                LEVEL 4     *
*                                                                           *
*                                                                           *
*                    SOURCE: GENERAL FUND                                   *
*                                                                           *
*                                                                           *
*                                                  *                        *
*                              CURRENT            NEW                       *
*                                                                           *
*          INITIAL BALANCE     84527              80000                     *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*          *  LEAVE BLANK TO RETAIN CURRENT VALUE                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                       PRESS ENTER TO CONTINUE                             *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.61 PMSRCQTR

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                    PERMANENTLY MODIFY A SOURCE                LEVEL 4     *
*                                                                           *
*                                                                           *
*                    SOURCE: GENERAL FUND                                   *
*                                                                           *
*                    YEAR  : 1985-86                                        *
*                                                                           *
*                                                   *                       *
*                              CURRENT            NEW                       *
*                                                                           *
*          FIRST  QUARTER        0                 5000                    *
*                                                                           *
*          SECOND QUARTER        0                 5000                    *
*                                                                           *
*          THIRD  QUARTER        0                 5000                    *
*                                                                           *
*          FOURTH QUARTER        0                 5000                    *
*                                                                           *
*                                                                           *
*          * LEAVE BLANK TO RETAIN CURRENT VALUE                            *
*                                                                           *
*                         PRESS ENTER TO CONTINUE                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.62 PSRCLIST

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                    PERMANENTLY MODIFY A SOURCE                LEVEL 4     *
*                                                                           *
*                                                                           *
*                                                                           *
*                    SOURCE :  GENERAL FUND                                 *
*                                                                           *
*                                                                           *
*                                                                           *
*              DO YOU WANT TO CHANGE THE LIST OF USES THAT ARE              *
*                                                                           *
*              ELIGIBLE TO RECEIVE FUNDS FROM THIS SOURCE ?                 *
*                                                                           *
*                                                                           *
*                                                                           *
*                          ENTER Y/N  y                                     *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                       PRESS ENTER TO CONTINUE                             *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.63 PMCKSRC

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                    PERMANENTLY MODIFY A NEW SOURCE          LEVEL 4       *
*                                                                           *
*                    SOURCE :  GENERAL FUND                                 *
*                                                                           *
*              USE                              ELIGIBLE?                   *
*                                                                           *
*          E AND G                                 Y                        *
*          CAPITAL OUTLAY                          Y                        *
*          SPONSORED PROGRAMS                      N                        *
*          OTHER                                   N                        *
*          AUXILIARIES                             N                        *
*          STUDENT FINANCL ASSISTNCE               Y                        *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                    PRESS ENTER TO CONTINUE                                *
*                                                                           *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.64 PMTSRCED

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                    PERMANENTLY DELETE A SOURCE                LEVEL 4     *
*                                                                           *
*                                                                           *
*          1. GENERAL FUND                  2. TUITION                      *
*                                                                           *
*          3. FEES                          4. LOCAL FUND                   *
*                                                                           *
*          5. SALES AND SERVICES            6. PRIVATE MONEY                *
*                                                                           *
*          7. FEDERAL MONEY                 8. STATE NON-GF                 *
*                                                                           *
*          9. RESERVES                     10. OTHER                        *
*                                                                           *
*         11. OVERHEAD                     12. DEBT                         *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                          PF10  QUIT                                       *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.65 PSRCDCK

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                    PERMANENTLY DELETE A SOURCE                LEVEL 4     *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                    SOURCE :  GENERAL FUND                                 *
*                                                                           *
*                                                                           *
*                                                                           *
*              ARE YOU SURE YOU WANT TO DELETE THIS SOURCE ?                *
*                                                                           *
*                                                                           *
*                          ENTER Y/N  Y                                     *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                       PRESS ENTER TO CONTINUE                             *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.66 PMTSRCDL

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                        PERMANENTLY DELETE A SOURCE              LEVEL 4   *
*                                                                           *
*                                                                           *
*        NEW LIST OF SOURCES AFTER DELETING SOURCE: GENERAL FUND            *
*                                                                           *
*                                                                           *
*              1. TUITION                    2. FEES                        *
*                                                                           *
*              3. LOCAL FUND                 4. SALES AND SERVICES          *
*                                                                           *
*              5. PRIVATE MONEY              6. FEDERAL MONEY               *
*                                                                           *
*              7. STATE NON-GF               8. RESERVES                    *
*                                                                           *
*              9. OTHER                     10. OVERHEAD                    *
*                                                                           *
*             11. DEBT                                                      *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                        PRESS ENTER TO CONTINUE                            *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.67 PNSRCBAL

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                                                              LEVEL 4      *
*                    PERMANENTLY CREATE A NEW SOURCE                        *
*                                                                           *
*                                                                           *
*                                                                           *
*                 SOURCE NAME :  NEW SOURCE                                 *
*                                                                           *
*                                                                           *
*              INITIAL BALANCE :  1000                                      *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                    PRESS ENTER TO CONTINUE                                *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.68 PNSRCQTR

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                PERMANENTLY CREATE A NEW SOURCE              LEVEL 4      *
*                                                                           *
*                SOURCE: NEW SOURCE                                         *
*                                                                           *
*                YEAR  : 1985-86                                            *
*                                                                           *
*                                                                           *
*              LEAVE BLANK IF NO FUNDS AVAILABLE                            *
*                                                                           *
*                                                                           *
*                FIRST  QUARTER :     2000                                  *
*                                                                           *
*                SECOND QUARTER :     0                                     *
*                                                                           *
*                THIRD  QUARTER :     2000                                  *
*                                                                           *
*                FOURTH QUARTER :     0                                     *
*                                                                           *
*                                                                           *
*                                                                           *
*                   PRESS ENTER TO CONTINUE                                 *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.69 PNCKSRC

