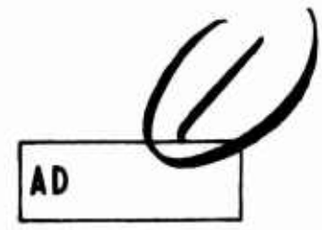
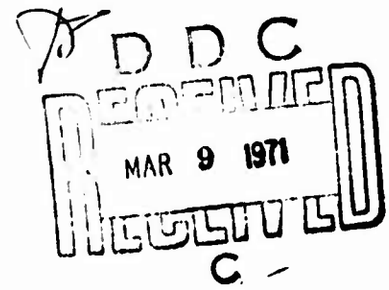
Technical Research Report 1162



SIMPO-I CAREER-NONCAREER MODEL

Robert L. McMullen

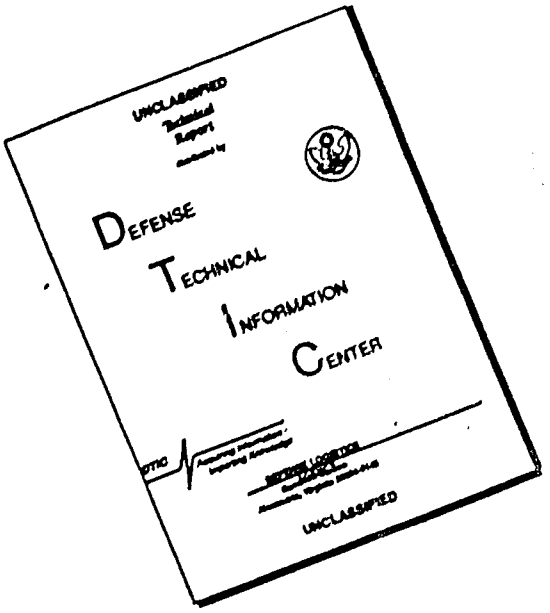
STATISTICAL RESEARCH AND ANALYSIS DIVISION



Behavior and Systems Research Laboratory
Office of the Chief of Research and Development
U. S. Army

June 1970

DISCLAIMER NOTICE

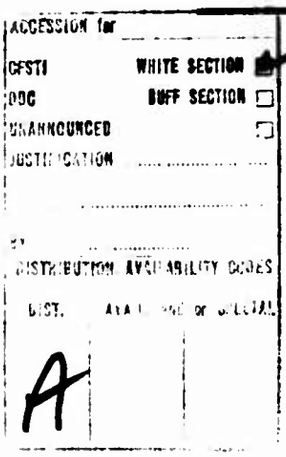


THIS DOCUMENT IS BEST QUALITY AVAILABLE. THE COPY FURNISHED TO DTIC CONTAINED A SIGNIFICANT NUMBER OF PAGES WHICH DO NOT REPRODUCE LEGIBLY.

BEHAVIOR AND SYSTEMS RESEARCH LABORATORY

An activity of the Chief, Research and Development

J. E. UHLANER
Director



NOTICES

DISTRIBUTION: Primary distribution of this report has been made by BESRL. Please address correspondence concerning distribution of reports to: Behavior and Systems Research Laboratory, Attn: CRDMRC/BESRL, Room 239, Commonwealth Building, 1320 Wilson Blvd., Arlington, Virginia 22209.

FINAL DISPOSITION: This report may be destroyed when it is no longer needed. Please do not return it to the Behavior and Systems Research Laboratory.

NOTE: The findings in this report are not to be construed as an official Department of the Army position, unless so designated by other authorized documents.

Technical Research Report 1162

AD

SIMPO-I CAREER-NONCAREER MODEL

Robert L. McMullen

STATISTICAL RESEARCH AND ANALYSIS DIVISION
Cecil D. Johnson, Chief

BEHAVIOR AND SYSTEMS RESEARCH LABORATORY

Office, Chief of Research and Development
Department of the Army

Room 239, The Commonwealth Building
1320 Wilson Boulevard, Arlington, Virginia 22209

June 1970

Army Project Number
2Q065101M711

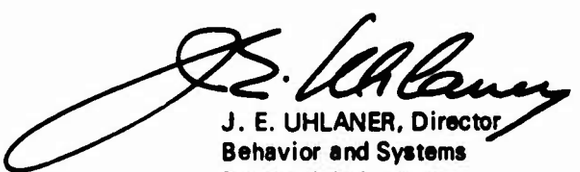
SIM d-11

BESRL Technical Research Reports and Technical Research Notes are intended for sponsors of R&D tasks and other research and military agencies. Any findings ready for implementation at the time of publication are presented in the latter part of the Brief. Upon completion of a major phase of the task, formal recommendations for official action normally are conveyed to appropriate military agencies by briefing or Disposition Form.

FOREWORD

The BESRL Work Unit, "Computerized Models for the Simulation of Policies and Operations of the Personnel Subsystem--SIMPO-I," is conducted by the Statistical Research and Analysis Division. The task constitutes the initial undertaking of an operations research requirement described in the Army Master Study Program under the title, "A Simulation Model of Personnel Operations (SIMPO)" and is Project 2Q065101M711, "Army Operations and Intelligence Analysis," under the auspices of the Army Study Advisory Committee. Sub-Work Units include: a) Operational Analysis of Personnel Subsystems; b) Cataloging and Integration of Existing Manpower Models; c) Development of Measures of System Effectiveness; d) Development of Modeling Techniques; e) Design and Programming of SIMPO-I; f) Application and Evaluation of Computerized Models; and g) Problem Oriented Language for Management.

The present Technical Research Report deals with the development and user application phases of a model of the career and noncareer phases of the Army personnel system. The Career-Noncareer Model contains many user options, requires little computer time, and adapts to many subsystems. The publication describes the systems simulated and the model logic. Instructions for model use, a listing and explanation of the logic of computer programs for the model, and example applications are provided.



J. E. UHLANER, Director
Behavior and Systems
Research Laboratory

SIMPO-I CAREER-NONCAREER MODEL

BRIEF

Requirement:

To develop a versatile model of the short tour and sustaining base areas which can be used to evaluate rotation problems under a variety of policy conditions.

Research Product:

A specialized mass-flow model of the career and noncareer segments of the Army personnel system that can be used to evaluate policies on training input, reassignment, manning levels, or utilization of manpower. Many user options are available, computer running time is relatively short (about 3 minutes for a 48-month projection), and reconsideration of an established data base is easy to accomplish.

Utilization:

The model has been used to study policies concerning the reenlistment of WACs for the Enlisted Personnel Directorate of the Office of Personnel Operations (OPO); to study sequential overseas assignments for officers for the Officer Personnel Directorate of OPO; to study phasedown problems for the Capabilities and Analysis Division (CAD) of the Office of the Deputy Chief of Staff for Personnel (ODCSPER); and to study a variety of problems connected with the Army Aviator System for the Executive for Army Aviation of OPO, CAD, the Aviation Branch of the Directorate of Individual Training of ODCSPER, the Deputy Undersecretary of the Army for Operations Research, and the Office of the Undersecretary of Defense for Systems Analysis.

SIMPO-I CAREER-NONCAREER MODEL

CONTENTS

FIGURES

SIMPO-I CAREER-NONCAREER MODEL

A continuing problem of Army management is the determination of manpower requirements needed to maintain a balanced system. The objective is not merely to fill vacancies and replace losses. Force commitments must be satisfied in many parts of the world, and to support these commitments a manpower base must be maintained such that the commitments can be met without falling back on undesirable rotation policies. An acceptable ratio of experienced versus inexperienced personnel must be maintained in combat tours. The reassignment procedure must provide for changes in short tour requirements.

The difficulty of arriving at adequate estimates of manpower requirements under a wide variety of constraints--sometimes inconsistent--has led to efforts to apply available technology in developing more efficient methods of dealing with manpower distribution problems. An alternative to the "manual" procedure is to develop a computer model that reflects the basic assignment procedures while allowing flexibility in the model for varying parameters such as assignment priorities, loss and retention rates, training output, and short tour quotas.

The Simulation Model of Personnel Operations Work Unit of the Behavior and Systems Research Laboratory has had two main approaches to the evaluation of alternative manpower policies: entity models and mass flow models. The entity models keep track of each individual or "entity" and his specific characteristics. His movement through the system is determined by matching his characteristics against system requirements. The mass flow models deal with groups of people having one or more characteristics that distinguish them from persons in other groups. Movement in the system is by group or parts of a group according to rules that govern the personnel flow.

The mass flow models are of two kinds, general purpose and special purpose. The general purpose models allow greater flexibility in number and type of tours and in the rules governing flow of personnel. The price for this greater flexibility is longer computer running time. The special purpose models, while dealing with a more specific problem, are much more efficient in the use of computer time, either allowing faster turn-around time in responding to problems posed by users of the models or the evaluation of more alternatives.

STATEMENT OF THE PROBLEM

The first stage in developing a model is the analysis of the personnel system of concern. Army personnel can be classified by such characteristics as type of enlistment (2-year or 3-year noncareer commitment and career status), number of overseas tours, current location

(continental U. S. or overseas), and number of months in present tour or MOS. There are policies such as the minimum allowable number of months and the desirable number of months in the base tour, the order in which personnel are picked for short tour assignment, the ratio of experienced versus inexperienced among those assigned to short tour, and promotion rates. There are temporary and permanent loss rates for the short tour.

Once these basic characteristics are determined, a decision must be made on which ones are to be included in the model. In the interest of running economy, some of the detail may have to be left out. (For example, it was decided not to try to distinguish between the many MOS.) In making such decisions, there are two things to consider: the information the program should produce and how long it takes to produce it. A specific characteristic may not be included because it has little bearing on the desired output--or so little significance that the increase in running time incurred would be out of proportion. It may not be economical to consider separately certain attributes of individuals when these attributes can be combined with others that have a common effect with respect to simulation results. An example of this is a miscellaneous loss factor for the noncareer base tour personnel, which can include anything from accidental death to court martial. Another attribute that was incorporated in a manner to effect a compromise between running time and simulator detail was time-in-system. For the 2- and 3-year commitment personnel, it is necessary to keep track of their time in service, by month, in order to know when they will reach their ETS. For the career personnel, a record of the time remaining before the end of their current term of service is less critical and therefore is not maintained.

The model described in the present Research Report covers the career and noncareer elements of the personnel system and is designed as a vehicle for studying rotation between a combat short tour and a sustaining base.

SYSTEM ANALYSIS

Requirements for modeling the system are indicated by the following system analysis. Basically, there are two groups of persons, those in the base tour and those in the short tour. Each of these groups is split between career and noncareer personnel. The noncareer base tour is made up to two main subgroups, the 2-year and the 3-year commitment personnel. Each subgroup has personnel who have not been to a short tour and those who have returned from a short tour. Both the 2-year and 3-year groups have a corresponding group in the short tour area. The career base tour group is split into 5 subgroups: those with zero, one, two, three or more short tours, and a permanently nondeployable subgroup. Correspondingly, the career short tour group has 4 subgroups: those on their first, second, third, or subsequent short tour assignment.

Renewal of the system is provided by input of new persons. The new input may be inductees or enlistees or school output depending on the system being modeled. This input to the system feeds the noncareer subsystem and is split proportionally between the 2-year and the 3-year commitment groups. Losses to the system fall into several categories. The primary loss to the noncareer system is made up of those who have completed their enlistment or commitment. A portion of these elect to remain in service and constitute input to the career part of the model. Other loss groups in the model represent permanent casualties from all short tour groups, miscellaneous losses from the career system, and miscellaneous losses from the noncareer base tour group. Miscellaneous losses to the career system are usually considered as including those being promoted to a rank above the ranks simulated in the model.

The movement or lack of movement between groups is specified by certain rules or policies. Some policies specify absolute limitations and others specify desirable limitations which can be relaxed if necessary to meet requirements. Absolute limitations include number of months an individual may be in a stabilized base tour. In the case of personnel available for short tour, those with no previous short tour will be sent before those with a previous short tour, and those with one previous short tour will be sent before those with two short tours. Noncareer personnel may not be sent to a short tour unless they have at least 6 months service remaining. An example of a desirable--but not mandatory--policy is allowing twenty-five months in the base tour between short tours. The monthly short tour manning level is another example of a desirable requirement that may or may not be met. The policy that specifies the mix or proportion of experienced versus inexperienced personnel sent to short tour may fall into either category. At one time, the requirement may be specified as an exact percentage that cannot be varied; at other times, the percentage may be allowed to vary. Input to the system may also be either stipulated or allowed to fluctuate in response to system requirements. The upper limit on the system total may also be either fixed or free to fluctuate.

In addition to policy constraints, there are various rates and percentages that must be provided as input to the model: the various loss rates mentioned earlier, the percentage of personnel retained from the noncareer system for the career system, the percentage of new versus experienced personnel sent to short tour, and the percentage of temporarily and permanently nondeployables. The number of months in the base tour before assignment to short tour is a fixed constraint that must be provided as input.

MODEL DEVELOPMENT

Although many other factors are involved in a personnel system, the aspects described above, if properly integrated, will provide a useful abstraction of the Army rotation system. Additional aspects of the system can then be added to the model as their importance becomes apparent.