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                    PERMANENTLY CREATE A NEW SOURCE            LEVEL 4     *
*                                                                           *
*                    SOURCE :  NEW SOURCE                                   *
*                                                                           *
*              USE                              ELIGIBLE?                   *
*                                                                           *
*          E AND G                                 Y                        *
*          CAPITAL OUTLAY                          Y                        *
*          SPONSORED PROGRAMS                      N                        *
*          OTHER                                   N                        *
*          AUXILIARIES                             N                        *
*          STUDENT FINANCL ASSISTNCE               N                        *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                    PRESS ENTER TO CONTINUE                                *
*                                                                           *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.70 PMTSRCNL

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                    PERMANENTLY CREATE A NEW SOURCE              LEVEL 4   *
*                                                                           *
*                                                                           *
*        NEW LIST OF SOURCES AFTER ADDING SOURCE: NEW SOURCE                *
*                                                                           *
*                                                                           *
*            1. TUITION                    2. FEES                        *
*                                                                           *
*            3. LOCAL FUND                 4. SALES AND SERVICES          *
*                                                                           *
*            5. PRIVATE MONEY              6. FEDERAL MONEY               *
*                                                                           *
*            7. STATE NON-GF               8. RESERVES                    *
*                                                                           *
*            9. OTHER                     10. OVERHEAD                    *
*                                                                           *
*           11. DEBT                      12. NEW SOURCE                  *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                        PRESS ENTER TO CONTINUE                            *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.71 PUSEOPTN

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                                                              LEVEL 3      *
*                    PERMANENT CHANGES TO USES                              *
*                                                                           *
*                                                                           *
*                                                                           *
*                    PF1   MODIFY AN EXISTING USE                           *
*                                                                           *
*                    PF2   DELETE A USE                                     *
*                                                                           *
*                    PF3   CREATE A NEW USE                                 *
*                                                                           *
*                    PF4   SORT USES                                        *
*                                                                           *
*                                                                           *
*                    PF10  QUIT                                             *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                         SELECT PF KEY                                     *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.72 PMTUSEM

```
****************************************************************************************
*                                                                                      *
*                                                                                      *
*                                PERMANENTLY MODIFY A USE                    LEVEL 4   *
*                                                                                      *
*                                                                                      *
*                  1. E AND G                        2. CAPITAL OUTLAY                 *
*                                                                                      *
*                  3. SPONSORED PROGRAMS             4. OTHER                          *
*                                                                                      *
*                  5. AUXILIARIES                    6. STUDENT FINANCL ASSI           *
*                                                                                      *
*                                                                                      *
*                                                                                      *
*                                                                                      *
*                                                                                      *
*                                                                                      *
*                                                                                      *
*                                                                                      *
*                                                                                      *
*                                                                                      *
*                                                                                      *
*                                                                                      *
*                                                                                      *
*                                     PF10  QUIT                                       *
*                                                                                      *
*                                                                                      *
*                                                                                      *
*                                                                                      *
****************************************************************************************
```

C.73 PMUSEQTR

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                    PERMANENTLY MODIFY A USE                    LEVEL 4    *
*                                                                           *
*                                                                           *
*                    USE  : E AND G                                         *
*                                                                           *
*                    YEAR : 1985-86                                         *
*                                                                           *
*                                                  *                        *
*                              CURRENT            NEW                       *
*                                                                           *
*          FIRST  QUARTER      37176              25000                     *
*                                                                           *
*          SECOND QUARTER      26270              25000                     *
*                                                                           *
*          THIRD  QUARTER      40174              25000                     *
*                                                                           *
*          FOURTH QUARTER      38465              25000                     *
*                                                                           *
*                                                                           *
*          * LEAVE BLANK TO RETAIN CURRENT VALUE                            *
*                                                                           *
*                        PRESS ENTER TO CONTINUE                            *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.74 PUSELIST

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                    PERMANENTLY MODIFY A USE                    LEVEL 4    *
*                                                                           *
*                                                                           *
*                                                                           *
*                    USE :  E AND G                                         *
*                                                                           *
*                                                                           *
*                                                                           *
*              DO YOU WANT TO CHANGE THE LIST OF SOURCES THAT               *
*                                                                           *
*               ARE  ELIGIBLE TO PROVIDE FUNDS TO THIS USE ?                *
*                                                                           *
*                                                                           *
*                                                                           *
*                          ENTER Y/N  y                                     *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                      PRESS ENTER TO CONTINUE                              *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.75 PMCKUSE

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                    PERMANENTLY MODIFY A USE                   LEVEL 4    *
*                                                                           *
*                    USE :  E AND G                                         *
*                                                                           *
*          SOURCE                          ELIGIBLE?                        *
*                                                                           *
*     GENERAL FUND                            Y                             *
*     TUITION                                 Y                             *
*     FEES                                    Y                             *
*     LOCAL FUND                              Y                             *
*     SALES AND SERVICES                      Y                             *
*     PRIVATE MONEY                           Y                             *
*     FEDERAL MONEY                           Y                             *
*     STATE NON-GF                            Y                             *
*     RESERVES                                N                             *
*     OTHER                                   Y                             *
*     OVERHEAD                                Y                             *
*     DEBT                                    Y                             *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                    PRESS ENTER TO CONTINUE                                *
*                                                                           *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.76 PMTUSED

```
********************************************************************************
*                                                                              *
*                                                                              *
*                             PERMANENTLY DELETE A USE                LEVEL 4  *
*                                                                              *
*                                                                              *
*                1. E AND G                     2. CAPITAL OUTLAY              *
*                                                                              *
*                3. SPONSORED PROGRAMS          4. OTHER                       *
*                                                                              *
*                5. AUXILIARIES                 6. STUDENT FINANCL ASSI        *
*                                                                              *
*                                                                              *
*                                                                              *
*                                                                              *
*                                                                              *
*                                                                              *
*                                                                              *
*                                                                              *
*                                                                              *
*                                                                              *
*                                                                              *
*                                                                              *
*                                                                              *
*                                  PF10  QUIT                                  *
*                                                                              *
*                                                                              *
*                                                                              *
*                                                                              *
********************************************************************************
```

C.77 PUSEDCK

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                    PERMANENTLY DELETE A USE                    LEVEL 4    *
*                                                                           *
*                                                                           *
*                                                                           *
*                    USE :  E AND G                                         *
*                                                                           *
*                                                                           *
*                                                                           *
*              ARE YOU SURE YOU WANT TO DELETE THIS USE ?                   *
*                                                                           *
*                                                                           *
*                         ENTER Y/N  y                                      *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                      PRESS ENTER TO CONTINUE                              *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.78 PMTUSEDL

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                          PERMANENTLY DELETE A USE              LEVEL 4   *
*                                                                           *
*                                                                           *
*            NEW LIST OF USES AFTER DELETING USE: E AND G                   *
*                                                                           *
*                                                                           *
*              1. CAPITAL OUTLAY              2. SPONSORED PROGRAMS         *
*                                                                           *
*              3. OTHER                       4. AUXILIARIES                *
*                                                                           *
*              5. STUDENT FINANCL ASSI                                      *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                          PRESS ENTER TO CONTINUE                          *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.79 PNUSEBAL

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                                                                LEVEL 4    *
*                    PERMANENTLY CREATE A NEW USE                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                    USE NAME :  NEW USE                                    *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                       PRESS ENTER TO CONTINUE                             *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.80 PNUSEQTR

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                PERMANENTLY CREATE A NEW USE                LEVEL 4        *
*                                                                           *
*                USE : NEW USE                                              *
*                                                                           *
*                YEAR: 1985-86                                              *
*                                                                           *
*                                                                           *
*            LEAVE BLANK IF NO FUNDS AVAILABLE                              *
*                                                                           *
*                                                                           *
*              FIRST  QUARTER :     10000                                   *
*                                                                           *
*              SECOND QUARTER :     5000                                    *
*                                                                           *
*              THIRD  QUARTER :     5000                                    *
*                                                                           *
*              FOURTH QUARTER :     5000                                    *
*                                                                           *
*                                                                           *
*                                                                           *
*                 PRESS ENTER TO CONTINUE                                   *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.81 PNCKUSE

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                    PERMANENTLY CREATE A NEW USE              LEVEL 4      *
*                                                                           *
*                    USE :  NEW USE                                         *
*                                                                           *
*              SOURCE                          ELIGIBLE?                    *
*                                                                           *
*          GENERAL FUND                            Y                        *
*          TUITION                                 Y                        *
*          FEES                                    N                        *
*          LOCAL FUND                              N                        *
*          SALES AND SERVICES                      N                        *
*          PRIVATE MONEY                           N                        *
*          FEDERAL MONEY                           N                        *
*          STATE NON-GF                            N                        *
*          RESERVES                                N                        *
*          OTHER                                   Y                        *
*          OVERHEAD                                Y                        *
*          DEBT                                    Y                        *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                    PRESS ENTER TO CONTINUE                                *
*                                                                           *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.82 PMTUSENL

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                    PERMANENTLY CREATE A NEW USE                LEVEL 4    *
*                                                                           *
*                                                                           *
*          NEW LIST OF USES AFTER ADDING USE: NEW USE                       *
*                                                                           *
*                                                                           *
*            1. CAPITAL OUTLAY              2. SPONSORED PROGRAMS          *
*                                                                           *
*            3. OTHER                       4. AUXILIARIES                 *
*                                                                           *
*            5. STUDENT FINANCL ASSI        6. NEW USE                     *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                    PRESS ENTER TO CONTINUE                                *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.83 PRANKSRC

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                    PERMANENTLY SORT SOURCES                   LEVEL 4    *
*                                                                           *
*                                                                           *
*                   SORTING SCHEME FOR SOURCES                              *
*                                                                           *
*                                                                           *
*                 PF1   DISPLAY CURRENT SORTING SCHEME                      *
*                                                                           *
*                 PF2   ALPHABETICALLY                                      *
*                                                                           *
*                 PF3   DECREASING AMOUNT OF FUNDS                          *
*                                                                           *
*                 PF4   INCREASING AMOUNT OF FUNDS                          *
*                                                                           *
*                 PF5   USER SPECIFIED                                      *
*                                                                           *
*                                                                           *
*                 PF10  QUIT                                                *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                        SELECT PF KEY                                      *
*                                                                           *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.84 PUSRTSRC