Figure 1 shows the basic concepts of the mass flow model. First, there are nodes and arcs. The large circles indicate collections of personnel having one or more common attributes. These personnel are moved from one node to another along the arcs connecting the nodes. This flow also occurs in the form of several nodes feeding a single node through a point node. If the model does not represent a closed system, input to the system can be provided by one or more source nodes, and losses from the system flow to one or more sink nodes. The arcs connecting source nodes to the system flow only into the system; the arcs to the sink nodes flow only out of the system.

Both arcs and nodes may be capacitated or noncapacitated. A capacitated arc can be visualized as a pipe of specific diameter that allows a limited flow while a capacitated node is a bucket that has a limit on what it can hold and/or a limit on how far it can be emptied. The noncapacitated nodes and arcs have no limit other than those imposed by connecting parts of the flow model. An example of a capacitated node with an upper limit is an authorized short tour manning level. The model is allowed to fill up to the quota but no more. A node with a lower duration limit is a base node representing personnel with a minimum length of time in tour, such as 18 months. A capacitated arc could be a requirement that 25 percent of the total flow to short tour be along the arc connecting the career base node to the career short tour node.

Nodes may be represented in several ways (Figure 2). The point node is a decision point at which flow is separated, aggregated--or both--with the possibility of assigning limits or ratios to control the flow to or from each connecting arc. The simplest node where entities are stored is a pool node. All members of a group located at such a node have the same characteristics, such as not being deployable. The next type, the vector node, keeps track of another attribute, usually time in node. If the vector node represents a tour of duty and each cell represents a month, then the first cell contains personnel in the first month of the tour of duty, the second cell those in the second month, etc., up to n-months. For each time increment during a simulation (i.e., for each succeeding month that the model represents during a simulation), cell members are shifted one cell to the right, up to n-months representing the end of the tour. Those shifted right from the nth cell are moved via the connecting arcs to a sink node, a pool node, or the appropriate cell of a vector or matrix node.

The matrix node allows representation of an additional attribute such as total time of commitment since entering the service. It can be considered as a set of vectors where each vector keeps track of time in tour and each succeeding vector represents an additional month in service. For each successive month, the personnel are shifted to an adjacent cell, one cell to the right to represent added time in tour, and down one cell for added time in system.

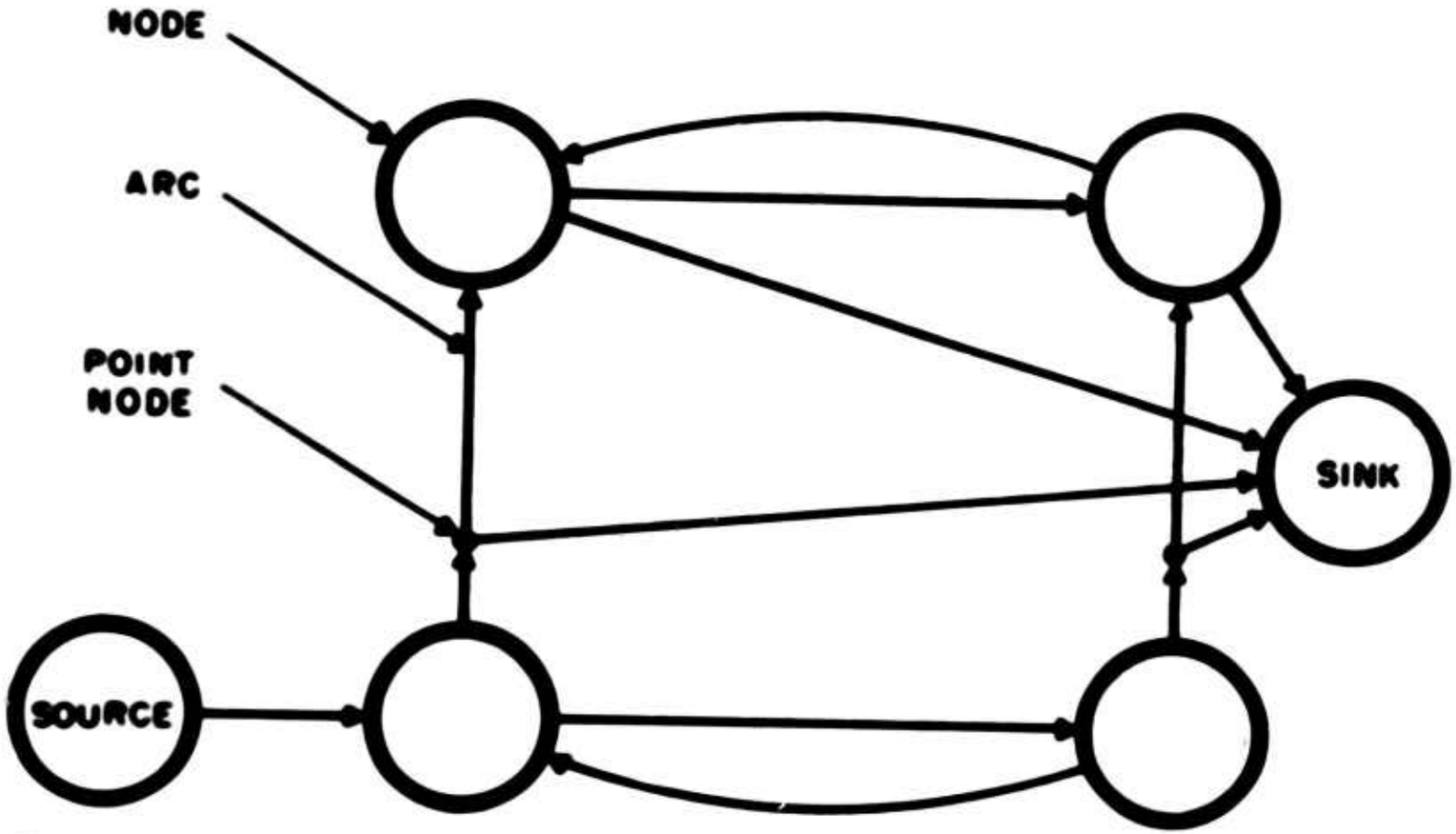


Figure 1. Basic concepts of the mass flow model

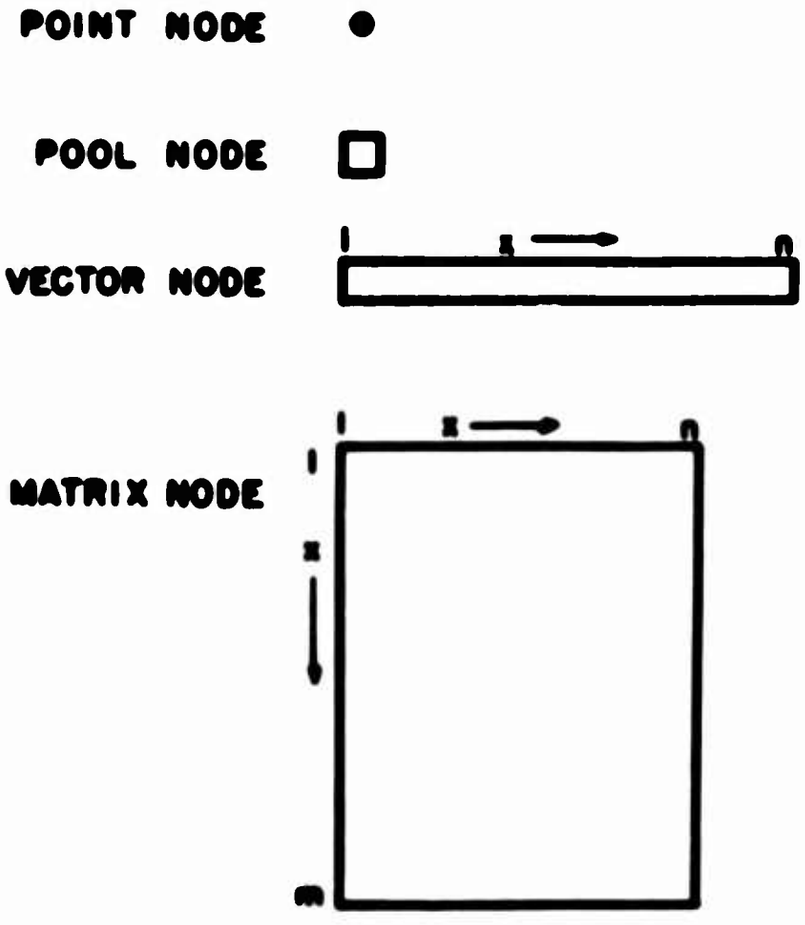


Figure 2. Types of nodes

In the Career-Manpower Model, a combination of nodes and arcs depicts the various categories of personnel and the specific flow patterns required of persons in the system. Figure 3 shows the nodes. For enlisted personnel with a 2-year or 3-year obligation, a record of time in system as well as time in tour is maintained and matrix nodes are required to represent their tours. In addition, there is a vector node for personnel who have not had a short tour, since time in tour is equal to time in system at this point in their career.

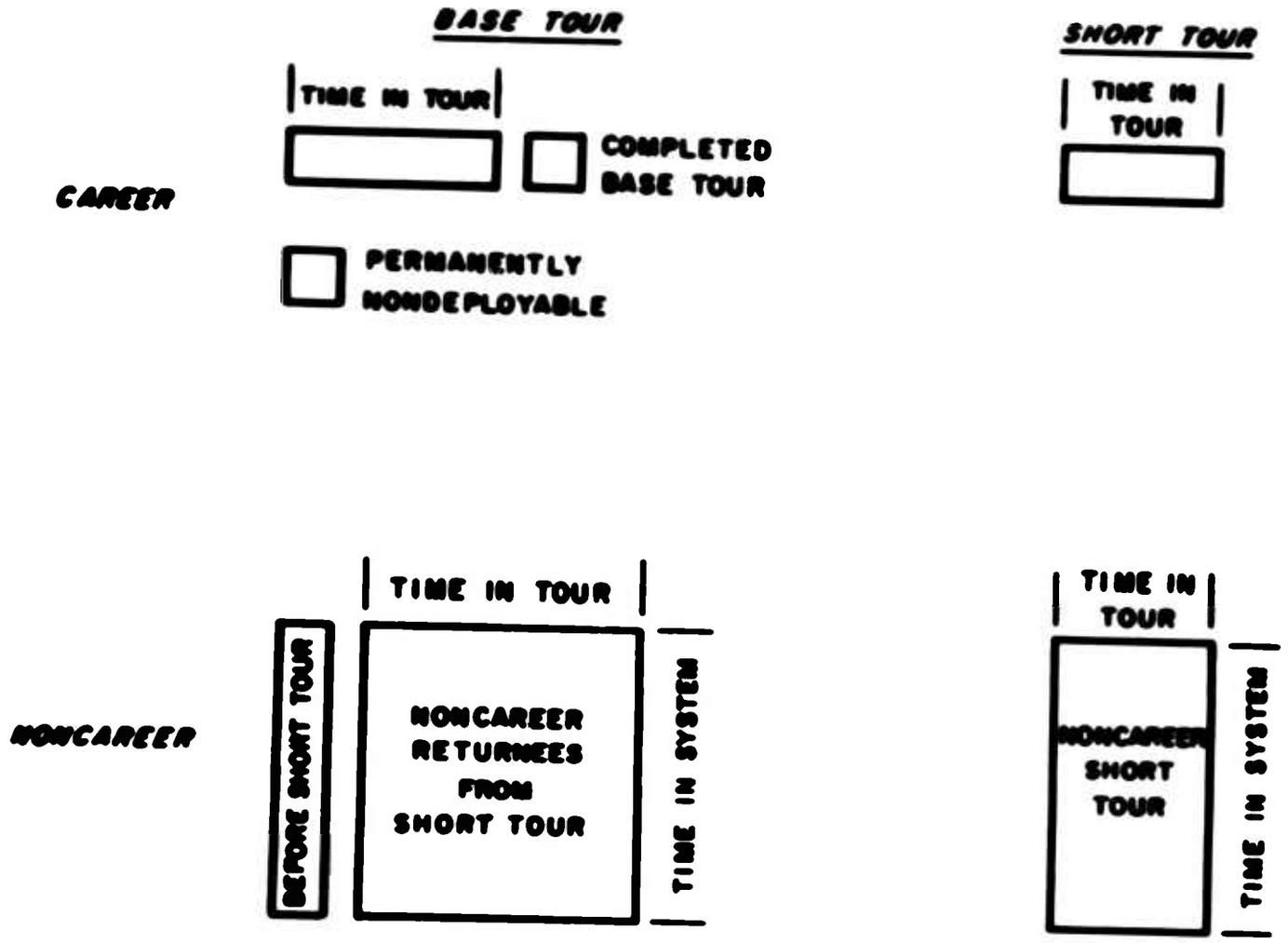


Figure 3. Types of occupied nodes used by model

In the case of career personnel in the base tour, a pool node represents permanently nondeployable personnel. Desirable base tour length is represented by a pool cell at the end for those who have completed a base tour. Time since the last reenlistment is not required for career personnel, and this attribute is therefore not depicted. However, the number of short tours served is an important consideration because it has an effect on the network flow. The tour history of aggregated individuals in this kind of model can be shown only by having those with different tour histories at different nodes. Therefore, several different vector nodes are used to represent the short tours, one for each group that has been in short tour a given number of times (Figure 4). In this case, histories of having had 0, 1, 2, and 3+ tours are indicated in the base tour by 4 separate vector nodes, and histories of 1 through 4 tours, including the current tour, are shown in the short tour area by the 4 vector nodes. The other vector and matrix nodes, including the matrices for both the 24-month and 36-month noncareer commitments and the corresponding vectors (24 and 36 months, respectively) for noncareer personnel without short tour, are also shown.

For simplification, Figure 5 shows these various categories as single nodes. The career personnel are represented by four vector and four pool nodes in the base tour and four vector nodes in the short tour, and the two kinds of noncareer personnel are represented by a combination of a vector and a matrix in the base tour and by a matrix in the short tour. Two source nodes and four sink nodes are also shown. The arcs shown indicate the input flow and the rotational flow between base and short tour nodes.

Two sources of input to the model are indicated. The primary input is that specified by the user as the authorized or expected procurement rate; the second is an optimal source that provides additional personnel needed to meet a requirement not filled by the primary source. The inputs provide one example in which the flow is split proportionally at a point node between the two arcs which feed the A and B nodes.

Two arcs are shown returning from each of the short tour nodes. One is for personnel completing the short tour, the other for early returnees or temporary casualties. Note that the flow in the first arc all comes from the last cell in the vector, and the flow in the second arc represents a proportion of the contents of all cells in the vector. A point node in the arc supplying the career short tour permits setting aside a percentage of permanently nondeployable personnel.

Several arcs lead to the four sinks, representing types of losses to the system. Figure 6 shows how the sink nodes are connected to the system nodes. The career loss arcs cover losses due to promotion, retirements, etc. In the aviator application of the model, which simulates the cockpit aviators, promotion from major to lieutenant colonel moves the personnel to the sink representing promotion losses. The miscellaneous loss node for noncareer base nodes covers the small attrition due to accident, removal from the service, etc. Killed in action (KIA) and expiration of term of service (ETS) are self-explanatory.

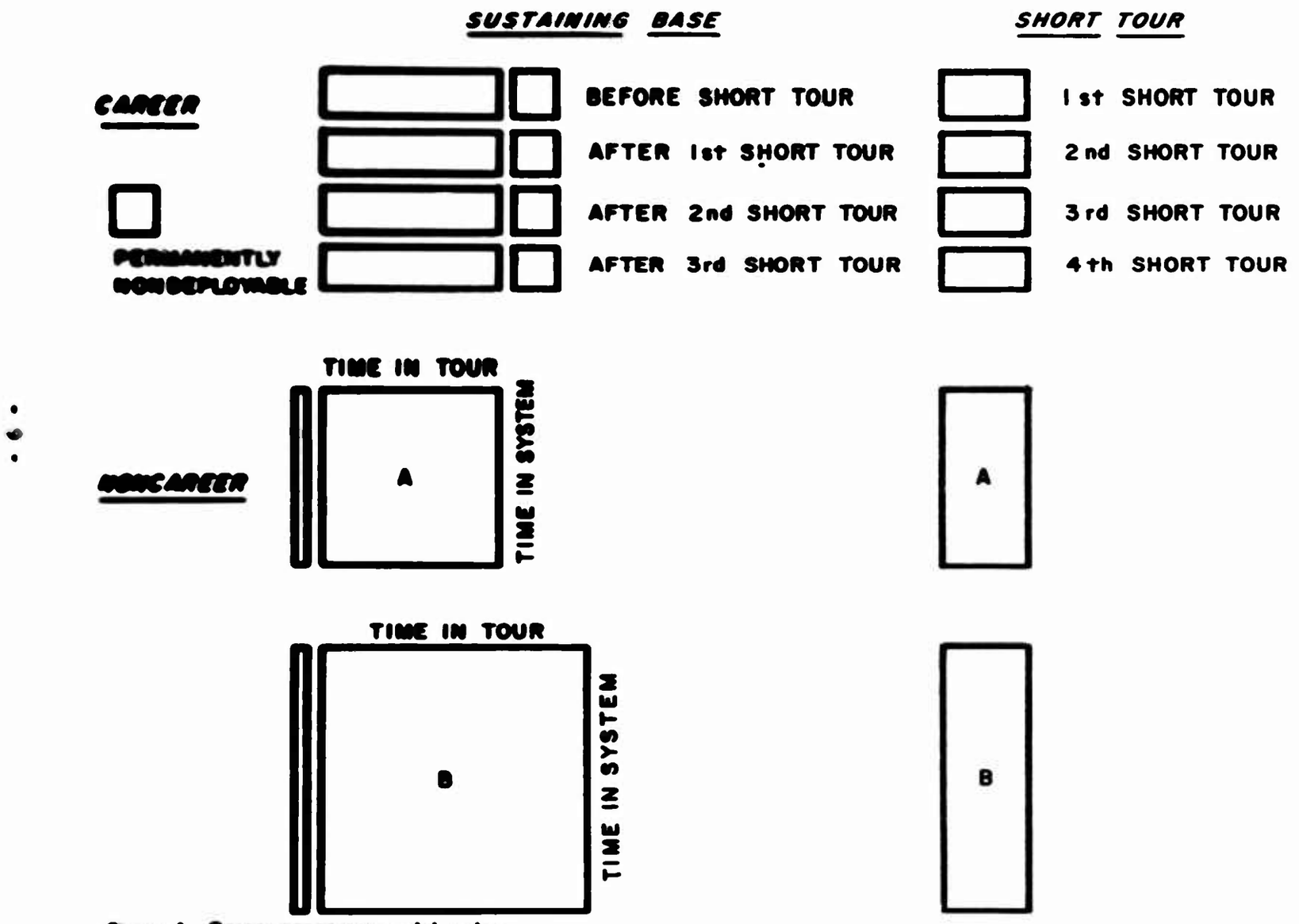


Figure 6. Career-noncareer model nodes

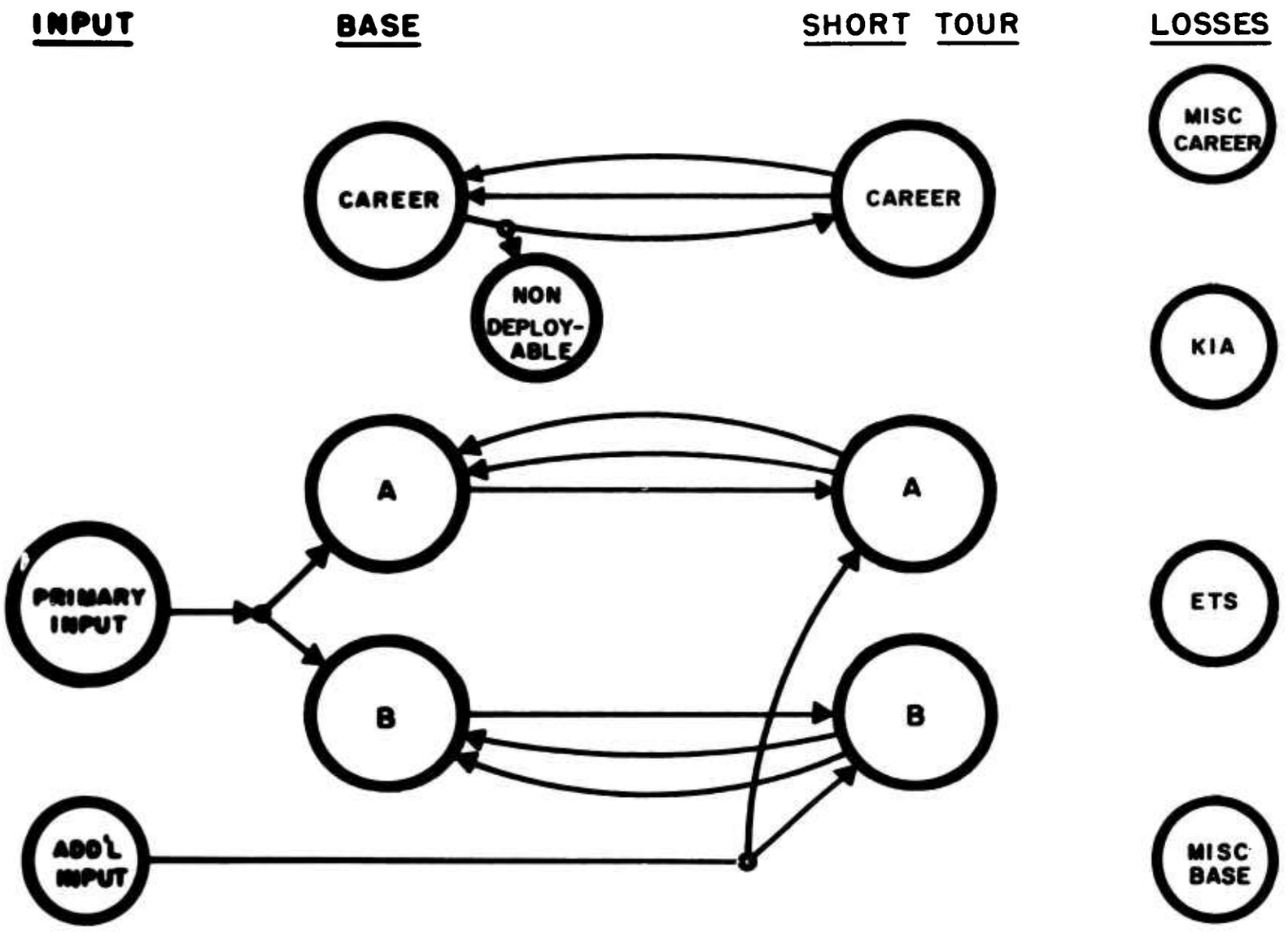


Figure 5. Input and initial flow patterns

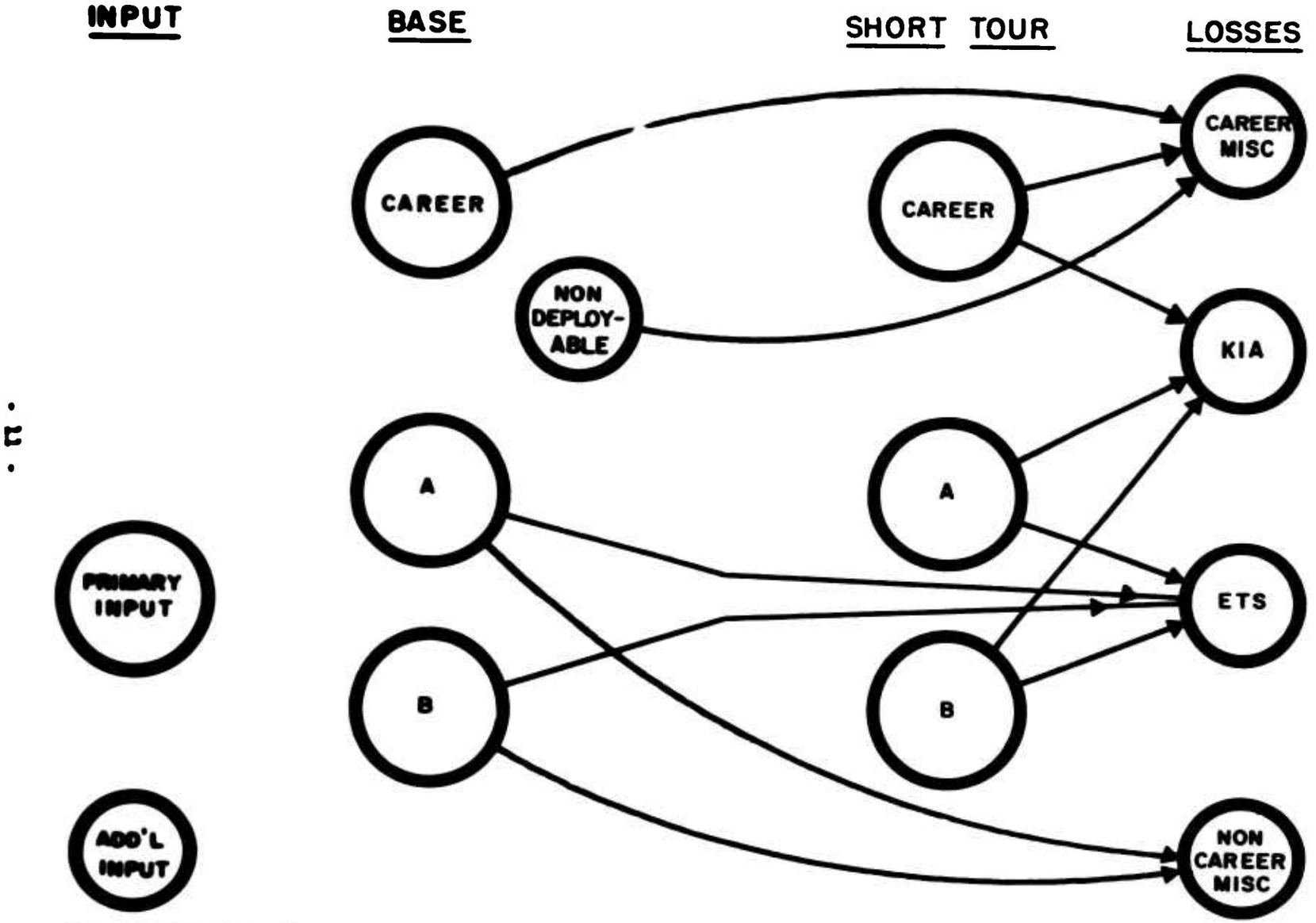


Figure 8. Model loss flows

Figure 7 shows sources of input to the system. Since a percentage of the noncareer personnel reaching their ETS date elect to continue service, point nodes are inserted in all arcs feeding the ETS node. These point nodes select out a percentage for retentions in the career system. Additional point nodes in the arcs feeding the career base nodes select out a portion for the permanently nondeployable node. Retainees in short tour who have not completed the short tour go to the appropriate month of the career short tour to complete the tour. Retainees who complete their short tour by their ETS date are returned to the career base node.