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                    PERMANENTLY SORT SOURCES                    LEVEL 5    *
*                                                                           *
*                    SORTING OF SOURCES BY USER                             *
*                                                                           *
*              SOURCES                              RANK                    *
*                                                                           *
*           1. DEBT                                  4                      *
*           2. OVERHEAD                              5                      *
*           3. OTHER                                 8                      *
*           4. RESERVES                              7                      *
*           5. STATE NON-GF                          9                      *
*           6. FEDERAL MONEY                        10                      *
*           7. PRIVATE MONEY                         6                      *
*           8. SALES AND SERVICES                   11                      *
*           9. LOCAL FUND                           12                      *
*          10. FEES                                  1                      *
*          11. TUITION                               2                      *
*          12. GENERAL FUND                          3                      *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                    PRESS ENTER TO CONTINUE                                *
*                                                                           *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.85 PSRTDSRC

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                    PERMANENTLY SORT SOURCES                   LEVEL 5    *
*                                                                           *
*                    SORTED LIST OF SOURCES                                 *
*                                                                           *
*               SORTING SCHEME : USER SPECIFIED                             *
*                                                                           *
*                                                                           *
*          1. FEES                        2. TUITION                       *
*                                                                           *
*          3. GENERAL FUND                4. DEBT                          *
*                                                                           *
*          5. OVERHEAD                    6. PRIVATE MONEY                 *
*                                                                           *
*          7. RESERVES                    8. OTHER                         *
*                                                                           *
*          9. STATE NON-GF               10. FEDERAL MONEY                 *
*                                                                           *
*         11. SALES AND SERVICES         12. LOCAL FUND                    *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                    PRESS ENTER TO CONTINUE                                *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.86 PRANKUSE

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                    PERMANENTLY SORT USES                    LEVEL 4       *
*                                                                           *
*                                                                           *
*                    SORTING SCHEME FOR USES                                *
*                                                                           *
*                                                                           *
*                 PF1   DISPLAY CURRENT SORTING SCHEME                      *
*                                                                           *
*                 PF2   ALPHABETICALLY                                      *
*                                                                           *
*                 PF3   DECREASING AMOUNT OF FUNDS                          *
*                                                                           *
*                 PF4   INCREASING AMOUNT OF FUNDS                          *
*                                                                           *
*                 PF5   USER SPECIFIED                                      *
*                                                                           *
*                                                                           *
*                 PF10  QUIT                                                *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                       SELECT PF KEY                                       *
*                                                                           *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.87 PSRTDUSE

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                        PERMANENTLY SORT USES                  LEVEL 5    *
*                                                                           *
*                         SORTED LIST OF USES                               *
*                                                                           *
*                   SORTING SCHEME : ALPHABETICAL                           *
*                                                                           *
*                                                                           *
*            1. AUXILIARIES                  2. CAPITAL OUTLAY              *
*                                                                           *
*            3. E AND G                      4. OTHER                       *
*                                                                           *
*            5. SPONSORED PROGRAMS           6. STUDENT FINANCL ASSI        *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                        PRESS ENTER TO CONTINUE                            *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.88 MAKESURE

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                    MAKE PERMANENT CHANGES                    LEVEL 2      *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*              DO YOU WANT TO SAVE THESE CHANGES ?                          *
*                                                                           *
*                                                                           *
*                                                                           *
*                        PF1   YES                                          *
*                                                                           *
*                        PF10  NO                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                        SELECT PF KEY                                      *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.89 MODWARN

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                          GOAL PROGRAMMING MODEL                LEVEL 2    *
*                                                                           *
*                                                                           *
*                                                                           *
*      NOTICE:  THE GOAL PROGRAMMING MODEL WILL USE THE TEMPORARY DATA CHANGES.  *
*                                                                           *
*               IF NO TEMPORARY DATA CHANGES WERE MADE, PERMANENT DATA WILL *
*                                                                           *
*               BE USED.                                                    *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                          PRESS ENTER TO CONTINUE        PF10  QUIT       *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.90 MODDATA

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                        GOAL PROGRAMMING MODEL                   LEVEL 2  *
*                                                                           *
*                                                                           *
*                                                                           *
*                       NUMBER OF SOURCES :   12                            *
*                                                                           *
*                       NUMBER OF USES    :   6                             *
*                                                                           *
*                       PLANNING PERIOD   :   1 YEAR(S)                     *
*                                                                           *
*                       STARTING YEAR     :   1985-86                       *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                        PRESS ENTER TO CONTINUE        PF10  QUIT         *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.91 MODLOPTN

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                        GOAL PROGRAMMING MODEL                LEVEL 3      *
*                                                                           *
*                                                                           *
*                                                                           *
*                   PF1   LOAD (RELOAD) ORIGINAL GP MODEL                   *
*                                                                           *
*                   PF2   FORM NEW GP MODEL                                 *
*                                                                           *
*                                                                           *
*                   PF10  QUIT                                              *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
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*                                                                           *
*                                                                           *
*                                                                           *
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*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.92 GPMENU

```
*******************************************************************************
*                                                                             *
*                                                                             *
*                          GOAL PROGRAMMING MODEL                 LEVEL 3    *
*                                                                             *
*                                                                             *
*                                                                             *
*                     PF1   VIEW RESULTS OF PREVIOUS MODEL                    *
*                                                                             *
*                     PF2   SELECT/MODIFY RIGID ALLOCATIONS                   *
*                                                                             *
*                     PF3   SELECT/MODIFY GOALS                               *
*                                                                             *
*                     PF4   VIEW CURRENT GOALS/RIGID ALLOCATIONS              *
*                                                                             *
*                     PF5   RUN MODEL                                         *
*                                                                             *
*                                                                             *
*                     PF10  QUIT                                              *
*                                                                             *
*                                                                             *
*                                                                             *
*                                                                             *
*                                                                             *
*                           SELECT PF KEY                                     *
*                                                                             *
*                                                                             *
*                                                                             *
*                                                                             *
*******************************************************************************
```

C.93 RIGIDSAU

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                        GOAL PROGRAMMING MODEL                LEVEL 4      *
*                                                                           *
*                       MAKE SPECIFIED ALLOCATIONS                          *
*                 SOURCES                          USES                     *
*            1. GENERAL FUND                  1. E AND G                   *
*            2. TUITION                       2. CAPITAL OUTLAY            *
*            3. FEES                          3. SPONSORED PROGRAMS        *
*            4. LOCAL FUND                    4. OTHER                     *
*            5. SALES AND SERVICES            5. AUXILIARIES               *
*            6. PRIVATE MONEY                 6. STUDENT FINANCL ASSIS     *
*            7. FEDERAL MONEY                                              *
*            8. STATE NON-GF                                               *
*            9. RESERVES                                                   *
*           10. OTHER                                                      *
*           11. OVERHEAD                                                   *
*           12. DEBT                                                       *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*           SOURCE NUMBER: 3                 USE NUMBER: 2                 *
*                                                                           *
*                        PRESS ENTER TO CONTINUE                            *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.94 RIGIDALL

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                    GOAL PROGRAMMING MODEL                     LEVEL 5     *
*                                                                           *
*                                                                           *
*                    SOURCE NAME: FEES                                      *
*                                                                           *
*                    USE NAME   : CAPITAL OUTLAY                            *
*                                                                           *
*                    YEAR       : 1985-86                                   *
*                                                                           *
*                                                                           *
*                                                                           *
*                      QTR1        QTR2        QTR3        QTR4             *
*                   +-----------+-----------+-----------+-----------+       *
*  AVAILABLE FROM SOURCE:  |  4307     |  7988     |  14063    |  18931    |  *
*                          |           |           |           |           |  *
*  REQUIRED FOR USE     :  |  44667    |  3274     |  2137     |  2884     |  *
*                          |           |           |           |           |  *
*  AMOUNT ALLOCATED     :  |  1000     |           |  1000     |           |  *
*                          +-----------+-----------+-----------+-----------|  *
*                                                                           *
*                                                                           *
*                                                                           *
*                    PRESS ENTER TO CONTINUE                                *
*                                                                           *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.95 GOALMENU

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                        GOAL PROGRAMMING MODEL                LEVEL 4      *
*                                                                           *
*                                                                           *
*                        TYPES OF GOAL                                      *
*                                                                           *
*                                                                           *
*                PF1   ALLOCATE SPECIFIED AMOUNT FROM SOURCE TO USE         *
*                                                                           *
*                PF2   ALLOCATE PERCENTAGE OF A SOURCE TO A USE             *
*                                                                           *
*                PF3   ALLOCATE PERCENTAGE OF A USE FROM A SOURCE           *
*                                                                           *
*                                                                           *
*                PF10  QUIT                                                 *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                              SELECT PF KEY                                *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.96 GOAL1SAU

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                        GOAL PROGRAMMING MODEL                LEVEL 4      *
*                                                                           *
*                      SPECIFIED ALLOCATION GOALS                           *
*              SOURCES                          USES                        *
*          1. GENERAL FUND                  1. E AND G                      *
*          2. TUITION                       2. CAPITAL OUTLAY               *
*          3. FEES                          3. SPONSORED PROGRAMS           *
*          4. LOCAL FUND                    4. OTHER                        *
*          5. SALES AND SERVICES            5. AUXILIARIES                  *
*          6. PRIVATE MONEY                 6. STUDENT FINANCL ASSIS        *
*          7. FEDERAL MONEY                                                 *
*          8. STATE NON-GF                                                  *
*          9. RESERVES                                                      *
*         10. OTHER                                                         *
*         11. OVERHEAD                                                      *
*         12. DEBT                                                          *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*         SOURCE NUMBER: 1                 USE NUMBER: 1                    *
*                                                                           *
*                      PRESS ENTER TO CONTINUE                              *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.97 GOAL2SAU

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                        GOAL PROGRAMMING MODEL                LEVEL 4      *
*                  PERCENTAGE ALLOCATION FROM SOURCE TO USE                 *
*                                                                           *
*                   SOURCES                        USES                    *
*              1. GENERAL FUND                1. E AND G                   *
*              2. TUITION                     2. CAPITAL OUTLAY            *
*              3. FEES                        3. SPONSORED PROGRAMS        *
*              4. LOCAL FUND                  4. OTHER                     *
*              5. SALES AND SERVICES          5. AUXILIARIES               *
*              6. PRIVATE MONEY               6. STUDENT FINANCL ASSIS     *
*              7. FEDERAL MONEY                                            *
*              8. STATE NON-GF                                             *
*              9. RESERVES                                                 *
*             10. OTHER                                                    *
*             11. OVERHEAD                                                 *
*             12. DEBT                                                     *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*             SOURCE NUMBER: 1                USE NUMBER: 1                 *
*                                                                           *
*                          PRESS ENTER TO CONTINUE                          *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.98 GOAL3SAU