In the case of a policy that prescribes a stabilized base tour of 18 months, personnel could be taken from the cells representing 19 months or more from the beginning of the tour. The policy of sending to short tour those who have been in base tour the longest means, in the case of the career group, that those who have completed their base tour are taken first. Then, starting in the last cell of the tour vector, personnel are drawn from successive cells, moving in the direction of fewer months in tour until either the number of men needed is found or the cell representing the minimum required number of months in the base tour is reached (i.e., the stabilized tour length). Since personnel with fewer short tours are sent first, the search pattern in the career base tours (Figure 4) is as follows: the first two pool nodes for completed base tour are searched and then the first two vectors. This search finds people who have had 0 or 1 short tour and sends them to the first and second vector, respectively, on the short tour side. If need for career personnel is not satisfied, then the third pool node, followed by the third vector, is searched for those who have had two previous short tours. (The vector is searched down to the minimum allowable base tour, if necessary.) Those persons are sent to the third tour vector in the short tour. The search continues until either the needs are met or there is no one left who is deployable.

The pattern for the noncareer group is somewhat different. The noncareer vectors representing personnel who have not had a short tour are searched first. However, the present policy is that noncareer personnel may not be sent to short tour if they have 6 months or less to serve. Therefore, the search begins in the 7th cell from the end and moves toward the beginning of the vectors. Next, the matrices are searched; but again the 6-months rule applies, and the search begins in the 7th row and column from the bottom and right-hand edge of the matrix.

The effect of some of these constraints is noteworthy. If a man spends 2 months in a base tour before a 12-month short tour and returns to the base tour for an 18-month stabilized base tour, his time in system adds up to 32 months. Since he must have at least 6 months remaining to be reassigned to a short tour, he will serve only one short tour during his 48-month commitment. An exception is the early returnee, i.e., temporary casualty. It is possible for him to serve an 18-month base tour and still have more than 6 months remaining in service.

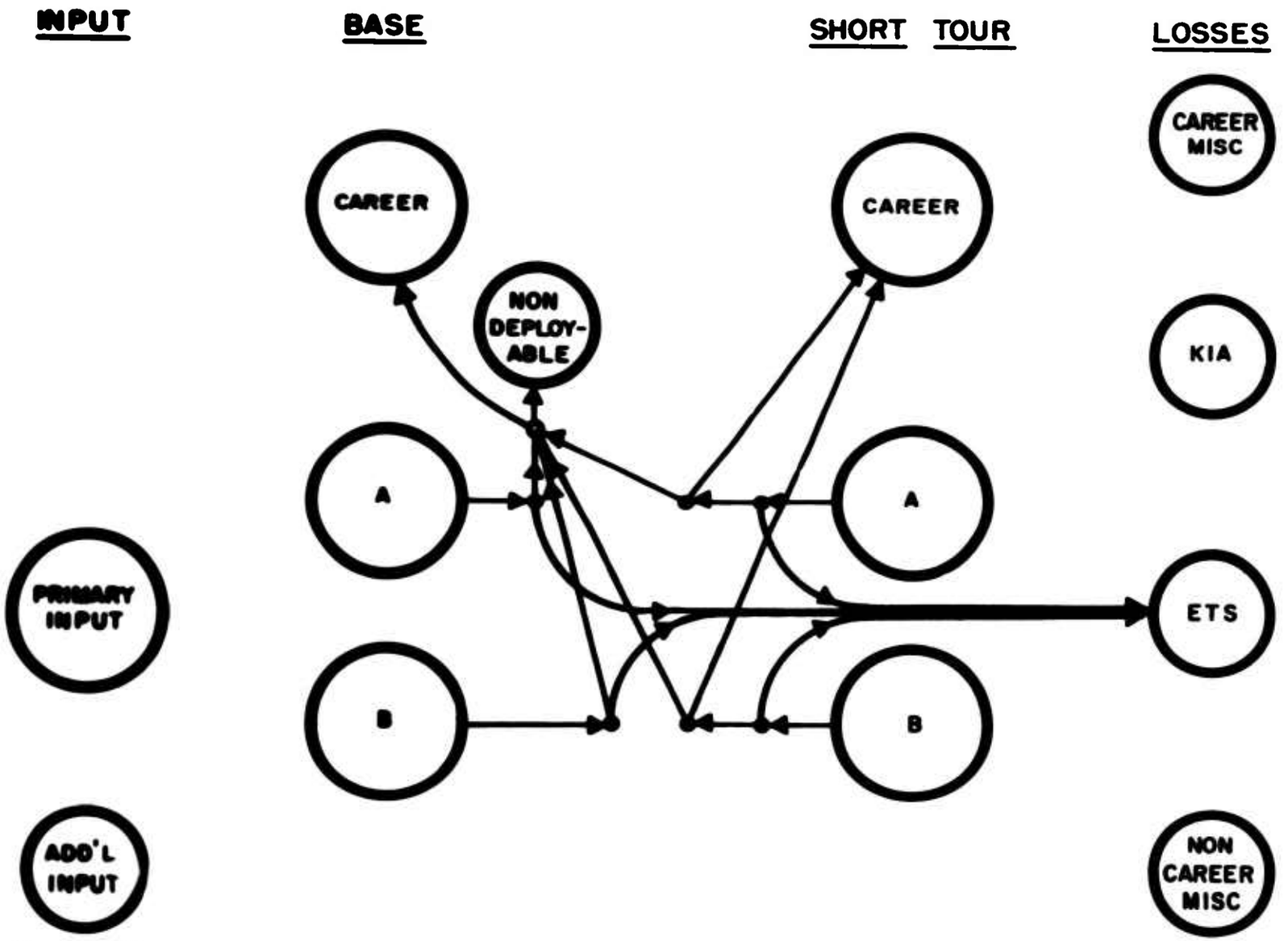


Figure 7. Noncareer to career flow

The application of loss or retention rates to the various nodes can present a problem. For example, say there is an attrition rate of .5% per month for the 36-month noncareer short tour personnel. Of all those in that short tour matrix, .5% will be removed from the matrix. This can be done by subtracting .5% from each cell in the matrix. However, if a given cell in the matrix had 160 men in it, then .5% of them equals .8 men. Reassignment of 8/10's of a man is not only hard to visualize but is also outside the capabilities of the model. In a practical sense, either zero or one man has to be reassigned in the model as well as in the real system. The model handles this problem by proceeding to the next cell in the matrix, taking .5% of it and adding it to the fraction from the previous cell. If the next cell had 83 men, then .5% equals .415. This added to the previous results gives 1.215 men. Therefore, one man is subtracted from this cell and .215 is carried over as a remainder.

MODEL APPLICATION

Army Aviation Personnel Applications

The Career-Noncareer Model has been used on several personnel management problems dealing with Army aviators. One problem has been to determine how short tour requirements could be met while minimizing involuntary third time short tours, assuming a given short tour manning level requirement. An extension of this problem was to determine when third tours would have to begin in order to meet the need for specific numbers of experienced personnel to be sent to short tour during FY 1970 and 1971.

Figure 8 depicts the appropriate constraint pattern for a given number of experienced personnel, A, B, C, to be sent to short tour in FY 70, and corresponding numbers X_j ($j = 1, 2, 3$, representing different requirements) to be sent in FY 71. To determine at what point third tours appear, the problem was run for three sets, A, B, C for FY 70, and their corresponding numbers, X_j, Y_j, Z_j ($j = 1, 2, 3$) for FY 71. Since the proportion of experienced personnel to inexperienced personnel sent to short tour is a number calculated by the model, an iterative procedure was used and the mix (percentage of experienced vs inexperienced) was varied until appropriate numbers were produced.

Another problem involved computing the minimum FY 1971 training output requirements, given expected manning levels for short tours and the policy of no third short tours.

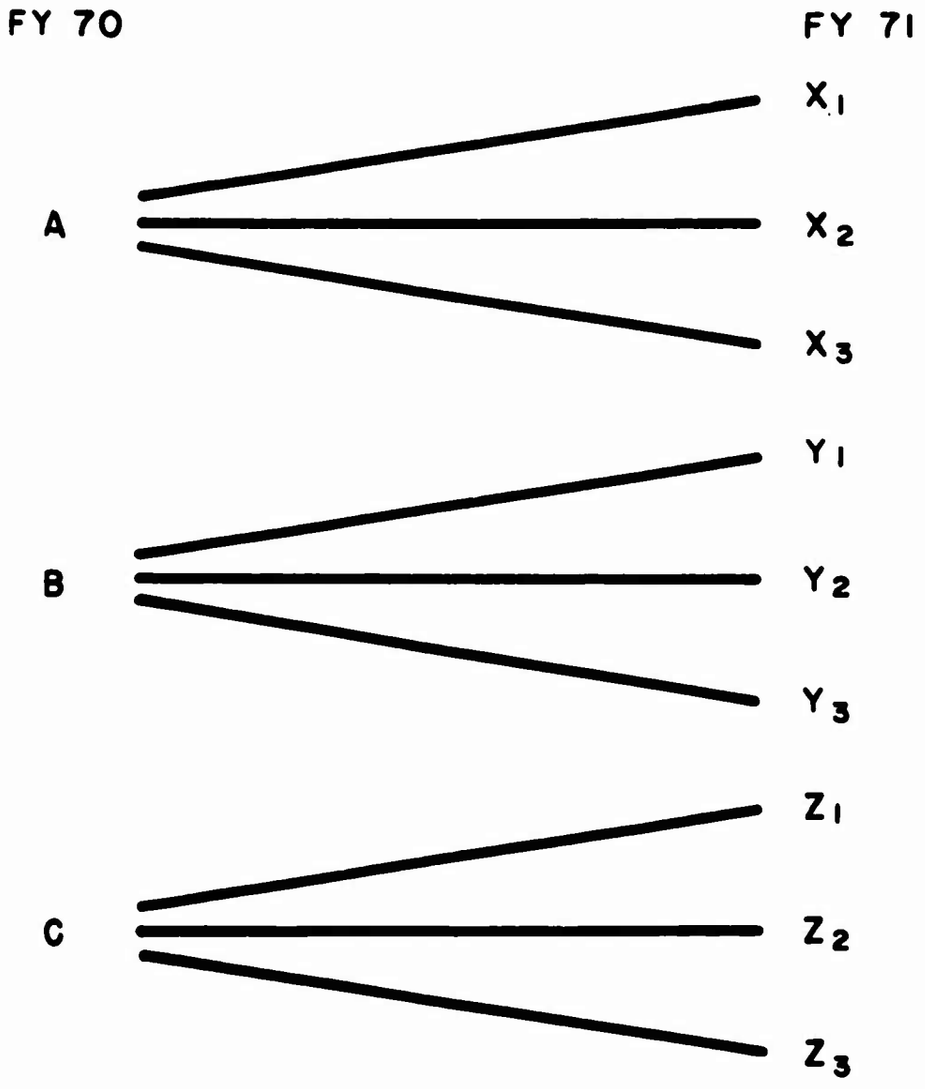


Figure 8. Third tour analysis

Special model modifications not reported here have been introduced to answer specific management questions. In the normal running of the program, the short tour quotas are specified and the model bases calculations on the quotas, for example, calculation of the number of short tour replacements required (Column 5 of the Summary). However, if the starting point for the simulation is at some point in the past, replacements up to the time of the run are a matter of record. With the modification in the model, the user can specify the exact number of replacements up to a given month and then switch back to letting the quota determine the number of replacements.

Another problem required evaluation of a proposed policy of encouraging noncareer personnel to extend their short tour duty with an accompanying reduction in service commitment. One of the goals in mind was to increase the short tour manning level to 100% without increasing training input. The policy posed several questions: 1) How many noncareer personnel would have to extend to make a significant impact on the manning level? 2) Would the number of career personnel going on second tour be reduced and in what numbers? 3) How would the average base tour length be changed? 4) Since extendees would be leaving the system and not be available for retention in the career system, what would be the impact on the career pool? 5) What new retention rate would be required to maintain the career pool?

To handle the problems, the model was changed so that extendees are moved out of the short tour for one month before being returned for the extension tour. When they are returned they are counted as experienced personnel, thus easing the pull on second tour personnel from the base tour. If a person cannot serve the full extension tour because he would be eligible for release before completion of the tour, then he is not considered for extension. The analysis to date has been fruitful, and more work is scheduled.

Army Phasedown Application

The Career-Noncareer Model has been used also in the study of policies relating to eventual phasedown in Vietnam. In connection with this study, the model was modified to allow the option of early release from expected term of commitment in the case of men who have completed a specified time in the combat area. One option provided in the model makes possible "in-simulation" change of policy with regard to total amount of required service or acceptable length of service in Vietnam. The effects of different combinations of service time constraints and varied schedules for application of the constraints can be studied. Two data bases have been used. One combination allows for the entire enlisted force and the other for a single combat division. Both model applications have been part of a feasibility study regarding techniques, approaches, and models available for phasedown planning. Development of these applications has been a cooperative effort of BESRL research scientists and members of the Long Range Requirements Branch of Directorate of Procurement and Distribution, DCSPER.