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                        GOAL PROGRAMMING MODEL                   LEVEL 4  *
*                 PERCENTAGE ALLOCATION FOR USE FROM SOURCE                 *
*                                                                           *
*                  SOURCES                        USES                      *
*             1. GENERAL FUND                 1. E AND G                    *
*             2. TUITION                      2. CAPITAL OUTLAY             *
*             3. FEES                         3. SPONSORED PROGRAMS         *
*             4. LOCAL FUND                   4. OTHER                      *
*             5. SALES AND SERVICES           5. AUXILIARIES                *
*             6. PRIVATE MONEY                6. STUDENT FINANCL ASSIS      *
*             7. FEDERAL MONEY                                              *
*             8. STATE NON-GF                                               *
*             9. RESERVES                                                   *
*            10. OTHER                                                      *
*            11. OVERHEAD                                                   *
*            12. DEBT                                                       *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*            SOURCE NUMBER: 3                USE NUMBER: 1                  *
*                                                                           *
*                          PRESS ENTER TO CONTINUE                          *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.99 GOAL1

```
*****************************************************************************************
*                                                                                       *
*                                                                                       *
*                                GOAL PROGRAMMING MODEL                                 *
*                                                                                       *
*                  GOAL: ALLOCATE SPECIFIED AMOUNT FROM SOURCE TO USE                   *
*                                                                                       *
*                                SOURCE : GENERAL FUND                                  *
*                                USE    : E AND G                                       *
*                                YEAR   : 1985-86                                       *
*                                                                                       *
*                                  QTR 1        QTR 2        QTR 3        QTR 4        *
*    AVAILABLE FROM SOURCE         84527        0            0            0            *
*    REQUIRED FOR USE              37176        26270        40174        38465        *
*    ALLOCATION TARGET             30000        20000        40000        30000        *
*    DEVIATIONAL TYPE (<,=,>)      >            >            >            >            *
*    PRIORITY                      1            2            3            4            *
*    WEIGHT                        1            1            1            1            *
*                                                                                       *
*    DELETE ?                      N            N            N            N            *
*                                                                                       *
*    AMOUNT TARGETED               30000        20000        40000        30000        *
*    AMOUNT ACHIEVED               30000        0            24527        30000        *
*    ABSOLUTE DEVIATION            0            20000        15473        0            *
*    PERCENTAGE DEVIATION          0.0          100.0        38.7         0.0          *
*                                                                                       *
*                                   PRESS ENTER TO CONTINUE                             *
*                                                                                       *
*                                                                                       *
*****************************************************************************************
```

C.100 GOAL2

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                          GOAL PROGRAMMING MODEL                           *
*                                                                           *
*                GOAL: ALLOCATE PERCENTAGE OF A SOURCE TO A USE             *
*                                                                           *
*                          SOURCE : GENERAL FUND                            *
*                          USE    : E AND G                                 *
*                          YEAR   : 1985-86                                 *
*                                                                           *
*                             FUNDS AVAILABLE         FUNDS REQUIRED        *
*        THIS YEAR                84527                   142085            *
*        CUMMULATIVE              84527                   142085            *
*        TOTAL                    84527                   142085            *
*                                                                           *
*                           PERCENTAGE TO BE ALLOCATED : 50                 *
*                           DEVIATIONAL TYPE (<,=,>)   : >                  *
*                           PRIORITY                   : 4                  *
*                           WEIGHT                     : 1       DELETE ?  N *
*                                                                           *
*                                      PERCENTAGE     $ AMOUNT              *
*                TARGET                :                                    *
*                ACHIEVED              :                                    *
*                ABSOLUTE DEVIATION    :                                    *
*                PERCENTAGE DEVIATION  :                                    *
*                             PRESS ENTER TO CONTINUE                       *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.101 GOAL3

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                          GOAL PROGRAMMING MODEL                           *
*                                                                           *
*                GOAL: ALLOCATE PERCENTAGE OF A USE FROM A SOURCE           *
*                                                                           *
*                          SOURCE : FEES                                    *
*                          USE    : E AND G                                 *
*                          YEAR   : 1985-86                                 *
*                                                                           *
*                             FUNDS AVAILABLE         FUNDS REQUIRED        *
*        THIS YEAR                20931                   142085            *
*        CUMMULATIVE              20931                   142085            *
*        TOTAL                    20931                   142085            *
*                                                                           *
*                           PERCENTAGE TO BE ALLOCATED : 20                 *
*                           DEVIATIONAL TYPE (<,=,>)   : >                  *
*                           PRIORITY                   : 5                  *
*                           WEIGHT                     : 1       DELETE ?  N *
*                                                                           *
*                                      PERCENTAGE     $ AMOUNT              *
*                TARGET                :                                    *
*                ACHIEVED              :                                    *
*                ABSOLUTE DEVIATION    :                                    *
*                PERCENTAGE DEVIATION  :                                    *
*                             PRESS ENTER TO CONTINUE                       *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.102 VUGOALS

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                    GOAL PROGRAMMING MODEL                    LEVEL 4      *
*                                                                           *
*                VIEW CURRENT GOALS/RIGID ALLOCATIONS                       *
*                                                                           *
*                                                                           *
*                PF1   RIGID ALLOCATIONS (SORTED BY SOURCE)                 *
*                                                                           *
*                PF2   RIGID ALLOCATIONS (SORTED BY USE)                    *
*                                                                           *
*                PF3   GOAL TYPE 1 : SPECIFIC ALLOCATIONS                   *
*                                                                           *
*                PF4   GOAL TYPE 2 : PERCENTAGE OF SOURCE TO USE            *
*                                                                           *
*                PF5   GOAL TYPE 3 : PERCENTAGE OF USE FROM SOURCE          *
*                                                                           *
*                PF6   ALL GOALS   : BY PRIORITY                            *
*                                                                           *
*                PF7   PRINT ALL THESE REPORTS                              *
*                                                                           *
*                                                                           *
*                PF10  QUIT                                                 *
*                                                                           *
*                                                                           *
*                       SELECT PF KEY                                       *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.103 VURIGIDS