WAC Reenlistment Application

The Career-Noncareer Model was used to evaluate the effects of allowing members of the Women's Army Corps to choose their Continental United States station for a one-year period when they reenlisted for four years.

For some time, the WAC reenlistment rate had been declining; the end-of-first-term loss rate was very high. In an effort to check the decline in reenlistments, management was considering allowing choice of CONUS assignment as well as encouraging volunteers for overseas assignment (a policy already in effect). In view of the relatively easy-to-fill rotation cycle in the WAC system at the present time, the suggested policy was regarded by some of the DCSPER staff as a potential source of concern in a system so far free from the difficulties that beset some of the combat MOS systems.

Many constraints on assignment of WACs were already in effect. Assignment durations were different for each of the three main tour areas (short tour, long tour, and CONUS). WACs were not sent overseas until they had been in service a year, nor when they had less than a year remaining in their enlistment. The new policy would mean they would not be sent over for a year after reenlistment.

It was possible to set up the starting data and to modify the Career-Noncareer Model so that the first reenlistment would result in at least 12 more months in CONUS (including the consequence that reenlistment overseas would mean transfer to CONUS for a least a year). Subsequent reenlistments were harder to handle, since time-in-service is not monitored after the individual passes to career status. In the simulation, additional stress on the system was introduced by increasing overseas requirements until the resulting CONUS tour fell below acceptable limits--a form of sensitivity analysis. Since the critical requirements were well beyond any expectation for the WAC, the predicted requirements under the proposed policy could be assumed to be within the capability of the present WAC system.

This model application was accomplished in cooperation with the Plans and Programs Office and the Enlisted Personnel Directorate of the Office of Personnel Operations.

CONCLUSION

An important concept in manpower modeling is that neither requirements nor resources should be regarded as fixed, but that the effects for interactions between the two must be evaluated and adjustments made, if necessary, to maximize the objective. A manager seeking an optimal system would usually fix either requirements or assets and designate the other as the objective function to be optimized. This objective function may be in the form either of minimizing the force needed to meet a given contingency or of maximizing the magnitude of the threat (contingency) that can be handled by a given force. The savings in having a smaller force would usually be paid for in reduced capacity for dealing with a given contingency. While various techniques of getting more mileage out

of existing resources may appear more attractive than the reduction of requirements, extending the time in short tour and/or reducing the minimum time in base tour must be balanced against the effect this has on morale and such consequences of poor morale as reduced retention of career personnel[1].

The Career-Enhancement Model can play the role of a tool, providing a dynamic picture of a given set of alternate force structures to deal with actual or hypothetical military requirements and the extent that each force structure is feasible under given policies and system constraints. The model may also be used for evaluating the sensitivity of the system to various force structure parameters. For example, changes in type of input might affect the feasibility of various requirement configurations. If an all-voluntary Army were established, changes in both requirements and resource management might be necessary to fulfill Army missions.

The Career-Enhancement Model makes efficient use of computer time. A typical run of 48 months takes on the order of three minutes on a CDC-[illegible][1]. This capability allows management to try several approaches or combinations of program options. The model has been of assistance to management in evaluating and reassessing its own view or interpretation of the personnel system. Appendix F provides runs made using different options.

---

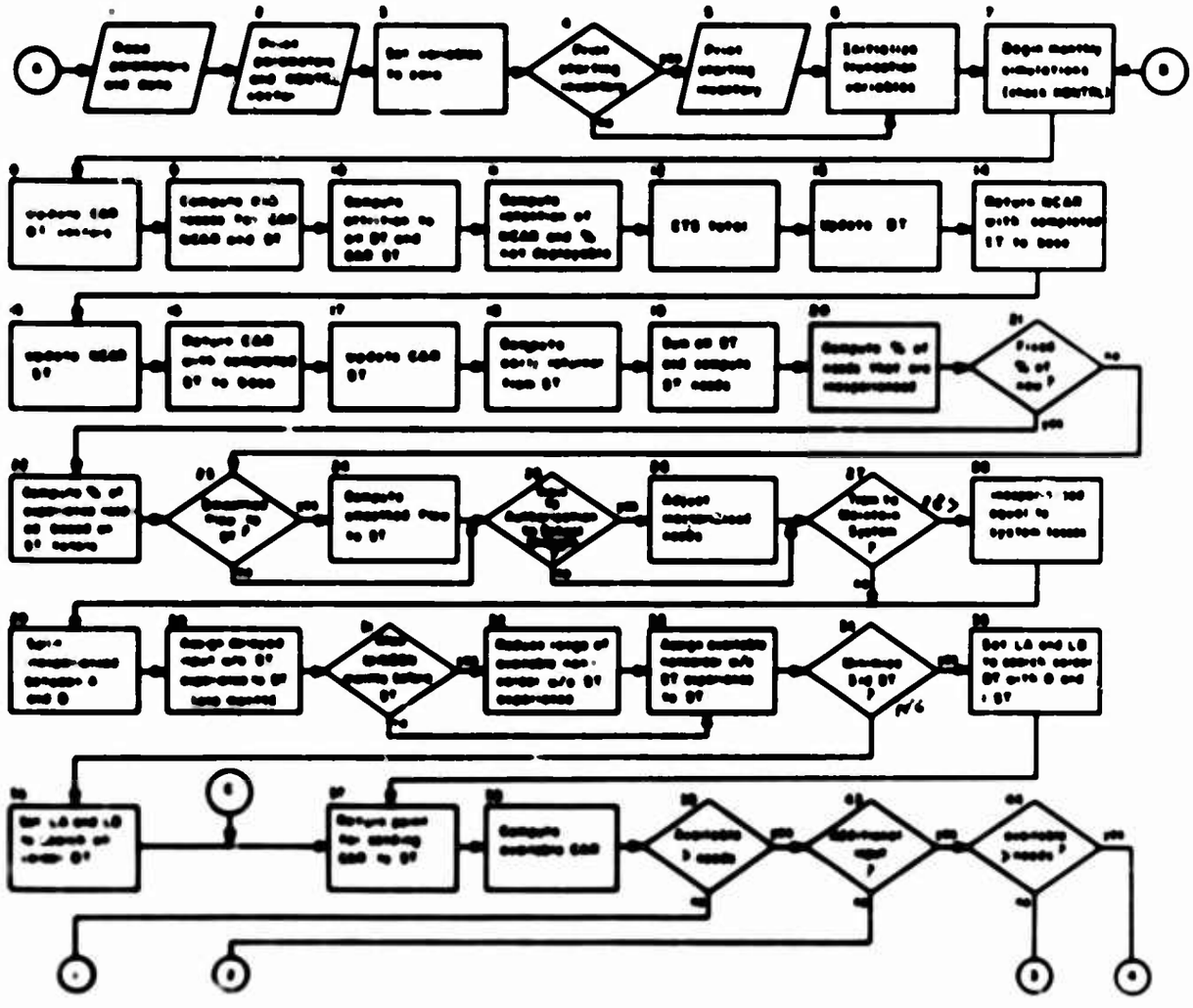
[1] Commercial designations are used for information purposes only. Their mention does not constitute endorsement by the Behavior and Systems Research Laboratory or by the Army.