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                    VIEW GP MODEL'S GOALS/RIGID ALLOCATIONS                *
*                                                                           *
*                        RIGID ALLOCATIONS (BY SOURCE)                      *
*                                                                           *
*          SOURCE                 USE                 YR/QTR       AMOUNT   *
*     1.   FEES                 CAPITAL OUTLAY         1/1           1000   *
*     2.   FEES                 CAPITAL OUTLAY         1/3           1000   *
*     3.   OVERHEAD             E AND G                1/1          30000   *
*     4.   OVERHEAD             E AND G                1/2          20000   *
*     5.   OVERHEAD             E AND G                1/3          40000   *
*     6.   OVERHEAD             E AND G                1/4          30000   *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                  PF7  BACKWARD        PF8  FORWARD       PF10  QUIT       *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.104 VURIGIDU

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                    VIEW GP MODEL'S GOALS/RIGID ALLOCATIONS                *
*                                                                           *
*                          RIGID ALLOCATIONS (BY USE)                       *
*                                                                           *
*          SOURCE                 USE                 YR/QTR       AMOUNT   *
*     1.   OVERHEAD               E AND G              1/1          30000   *
*     2.   OVERHEAD               E AND G              1/2          20000   *
*     3.   OVERHEAD               E AND G              1/3          40000   *
*     4.   OVERHEAD               E AND G              1/4          30000   *
*     5.   FEES                   CAPITAL OUTLAY       1/1           1000   *
*     6.   FEES                   CAPITAL OUTLAY       1/3           1000   *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                    PF7  BACKWARD        PF8  FORWARD       PF10  QUIT    *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.105 VUGOAL1

```
*****************************************************************************************
*                                                                                       *
*                                                                                       *
*                        VIEW GP MODEL'S GOALS/RIGID ALLOCATIONS                        *
*                                                                                       *
*                             GOAL 1 : SPECIFIC ALLOCATION                              *
*                                                                                       *
*              SOURCE                 USE            YR/QTR   AMOUNT   TYPE   PR   WT   *
*     1.   GENERAL FUND          E AND G             1/1      30000    >      1    1   *
*     2.   GENERAL FUND          E AND G             1/2      20000    >      2    1   *
*     3.   GENERAL FUND          E AND G             1/3      40000    >      3    1   *
*     4.   GENERAL FUND          E AND G             1/4      30000    >      4    1   *
*                                                                                       *
*                                                                                       *
*                                                                                       *
*                                                                                       *
*                                                                                       *
*                                                                                       *
*                                                                                       *
*                                                                                       *
*                                                                                       *
*                                                                                       *
*                                                                                       *
*                                                                                       *
*                       PF7  BACKWARD        PF8  FORWARD       PF10  QUIT             *
*                                                                                       *
*                                                                                       *
*****************************************************************************************
```

C.106 VUGOAL2

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                    VIEW GP MODEL'S GOALS/RIGID ALLOCATIONS                *
*                                                                           *
*                GOAL 2 : ALLOCATE PERCENTAGE OF SOURCE TO USE              *
*                                                                           *
*            SOURCE                USE              YEAR    PERCENT  TYPE  PR   WT  *
*     1.   GENERAL FUND          E AND G             1       50.00    >     4    1  *
*     2.   LOCAL FUND            SPONSORED PROGRAMS  1       35.00    =     4    1  *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                  PF7  BACKWARD        PF8  FORWARD       PF10  QUIT       *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.107 VUGOAL3

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                    VIEW GP MODEL'S GOALS/RIGID ALLOCATIONS                *
*                                                                           *
*              GOAL 3 : ALLOCATE PERCENTAGE OF USE FROM SOURCE              *
*                                                                           *
*          SOURCE              USE            YEAR    PERCENT  TYPE   PR   WT  *
*    1.    FEES              E AND G          1       20.00    >      5    1  *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                  PF7  BACKWARD       PF8  FORWARD       PF10  QUIT        *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.108 VUALLGLS

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                    VIEW GP MODEL'S GOALS/RIGID ALLOCATIONS                *
*                                                                           *
*                          ALL GOALS : BY PRIORITY                          *
*                                                                           *
*        GT      SOURCE            USE            YR/QTR   TARGET   TYPE   PR   WT   *
*     1. 1  GENERAL FUND        E AND G            1/1         0    >      1    1   *
*     2. 1  GENERAL FUND        E AND G            1/2         0    >      2    1   *
*     3. 1  GENERAL FUND        E AND G            1/3         0    >      3    1   *
*     4. 1  GENERAL FUND        E AND G            1/4         0    >      4    1   *
*     5. 2  GENERAL FUND        E AND G            1       50.00    >      4    1   *
*     6. 2  LOCAL FUND          SPONSORED PROGRAMS 1       35.00    =      4    1   *
*     7. 3  FEES                E AND G            1       20.00    >      5    1   *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                  PF7  BACKWARD        PF8  FORWARD       PF10  QUIT       *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.109 GOALACHV

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                    GOAL PROGRAMMING MODEL                    LEVEL 4      *
*                                                                           *
*                                                                           *
*                VIEW GOAL ACHIEVEMENT REPORTS                              *
*                                                                           *
*                                                                           *
*                                                                           *
*                PF1   GOAL TYPE 1 : SPECIFIC ALLOCATIONS                   *
*                                                                           *
*                PF2   GOAL TYPE 2 : PERCENTAGE OF SOURCE TO USE            *
*                                                                           *
*                PF3   GOAL TYPE 3 : PERCENTAGE OF USE FROM SOURCE          *
*                                                                           *
*                PF4   ALL GOALS : BY PRIORITY                              *
*                                                                           *
*                PF5   PRINT ALL THESE REPORTS                              *
*                                                                           *
*                                                                           *
*                PF10  QUIT                                                 *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                       SELECT PF KEY                                       *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.110 GACHMNT1