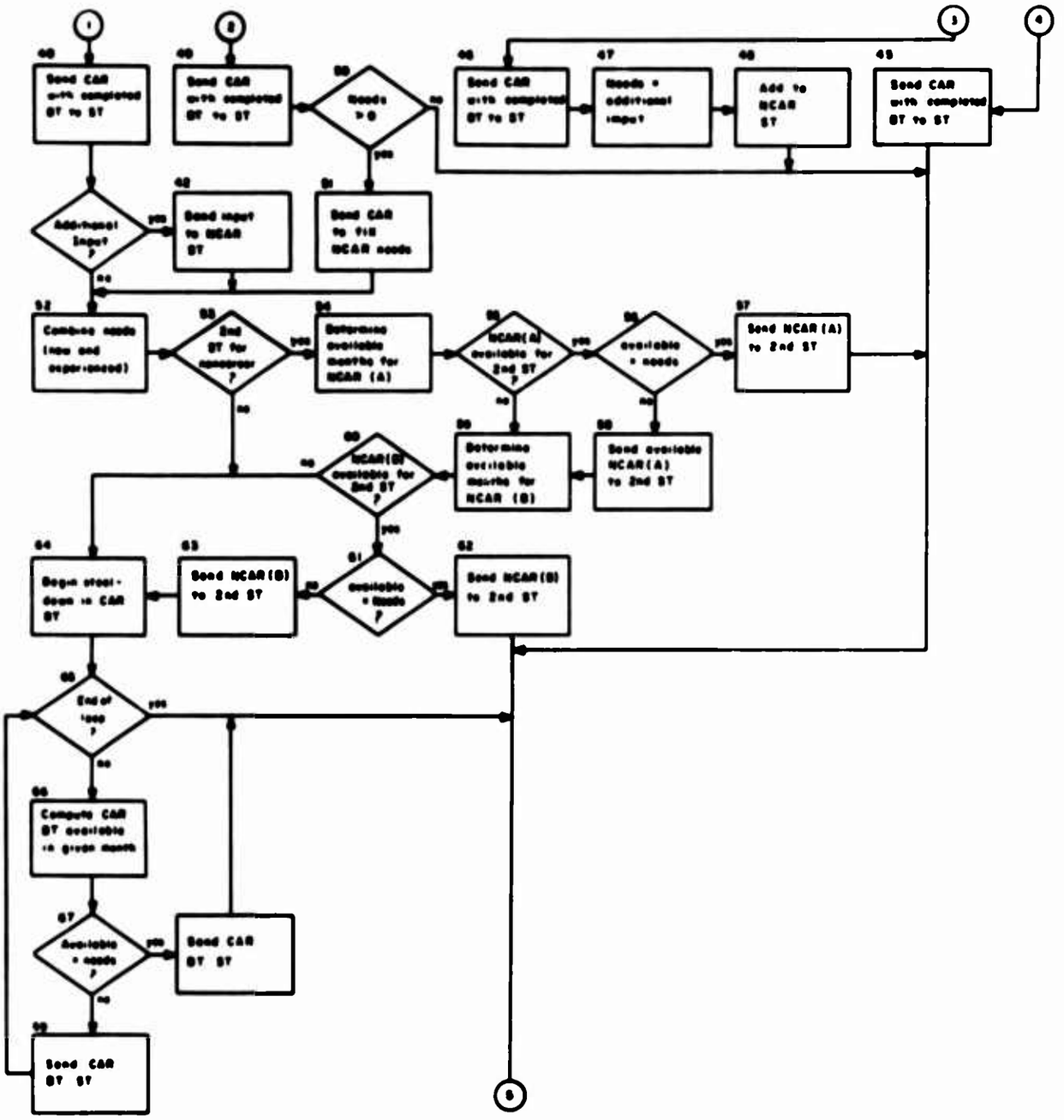
APPENDIXES

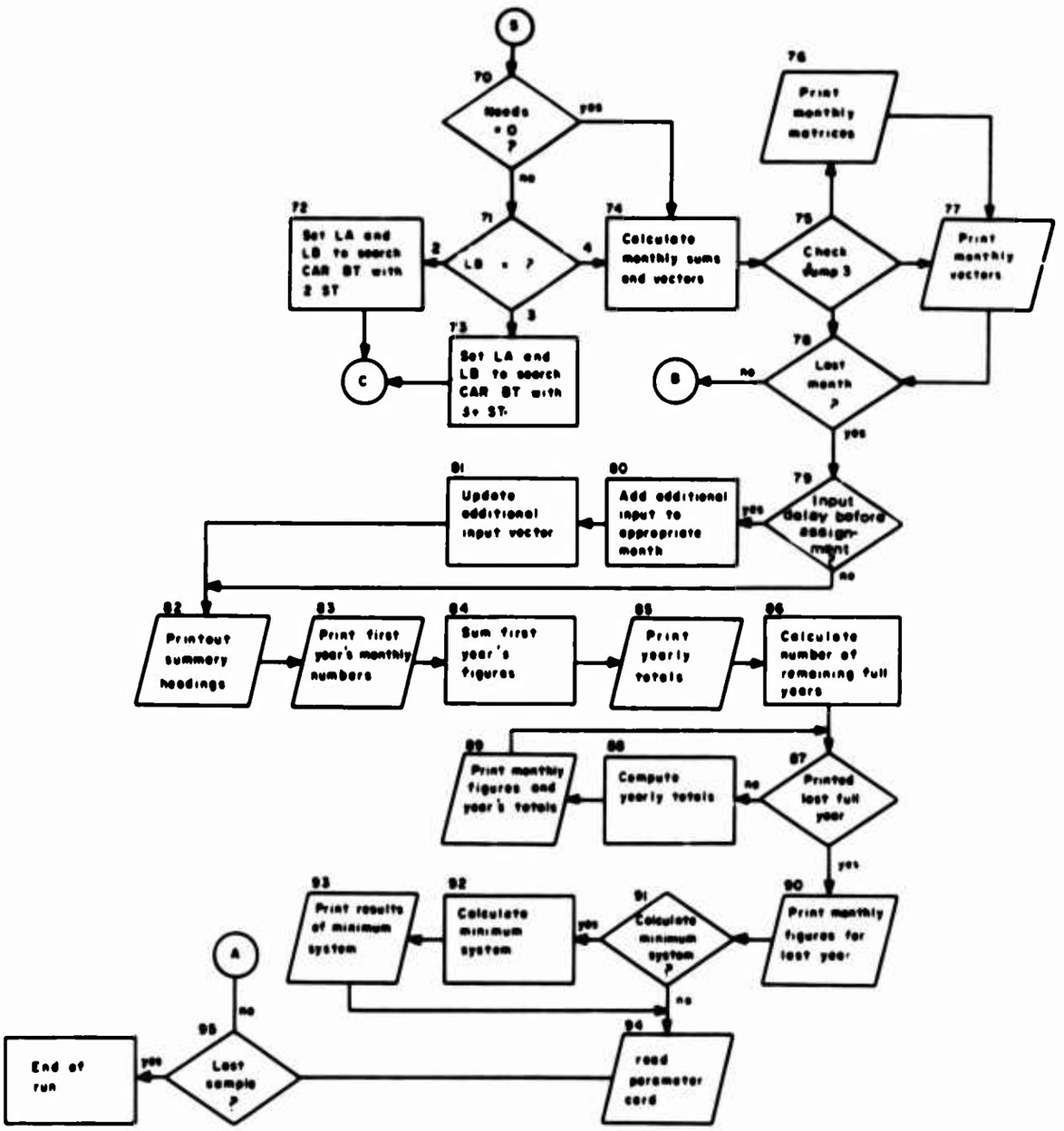
APPENDIX A

MODEL FLOW CHART

NOTE ST = SHORT TOUR, DT = BASE TOUR, CAR = CAREER, NCAR = NONCAREER






B
70
Needs = 0 ?
yes
no
76
Print monthly matrices
72
Set LA and LB to search CAR BT with 2 ST
2
71
LB = ?
4
3
74
Calculate monthly sums and vectors
75
Check dump 3
77
Print monthly vectors
73
Set LA and LB to search CAR BT with 3+ ST.
C
B
no
78
Last month ?
yes
81
Update additional input vector
80
Add additional input to appropriate month
yes
79
Input delay before assignment ?
no
82
Printout summary headings
83
Print first year's monthly numbers
84
Sum first year's figures
85
Print yearly totals
86
Calculate number of remaining full years
89
Print monthly figures and year's totals
88
Compute yearly totals
no
87
Printed last full year
yes
93
Print results of minimum system
92
Calculate minimum system
yes
91
Calculate minimum system ?
90
Print monthly figures for last year
A
no
no
95
Last sample ?
yes
End of run
94
read parameter card

APPENDIX B

DESCRIPTION OF COMPUTER PROGRAM

A 1- Return point for additional samples. Read parameters and starting data. See appendix for list and description.

2- Print starting parameters and control vector

PRINT: Title, heading FMT (9) FORMAT (1H1, 9A8)

PRINT: LS, LC, LAUS, LRA, NTIME, MINTUR, LEVTNG, MINBAS, MINBSN, IEOUT, IFY, JUMP1, JUMP2, JUMP3, JUMP4, JUMP5, JUMP6, JUMP7. FORMAT (1H, 12110)

PRINT: R1, R2, RLOSS1, RLOSS2, RLOSS3, RETNT1, RETNT2, RNOUSE, RPNDPL, RTNDPL, RNEW, RRA. FORMAT (1H, 12110)

PRINT: KONTRL Vector, NTIME number of months. FORMAT (1H, 12110)

3- Clear out variables to zero and calculate starting inventory total, NTOT.

4- If JUMP3>0, go to 5, print starting inventory; otherwide go to section 6.

5- Print starting inventory.

6- Set initial values to .5 so that they wil round upward when truncated.

B 1- Begin monthly iterations. Return point for iterations.

The KONTRL vector is the last vector read in at the beginning of the simulation and has one cell for month. This cell may be left blank or filled with a number, one through seven. These numbers indicate a change in one of the JUMP controls or reading in a new set of parameters to be used beginning in the current month according to the following list:

KONTRL = 7, JUMP3 = 0, print summary only

= 6, JUMP3 = 2, print monthly matrices, vectors and summary.

= 5, read new parameters:

LLS, LLC, LLAUS, LLRA, MINTUR, LEVTNG, MINBAS, MINBSN, IEOUT, JUMP1, JUMP2, JUMP3, JUMP4, JUMP5.

The first four variables are temporary values for new LS, LC, LAUS and LRA variables respectively. If the new value is equal to or greater than the old value, it is substituted for the old.

If the new value is less than the old, then the appropriate matrix is collapsed to the level of the new value before substituting it for the old. The other values are substituted directly.

KONTRL = 4, read new rates:

R1, R2, RLOSS1, RLOSS2, RLOSS3, RETNT1, RETNT2, RHOUSE, RPNDPL, RTNDPL, RNEW, RRA

These are substituted directly.

= 3, JUMP2 = 3, train to authorization or school capacity.

= 2, JUMP2 = 2, train to maintain system total.

= 1, JUMP2 = 0, calculate additional input.

8- Career personnel completing LC number of months in the base tour vector (JC) are added to their respective completed-base-tour cell (JCLC). All other career base personnel are moved up one month.

9- Permanent casualties for career and noncareer short tours are computed and the total put into KAS(NT).

10- Compute attrition to all base tours and career short tour:

RLOSS1 = career system loss rate for base tours.

RLOSS2 = noncareer system loss rate for base tours.

RLOSS3 = career system loss rate for short tours.

The attrition loss total for career and noncareer groups goes into LOSS(NT).

11- Apply retention rates to noncareer matrices and vectors, RETNT1 for noncareer (A) and RETNT2 for noncareer (B). Of those retained, a portion is sent to the permanently nondeployable node (NDPLP) using the RPNDPL rate. Retainees that are deployable are sent to the appropriate career vector or node depending on whether they have enough months for completed career base tour, and whether they have had a short tour. The total number retained from noncareer tours is entered in IRETNT(NT).

12- The personnel remaining in the last month of the noncareer tours after deducting the retentions are terminating their service in month NT and are sent to IETS(NT).

13- Update the noncareer base tour matrices and vectors.

14- At the end of noncareer short tours all those with IEOUT or fewer months commitment remaining have the retention rates for the career group applied. As in section 11, a permanently nondeployability factor is applied and the remaining personnel are sent to the career base tour with one previous short tour. Personnel not retained are added to those released in month NT, (IETS(NT)).

15- Update the noncareer short tours and put the total number returning from noncareer short tour in MRET(NT).

16- Return to the base tour those career personnel who have completed their short tour. Add their total to MRET(NT).

17- Update career short tours.

18- Compute early return losses to all short tours using R2. Put total in KAS2(NT). Return personnel to first month of appropriate base tour.

19- Compute sum of all career and noncareer personnel in short tour. Compare this total with short tour quota for the month. If number in short tour is less than quota, the difference equals the NEEDS for that month and is put in INEEDS(NT).

20- Using the RNEW percentage, compute the number of personnel that can be inexperienced (NOO), i.e. noncareer personnel.

21- JUMP2 = 2 go to section 22, limit career personnel going to short tour.
JUMP2 ≠ 2 go to section 23.

22- In this option the sum of the short tours is compared to the number allowed by the (1-RNEW) percentage of the short tour quota for the month. If there are already too many experienced people in short tour (NEDEX2 = 0), then experienced personnel are not sent. If the number allowed by the quota is less than the number needed, then the requisitions are reduced to the level that is allowed. However, if the number required is less than the allowed number, then the requirements stand.

23- JUMP1 = 1, go to section 24, smoothed flow to short tour.
JUMP1 ≠ 1, go to section 25.

24- This option smooths out large increases or surges in short tour quotas. A base number is first calculated. This number is the sum of the average number of personnel expected to complete their short tour in that month plus the projected number of losses using the R1 and R2 loss rates. If the NEEDS for that month fall below 110% of this base number, the NEEDS do not change. If the NEEDS are larger, then a new base number is calculated. It is the sum of 1) the difference between the previous month and the current month's short tour total, i.e. the losses, and 2) 90% of the RNEW percentage of the difference in the last month's short tour total and the current month's quota. If this number is equal to or greater than the NEEDS, the NEEDS stand. If they are less, then the NEEDS are reduced to the level of the new base number and (1-RNEW) percent of the losses is the number of experienced personnel required. The balance are inexperienced needs.

25- JUMP2>2 go to section 26, train to authorization or school capacity.
JUMP2≤2 go to section 27.

26- If the system total for the month plus the input for the month is less than or equal to the maximum system allowed plus the losses for the month, then the NEW input is not changed. Therefore, the full input for the month is used. Go to section 29.

If the sum of the system total and the input is greater, then the NEW input is reduced. The new computed NEW input may not be less than zero. Go to section 29.

27- JUMP2≥2 go to section 28, train to maintain system.
JUMP2<2 go to section 29.

28- Set NEW input equal to the sum of all the losses for the month.

29- Using the RRA percentage, the NEW personnel are split between the noncareer (A) and (B) groups, (RRA) % to B and (1-RRA) % to A.

30- Send available noncareer (A) and (B) personnel without short tour experience to short tour. RNOUSE % of each group (A and B) is delayed in being assigned to short tour and remains in the base tour.

31- JUMP4≥2 go to section 32, allow MINBSN months in the base tour before assignment.
JUMP4<2 go to section 33.

32- Add MINBSN months to normal delay before assignment (LEVTNG) + 1 to find the first available month.

33- Send available noncareer personnel to short tour.

34- JUMP7>0 go to section 35, minimize use of personnel for third short tour.
JUMP7≤0 go to section 36, maximize average base tour length.

35- Set LA and LB to search career base tours with no short tour experience or one previous short tour. Go to section 37.

36- Set LA and LB to search all career base tours.

37- Return point if all career base tours were not checked on the first pass, i.e. JUMP7 = 1.

38- Determine the number of career personnel who have completed the desirable base tour, after taking out that percentage of persons who are temporarily nondeployable.

39- If this number is equal or less than the number of experienced men required, go to section 40.
If it is more, go to section 43.

40- Send available career personnel with completed base tour to short tour.

41- If JUMP2>0, go to section 52.

If JUMP2 = 0, calculate additional input. The remaining inexperienced needs (NOO) are put into the new-input vector (NEEW).

42- The number of personnel is split between the two noncareer tours and added to their respective short tours. Go to section 52.

43- If JUMP2 = 0, calculate additional input. Go to section 44.
If JUMP2>0, go to section 49.

44- If the number available is greater than the NEEDS, go to section 45.

If the NEEDS is equal or greater than the number available, go to section 46.

45- Send available career personnel with completed base tour to short tour up to the limit of NEEDS. Go to section 70.

46- Send available career personnel with completed base tour to short tour.

47- Remaining NEEDS equals additional noncareer input.

48- Add additional input to the noncareer short tours. Go to section 70.

49- Send available career personnel with completed base tour to short tour. Experienced needs (NEDEX2) equal zero.

50- If NEEDS are ≤ 0, go to section 70.
If NEEDS are > 0, go to section 51.

51- If inexperienced needs are ≤ 0, go to section 70.

If inexperienced needs are > 0, send available career personnel with completed base tour to short tour, charge against inexperienced needs.

52- If experienced needs equals NEEDS, go to section 53.

If experienced needs do not equal NOO, add them together and go to section 53.

53- If JUMP4 = 1, go to section 64.

If JUMP4 $\neq$ 1, go to section 54, second short tour for noncareer personnel. These are counted as experienced personnel.

54- Determine allowable limits of search in the noncareer (A) base tour (M1 = number of elements to be searched).

55- If M1 $\leq$ 0, go to section 59, it is not possible to send noncareer (A) personnel on to second short tour.

If M1 > 0, calculate the number of noncareer (A) personnel available for second short tour.

56- If the available personnel is equal to greater than the experienced needs, go to section 57.

If the available personnel is less than the needs, go to section 58.

57- Send available noncareer (A) personnel to short tour up to level of needs. Go to section 70.

58- Send available noncareer (A) personnel to short tour.

59- Determine allowable limits of search in the noncareer (B) base tour. (M1 same concept as used in 54.)

60- If M1 $\leq$ 0, go to section 64, it is not possible to send noncareer (B) personnel to second short tour.

If M1 > 0, calculate the number of noncareer (B) personnel available for second short tour.

61- If the available personnel is equal to or greater than the experienced needs, go to section 62.

If the available personnel is less than the needs, go to section 63.

62- Send available noncareer (B) personnel to short tour up to level of needs. Go to section 70.

63- Send available noncareer (B) personnel to short tour.

64- Begin steal down in the career base tours, i.e. send personnel who have not completed a full base tour, to short tour. Determine the lower limit to which the tours may be searched.

65- Beginning of loop that searches career tours for available personnel who have not completed a full base tour. The personnel with the largest number of months in the base tour are sent first. On successive passes personnel with one less month in the base tour are picked up. This is continued until the needs are met or the minimum base tour is reached.

66- The number of career personnel available in the month being search is computed, allowing for a percentage that is temporarily nondeployable (R = 1.-RTNDPL).

67- If the number available is more than the experienced needs, go to section 68.

68- Send available personnel up to level of experienced needs to short tour. Go to section 70.

69- Send available personnel to short tour. If the loop has not reached its search limit, go back to section 69 and pick up personnel with one less month in the base tour, otherwise continue to section 70.

70- If experienced needs = 0, go to section 74.
If experienced needs ≠ 0, go to section 71.

71- LB is the parameter that indicates the last career base tour search for sending personnel to short tour.

If LB = 2, then available personnel with 0 or 1 previous short tour have been sent. Go to section 72.

If LB = 3, then personnel with 0 through 2 previous short tours have been sent. Go to section 73.

If LB = 4, then all tours have been searched. Go to section 74.

72- Set LA and LB to 3 and go to section 37. Available personnel with 2 previous short tours are used to meet short tour needs.

73. Set LA and LB to 4 and go to section 37. Available personnel with 3 or more previous short tours are used to meet short tour needs.

74- At this point the NEEDS are either zero or they cannot be met. The monthly totals are computed for the following:

JNEED the total number of personnel actually sent to short tour.

JS2T the number of career personnel sent to their second short tour.

JS3T the number of career personnel sent to their third or more short tour.

INOO the total new or inexperienced personnel sent to short tour (noncareer).

XTR average base tour length.

IRET number of replacements sent with less than the desirable number of months in base.

NSTACT equal number of personnel on hand in short tour.

ICAR number of career personnel in base with less than the desirable number of months in base.

NTOTCR total number of career personnel in the system.

IGRAND system total for the month.

The following monthly vectors are computed. In the first four vectors, the cells represent the months in the indicated tour, i.e. first cell--first month in tour, 2nd cell--second month. The number in the cell is the number of personnel in that month of the tour. These are the time-in-tour vectors:

MAUS the number of noncareer (A) personnel in each month of the short tour.

MRA noncareer (B) personnel in short tour.

MBAUS noncareer (A) personnel in the base tour.

MBRA noncareer (B) personnel in the base tour.

In the following four vectors, the length of the vector is equal to the length of the noncareer commitment. In the first cell is the number of personnel in their first month of service, second cell, second month of service . . . last cell, last month before ETS. These are the ETS schedule vectors:

IAUSMT noncareer (A) ETS schedule in short tour.

IRAMT noncareer (B) ETS schedule in short tour.

IBUSMT noncareer (A) returnee ETS schedule in the base tour.

IBRAMT noncareer (B) returnee ETS schedule in the base tour.

75- If JUMP3 = 2, go to section 76, print both monthly matrices and vectors.

If JUMP3 = 1, go to section 77, print monthly vectors only.

If JUMP3 = 0, go to section 78.

76- Print the noncareer (A) and (B) base tour and short tour matrices.

77- Print the vectors for the noncareer (A) and (B), base and short tours, for returnee's time in tour, ETS schedules and time in base tour for personnel without short tour experience. For the career personnel, print the base vectors and nodes, the short tour vectors, the number who are permanently nondeployable, and the total number of career personnel with completed base tours. In addition, print the total number of actual personnel in short tour and the system grand total.

78- End of loop for monthly iteration. If there is another month in the simulation, go to B (section 7).

79- If the delay after entering the system before assignment is zero, go to section 80.

If the delay is more than zero, go to section 81.

80- When it is necessary and the option is used to compute additional input to meet short tour needs, this input is assigned directly to short tours. If, however, there has been a delay-before-assignment (LEVTNG) specified of x months, then the additional input that is used must enter the system x months earlier in order to be available. Therefore, the additional input (NEEW) is added to the system grand total vector x months before the month in which it was computed. In this manner, in the summary the system-total vector reflects the presence of this input during the x months delay time prior to assignment. The last x number of months in the vector are filled with 0's as a reminder that the delay option was used.

81- Following the reasons given in section 80, the calculated additional input is shifted back in its own vector the number of cells equal to the number of months delay before assignment. Therefore the summary will show the additional input entering the system at the point where it will be available when it is needed. As in section 80, the last x number of months are filled with 0's.

82- Print out summary title and column headings.

83- Print the monthly figures for the first year of the simulation. IFY is the number of months remaining the first Fiscal Year, which may be less then 12 months.

84- Compute column totals for the first year for specific columns (see sample summary).

85- Print the column totals computed in section 84 for the first year.

86- Compute the number of remaining full years in simulation.

87- Begin the loop that computes yearly totals and prints the monthly and yearly totals for the remaining full years.

88- Compute the totals for specific columns for the next 12-month period.

89- Print the monthly figures for the 12-month period and the yearly totals. If not the last full month, go back to section 87 for the next 12-month period. If last full month, go to section 90.

90- Print the remaining month's figures, if there are any remaining. Column totals are not computed if not a full year.

91- If JUMP = 0, go to section 92, calculate minimum system.
If JUMP ≠ 0, go to section 94.

02- Compute minimum system (See Appendix for Algorithm for Minimum Rotation System Size).

03- Print out minimum system data.

04- Read parameter card.

05- If it is a blank card, there is another sample. Go to section 1 to read another set of parameters and data cards.

If there is a number in columns 1 through 5, this was the last sample. Go to section 96 and terminate computer run.

96- End of computer run.

APPENDIX C

LIST OF SUMMARY HEADINGS

Column headings have the following meanings:

Number	Heading	Explanation
	Month	Time period simulated
1	ST Quota	Requirements for Short Tour
2	End Tour	Number completing assignment in Short Tour
3	Perm Cas	Short Tour casualties to the Army
4	ST Cas	Number returning to base from Short Tour before 12 months there
5	Repl Req	Number needed to bring ST up to requirements
6	Repl Sent	Number found by model to sent to ST
7	New Repl	Inexperienced men sent to ST
8	Ret - LC	Men sent to a Short Tour with less then LC months in base
9	2nd Tour	Number of men being returned for second Short Tour
10	3rd + Tour	Number of men being returned for third or subsequent Short Tour
11	Avg BS Tr	Average time in base for men in col 8
12	ST on Hand	Number actually assigned to ST
13	N Base - LC	Number in Base with less than LC months since returning from ST
14	Retnt Addns	Number passing from noncareer system to career
15	Car Tot	Total number in career system
16	Inpt Schd	Training output programmed
17	Addl Inpt	Computer generated training needed to minimize returnees
18	Attrt Loss	Losses from system by resignation or promotion
19	ETS	Losses from failure to extend commitment
20	Syst Tot	Total number in system

Parameters and rates are printed on the page preceeding each run summary.

APPENDIX D

COMPUTER PROGRAM LISTING

A note of explanation is in order concerning the following program listing. The model's program has been listed with a Variable-Reference Table program developed at BESRL. The first 2 lines at the top of the first page indicate the card column numbers. Notice that there are spaces between columns 5 and 6, 6 and 7, 72 and 73. The numbers running down the left-hand edge indicate the number of cards from the beginning of the program.