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                          GOAL ACHIEVEMENTS                                *
*                                                                           *
*                       GOAL 1 : SPECIFIC ALLOCATION                        *
*                                                                           *
*        SOURCE          USE          YR/QT TY PR WT TARGET ACHVED ABS-DEV %-DEV  *
*   1. GENERAL FUND    E AND G         1/1   >  1  1  30000  30000       0   0.0  *
*   2. GENERAL FUND    E AND G         1/2   >  2  1  20000  20000       0   0.0  *
*   3. GENERAL FUND    E AND G         1/3   >  3  1  40000   4527   35473  88.7  *
*   4. GENERAL FUND    E AND G         1/4   >  4  1  30000  30000       0   0.0  *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                   PF7  BACKWARD       PF8  FORWARD       PF10  QUIT       *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.111 GACHMNT2

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*****************************************************************************
*                                                                           *
*                                                                           *
*                          GOAL ACHIEVEMENTS                                *
*                GOAL 2 : ALLOCATE PERCENTAGE OF SOURCE TO USE              *
*                                                                           *
*                                        TARGET     ACHIEVED     ABS DEVTN  PRCNT  *
*       SOURCE      USE    YR TY PR WT DOLLAR/PRCNT DOLLAR/PRCNT DOLLAR/PRCNT DEVTN  *
*   1. GENERAL F E AND G   1  >  4  1  42263/ 50.0  84527/100.0      0/  0.0   0.0  *
*   2. LOCAL FUN SPONSORED 1  =  4  1   5734/ 35.0      0/  0.0   5734/ 35.0 100.0  *
*                                                                           *
*                                                                           *
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*                   PF7  BACKWARD        PF8  FORWARD       PF10  QUIT      *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.112 GACHMNT3

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                          GOAL ACHIEVEMENTS                                *
*                GOAL 3 : ALLOCATE PERCENTAGE OF USE FROM SOURCE            *
*                                                                           *
*                                        TARGET     ACHIEVED     ABS DEVTN  PRCNT  *
*       SOURCE     USE    YR TY PR WT DOLLAR/PRCNT DOLLAR/PRCNT DOLLAR/PRCNT DEVTN  *
*   1. FEES      E AND G   1  >  5  1  28417/ 20.0  18931/ 13.3   9486/  6.7  33.4  *
*                                                                           *
*                                                                           *
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*                                                                           *
*                                                                           *
*                   PF7  BACKWARD        PF8  FORWARD       PF10  QUIT      *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.113 GAALLGLS

```
*****************************************************************************************
*                                                                                       *
*                                                                                       *
*                                GOAL ACHIEVEMENTS                                      *
*                              ALL GOALS : BY PRIORITY                                  *
*                                                                                       *
*                                          TARGET     ACHIEVED     ABS DEVTN  PRCNT     *
*      GT  SOURCE   USE   Y/Q TY PR WT DOLLAR/PRCNT DOLLAR/PRCNT DOLLAR/PRCNT DEVTN    *
*    1. 1 GENERAL E AND G 1/1  >  1  1  30000        30000            0         0.0    *
*    2. 1 GENERAL E AND G 1/2  >  2  1  20000        20000            0         0.0    *
*    3. 1 GENERAL E AND G 1/3  >  3  1  40000         4527        35473        88.7    *
*    4. 1 GENERAL E AND G 1/4  >  4  1  30000        30000            0         0.0    *
*    5. 2 GENERAL E AND G 1    >  4  1  42263/ 50.0  84527/100.0      0/  0.0   0.0    *
*    6. 2 LOCAL F SPONSOR 1    =  4  1   5734/ 35.0      0/  0.0   5734/ 35.0 100.0    *
*    7. 3 FEES    E AND G 1    >  5  1  28417/ 20.0  18931/ 13.3   9486/  6.7  33.4    *
*                                                                                       *
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*                     PF7  BACKWARD        PF8  FORWARD       PF10  QUIT               *
*                                                                                       *
*                                                                                       *
*****************************************************************************************
```

C.114 PERMMODL

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*****************************************************************************
*                                                                           *
*                                                                           *
*                          GOAL PROGRAMMING MODEL                LEVEL 3    *
*                                                                           *
*                                                                           *
*                                                                           *
*          DO YOU WISH TO STORE THE CURRENT MODEL AS THE                    *
*                                                                           *
*          ORIGINAL/PERMANENT MODEL? (ENTER Y/N)          N                 *
*                                                                           *
*                                                                           *
*                                                                           *
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*                                                                           *
*                                                                           *
*                                                                           *
*                          PRESS ENTER TO CONTINUE                          *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*****************************************************************************
```

C.115 QUITMODL

```
*****************************************************************************
*                                                                           *
*                                                                           *
*                        FUND SOURCES AND USES MODEL                        *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*              WARNING: YOU ARE ABOUT TO LEAVE THE SANDU MODEL.             *
*                                                                           *
*                                                                           *
*                                                                           *
*                        PF1   RETURN TO SANDU MODEL                        *
*                                                                           *
*                        PF10  LEAVE MODEL                                  *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                              SELECT PF KEY                                *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*                                                                           *
*****************************************************************************
```

The vita has been removed from the scanned document