The first table at the end of the program lists the FORTRAN statement numbers in sequence and the card number where it was used. The second table lists the FORTRAN variables in alphabetical order used in the program. After each variable is a list of the card numbers where that variable was used. Comment cards (C in column 1) are ignored by the listing program.

```
      00000 0 0001111111111222222222233333333334444444445555555556666666667777 77777778
      12345 6 7890123456789012345678901234567890123456789012345678901234567890 12 34567890
    1               PROGRAM Z256F
    2         C     MOD F OLSON AND MCNULLEN
    3               COMMON NTX(1)
    4               COMMON IAUS(36,18),JS(18,6),JC(36,6),MOUOT(120),NEW(120),NEEW(120)
    5               COMMON JCLC(4),IXT(4)
    6               COMMON IRET(120),XTR(12,),IBAUS(36,36),IBAUSN(36),ICTS(120)
    7               COMMON LOSS(120),KAS(120),FMT(9),IBUSMT(36),MBAUS(36),KONTRL(120)
    8               DIMENSION KAS2(120),IAUSMT(36),MAUS(13),MRPT(120),JNCEN(120)
    9               DIMENSION INEED(120),IGRAND(120),ICAR(120),NTOTCR(120),NCAR(120)
   10               DIMENSION IRETNT(120),INOO(120),NSTACT(120),NRPT(120)
   11               DIMENSION ITT(12),ISYS(120),ICSYS(120)
   12               DIMENSION JS2T(120),JS3T(120)
   13               DIMENSION IRA(36,18),IBRA(36,36),IBRAMT(36),MBRA(36),IRAMT(36)
   14               DIMENSION MRA(36),IBRAN(36)
   15         C****** *     *       *       *       *       *       *       *    1
   16           1n1   READ 3,(FMT(I),I=1,9)
   17               READ 2,LS,LC,LAUS,LRA,NTIME,MINTUR,LEVTNG,MINBAS,MINBSN,IEOUT,IFY,
   18              1 JUMP1,JUMP2,JUMP3,JUMP4,JUMP5,JUMP6,JUMP7
   19               DO 9 I=1,18
   20               DO 409 L=1,4
   21         409   JS(I,L)=0
   22               DO 9 J=1,36
   23               IRA(J,I)=0
   24            9  IAUS(J,I)=0
   25               READ 5,R1,R2,RLOSS1,RLOSS2,RLOSS3,RETNT1,RETNT2,RNOUSE,RPNDPL,RTNU
   26              1 PL,HNEW,RRA
   27               DO 407 L=1,4
   28         C JS  =  CAREER SHORT TOUR
   29         407   READ 4,(JS(I,L),I=1,LS)
   30               DO 406 L=1,4
   31         C JC  =  CAREER BASE TOUR
   32               DO 405 I=1,36
   33         405   JC(I,J)=0
   34         406   READ 4,(JC(I,L),I=1,LC)
   35         C NDP L P = PERMANENTLY NONDEPLOYABLE CAREER
   36         C JCL C  = CAREER PEOPLE WITH COMPLETED BASE TOUR
   37         C MAX S YS = TOTAL NUMBER ALLOWED IN SYSTEM
   38               READ 17,(NDPLP,(JCLC(I),I=1,4),MAXSYS)
   39               DO 7 I=1,LAUS
```

```
C IAU S  = NONCAREER(A) SHORT TOUR
      7   READ 4,(IAUS(I,J),J=1,LS)
          DO 6 I=1,LAUS
C IRA U SE = NONCAREER(A) BASE TOUR RETURNEES
          READ 4,((IRAUS(I,J),J=1,LAUS)
C IRA U SN = NONCAREER(A) BASE TOUR WITHOUT SHORT TOUR EXPERIENCE
          READ 4,((IRAUSN(I),I=1,LAUS)
          DO 140 I=1,LRA
C IRA    = NONCAREER(B) SHORT TOUR
    140   READ 4,(IRA(I,J),J=1,LS)
          DO 141 I=1,LRA
C IRR A  = NONCAREER(B) BASE TOUR RETURNEES
    141   READ 4,((IRRA(I,J),J=1,LRA)
C IRR A N = NONCAREER(B) BASE TOUR WITHOUT SHORT TOUR EXPERIENCE
          READ 4,((IRRAN(I),I=1,LRA)
C MOU O T = QUOTAS FOR SHORT TOUR
          READ 17,((MBUOT(I),I=1,NTIME)
C NEW    = INPUT INTO SYSTEM
          READ 4,(NEW(I),I=1,NTIME)
          READ 4,(KONTRL(I),I=1,NTIME)
C-----  1---------2---------3---------4---------5---------6---------7-2
          PRINT 320,(FMT(I),I=1,9)
          PRINT 304
          PRINT 301,LS,LC,LAUS,LRA,NTIME,MINTUR,LEVTNG,MTNBAS,MINBSN,IENUT,
         1 IFV,JUMP1
          PRINT 305
          PRINT 301,JUMP2,JUMP3,JUMP4,JUMP5,JUMP6,JUMP7
          PRINT 303
          PRINT 302,R1,R2,RLOSS1,RLOSS2,RLOSS3,RETNT1,RETNT2,RNOUSE,RPNNPL,
         1 RTNDPL,RNEW,RRA
          PRINT 306
          PRINT 301,(KONTRL(I),I=1,NTIME)
C-----  1---------2---------3---------4---------5---------6---------7-3
C CLE A R OUT VARIABLES TO ZERO
          DO 8 I=1,120
          ICSYS(I)=0
        8 ISVG(I)=0
          DO 10 I=1,120
          NEEW(I)=IRET(I)=IGTS(I)=LOSS(I)=KAS(I)=KAS2(I)=NRET(I)=NRET1(I)=0
          JNEED(I)=INEED(I)=IGRANU(I)=ICAR(I)=NTOTCR(I)=NCAR(I)=IRETNT(I)=0
          JS2T(I)=JS3T(I)=0
   10     INOO(I)=NSTACT(I)=0
```

```
      DO 16 I=1,4
   16 IXT(I)=0
      NEEDS=NEEDXP=0
      NTOT=0
      DO 142 I=1,LS
      MRA(I)=0
      MAUS(I)=0
      DO 20 J=1,LAUS
      NTOT=NTOT+IAUS(J,I)
   20 MAUS(I)=MAUS(I)+IAUS(J,I)
      DO 142 J=1,LRA
      NTOT=NTOT+IRA(J,I)
  142 MRA(I)=MRA(I)+IRA(J,I)
      DO 143 I=1,LRA
      IRAMI(I)=0
      DO 143 J=1,LS
  143 IRAMI(I)=IRAMI(I)+IRA(I,J)
      DO 21 I=1,LAUS
      IAUSMI(I)=0
      DO 21 J=1,LS
   21 IAUSMI(I)=IAUSMI(I)+IAUS(I,J)
      DO 22 L=1,4
      DO 22 I=1,LS
   22 NTOT=NTOT+JS(I,L)
      NSI=NTOT
      DO 23 L=1,4
      DO 23 I=1,LC
   23 NTOT=NTOT+JC(I,L)
      DO 24 I=1,LAUS
   24 NTOT=NTOT+IRAUSN(I)
      DO 144 I=1,LRA
  144 NTOT=NTOT+IRRAN(I)
      DO 25 I=1,LAUS
      DO 25 J=1,LAUS
   25 NTOT=NTOT+IRAUS(I,J)
      JCLCT=0
      DO 425 L=1,4
  425 JCLCT=JCLCT+JCLC(L)
      DO 145 I=1,LRA
      DO 145 J=1,LRA
  145 NTOT=NTOT+IRRA(I,J)
      NTOT=NTOT+JCLCT*ADPLP
```

```
C****+****1****+****2****+****3****+****4****+****5****+****6****+****7****+****8
      IF(JUMP3)222,22,233
C
C****+****1****+****2****+****3****+****4****+****5****+****6****+****7****+****8
C  PRINT OUT STARTING INVENTORY
C
  233 CONTINUE
      PRINT 320, (FMT(I),I=1,9)
      PRINT 303
      DO 421 L=1,4
      PRINT 500,L
  421 PRINT 301,(JS(I,L),I=1,LS)
      PRINT 223
      DO 422 L=1,4
      M=L-1
      PRINT 501,M
  422 PRINT 301,(JC(I,L),I=1,LC)
      PRINT 207,NDPLP
      PRINT 208,JCLCI
      PRINT 502
      PRINT 301,(JBLG(I),I=1,4)
      PRINT 201
      DO 220 I=1,LAUS
  220 PRINT 301,(IAUS(I,J),J=1,LS)
      PRINT 204
      DO 221 I=1,LAUS
  221 PRINT 301,(IBAUS(I,J),J=1,LAUS)
      PRINT 206
      PRINT 301,(IBAUSN(I),I=1,LAUS)
      PRINT 249
      DO 146 I=1,LRA
  146 PRINT 301,(IRA(I,J),J=1,LS)
      PRINT 251
      DO 147 I=1,LRA
  147 PRINT 301,(IBRA(I,J),J=1,LRA)
      PRINT 257
      PRINT 301,(IBRAN(I),I=1,LRA)
      PRINT 504
      PRINT 301,(MOUT(I),I=1,NTIME)
      PRINT 503
      PRINT 301,(NEN(I),I=1,NTIME)
      PRINT 322
      PRINT 323,NTOT
  222 CONTINUE
```

```
C****** *    *    *    *    *    *    *    *    *    6
      XJST1=XJST2=XJST3=XJCT1=XJCLCT1=XJCLCT2=.5
C
C****** *    *    *    *    *    *    *    *    *    7
C BEGINNING MONTHLY SIMULATIONS
C
      DO 100 NT=1,NTIME
      NTX(1)=NT
      JS2=JS2=0
C RESET OR READ NEW PARAMETERS
      IF(KONTRL(NT)-6)412,412,413
413   JUMP3=0
      GO TO 122
412   IF(KONTRL(NT)-5) 410,410,411
411   JUMP3=2
      GO TO 122
410   IF(KONTRL(NT)-4)107,107,108
108   READ 4,LLS,LLC,LLAUS,LLRA,MINTUR,LEVING,MINRAS,MINBSN,IEOUT,JUMP1,
     1 JUMP2,JUMP3,JUMP4,JUMP5
      PRINT 321,NT
      PRINT 307
      PRINT 301,LLS,LLC,LLAUS,LLRA,MINTUR,LEVING,MINRAS,MINBSN,IEOUT,JUM
     1 P1,JUMP2,JUMP3
      PRINT 309
      PRINT 301,JUMP4,JUMP5
      IF(LS-LLS)1080,1080,1081
1081  K=LLS+1
      DO 1082 I=K,LS
      DO 1083 J=1,LAUS
      IAUS(J,LLS)=IAUS(J,LLS)+IAUS(J,I)
1083  IAUS(J,I)=0
      DO 1084 J=1,LRA
      IRA(J,LLS)=IRA(J,LLS)+IRA(J,I)
1084  IRA(J,I)=0
      DO 1082 J=1,4
      JS(LLS,J)=JS(LLS,J)+JS(I,J)
1082  JS(I,J)=0
1080  LS=LLS
      IF(LC-LLC)1085,1085,1086
1086  K=LLC+1
      DO 1087 I=K,LC
      DO 1087 J=1,4
      JCLC(J)=JCLC(J)+JC(I,J)
```

```
      1087  JC(I,J)=0
      1085  LC=LLC
            IF(LAUS-LLAUS)1088,1088,1089
      1089  K=LLAUS+1
            X=0
            DO 1090 I=K,LAUS
            DO 1091 J=1,LS
            X=IAUS(I,J)*RETNT1+X
            IX=X
            X=X-IX
            JS(J,1)=JS(J,1)+IX
            IETS(NT)=IETS(NT)+IAUS(I,J)-IX
            NRET(NT)=NRET(NT)+IAUS(I,J)-IX
            IRETNT(NT)=IRETNT(NT)+IX
      1091  IAUS(I,J)=0
            DO 1092 J=1,LAUS
            X=IBAUS(J,I)*RETNT1+X
            IX=X
            X=X-IX
            IRETNT(NT)=IRETNT(NT)+IX
            IETS(NT)=IETS(NT)+IBAUS(J,I)-IX
            IF(I-LC)1093,1093,1094
      1093  JC(I,2)=JC(I,2)+IX
            GO TO 1092
      1094  JCLC(2)=JCLC(2)+IX
      1092  IBAUS(J,I)=0
            DO 1095 J=1,K
            X=IBAUS(I,J)*RETNT1+X
            IX=X
            X=X-IX
            IRETNT(NT)=IRETNT(NT)+IX
            IETS(NT)=IETS(NT)+IBAUS(I,J)-IX
            IF(J-LC)1096,1096,1097
      1096  JC(J,2)=JC(J,2)+IX
            GO TO 1095
      1097  JCLC(2)=JCLC(2)+IX
      1095  IBAUS(I,J)=0
            X=IBAUSN(I)*RETNT1+X
            IX=X
            X=X-IX
            IRETNT(NT)=IRETNT(NT)+IX
            IETS(NT)=IETS(NT)+IBAUSN(I)-IX
            IF(I-LC)1098,1098,1099
```

```
      1100  JC(I,1)=JC(I,1)+IX
            GO TO 1090
      1099  JCLC(1)=JCLC(1)+IX
      1090  IBAUSN(I)=0
      1080  LAUS=LLAUS
            IF(LRA-LLRA)1100,1100,1101
      1101  K=LLRA+1
            X=0
            DO 1102 I=K,LRA
            DO 1103 J=1,LS
            X=IRA(I,J)*RETNT2+X
            IX=X
            X=X-IX
            JS(J,1)=JS(J,1)+IX
            IRETNT(NT)=IRETNT(NT)+IX
            NRET(NT)=NRET(NT)+IRA(I,J)-IX
      1103  IETS(NT)=IETS(NT)+IRA(I,J)-IX
            DO 1104 J=1,LRA
            X=IBRA(J,I)*RETNT2+X
            IX=X
            X=X-IX
            IRETNT(NT)=IRETNT(NT)+IX
            IETS(NT)=IETS(NT)+IBRA(J,I)-IX
            IF(I-LC)1105,1105,1106
      1105  JC(I,2)=JC(I,2)+IX
            GO TO 1104
      1106  JCLC(2)=JCLC(2)+IX
      1104  IBRA(J,I)=0
            DO 1107 J=1,K
            X=IBRA(I,J)*RETNT2+X
            IX=X
            X=X-IX
            IRETNT(NT)=IRETNT(NT)+IX
            IETS(NT)=IETS(NT)+IBRA(I,J)-IX
            IF(J-LC)1108,1108,1109
      1108  JC(J,2)=JC(J,2)+IX
            GO TO 1107
      1109  JCLC(2)=JCLC(2)+IX
      1107  IBRA(I,J)=0
            X=IBRAN(I)*RETNT2+X
            IX=X
            X=X-IX
            IRETNT(NT)=IRETNT(NT)+IX
```

```
297             IETS(NT)=IETS(NT)+IBRAN(I)-IX
298             IF(I-LC)1110,1111,1111
299       1110  JC(I,1)=JC(I,1)+IX
300             GO TO 1102
301       1111  JCLC(1)=JCLC(1)+IX
302       1102  IBRAN(I)=0
303       1100  LRA=LLRA
304             GO TO 122
305        107  IF(KONTRL(NT)-3)105,105,106
306        106  READ 5,A1,A2,ALOSS1,ALOSS2,ALOSS3,AEINT1,AEINT2,ANOUSE,APNDPL,ATNU
307             1 PL,RNEW,RRA
308             PRINT 321,NT
309             PRINT 308
310             PRINT 302,A1,A2,ALOSS1,ALOSS2,ALOSS3,AEINT1,AEINT2,ANOUSE,APNDPL,
311             1 RTNDPL,RNEW,RRA
312             GO TO 122
313        105  IF(KONTRL(NT)-2)120,120,121
314        121  JUMP2=3
315             GO TO 122
316        120  IF(KONTRL(NT)-1)122,123,124
317        124  JUMP2=2
318             GO TO 122
319        123  JUMP2=0
320        122  CONTINUE
321       C**** *    *         *         *         *         *         *   8
322       C SHIFT CAREER PEOPLE WITH COMPLETED BASE TOUR
323             DO 429 I=1,4
324        429  JCLC(I)=JCLC(I)+JC(LC,I)
325             LCM1=LC-1
326             LCP1=LC+1
327       C MOVE  CAREER BASE TOUR UP ONE TIME PERIOD
328             DO 440 L=1,4
329             DO 30 I=1,LCM1
330             J=LCP1-I
331             K=J-1
332        30   JC(J,L)=JC(K,L)
333       440   JC(1,L)=0
334       C
335       C**** *    *         *         *         *         *         *   9
336       C COMPUTE KIA
337       C
338             ITEM=0
339             X=0.
```

```
C PERMANENT LOSS FOR CAREER SHORT TOUR
      DO 31 I=1,LS
      XJST1=X
      DO 447 L=1,4
      Y=JS(I,L)
      XJST1=XJST1+R1*Y
      IX=XJST1
      XJST1=XJST1-IX
      ITEM=ITEM+IX
447   JS(I,L)=JS(I,L)-IX
      X=XJST1
C PERMANENT LOSS FOR NONCAREER(A) SHORT TOUR
      DO 149 J=1,LAUS
      Y=IAUS(J,I)
      X=R1*Y+X
      IX=X
      X=X-IX
      ITEM=ITEM+IX
149   IAUS(J,I)=IAUS(J,I)-IX
C PER MANENT LOSS FOR NONCAREER(B) SHORT TOUR
      DO 14? J=1,LRA
      Y=IRA(J,I)
      X=R1*Y+X
      IX=X
      X=X-IX
      ITEM=ITEM+IX
14?   IRA(J,I)=IRA(J,I)-IX
31    CONTINUE
C KAS(NT) = TOTAL PERMANENT LOSSES TO SHORT TOUR FOR MONTH NT
      KAS(NT)=ITEM
C
C.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
C COMPUTE ATTRITION IN BASE TOURS AND CAREER SHORT TOURS
C
      X=0
      ITEM=0
      X=XJCT1
C CAREER SYSTEM LOSS FOR CAREER WITH LESS THAN LC MONTHS IN BASE
      DO 33 L=1,4
      DO 33 I=1,LC
      Y=JC(I,L)
      XJCT1=XJCT1+RLOSS1*Y
```

```
            IX=XJCT1
            XJCT1=XJCT1-IX
      33    JC(1,L)=JC(1,L)+IX
C NON C AREER SYSTEM LOSS FOR NONCAREER(A) BASE TOUR WITHOUT SHORT TOUR EXPERIENCE
            DO 34 I=1,LAUS
            Y=IBAUSN(I)
            X=RLOSS2*Y+X
            IX=X
            X=X-IX
            IBAUSN(I)=IBAUSN(I)-IX
            ITEM=ITEM+IX
C NON C AREER SYSTEM LOSS FOR NONCAREER(A) BASE TOUR RETURNEES
            DO 34 J=1,LAUS
            Y=IBAUS(I,J)
            X=RLOSS2*Y+X
            IX=X
            X=X-IX
            IBAUS(I,J)=IBAUS(I,J)-IX
      34    ITEM=ITEM+IX
C NON C AREER SYSTEM LOSS FOR NONCAREER(B) BASE TOUR WITHOUT SHORT TOUR EXPERIENCE
            DO 150 I=1,LRA
            Y=IBRAN(I)
            X=RLOSS2*Y+X
            IX=X
            IBRAN(I)=IBRAN(I)-IX
            X=X-IX
            ITEM=ITEM+IX
C NON C AREER SYSTEM LOSS FOR NONCAREER(B) BASE TOUR RETURNEES
            DO 150 J=1,LRA
            Y=IBRA(I,J)
            X=RLOSS2*Y+X
            IX=X
            X=X-IX
            IBRA(I,J)=IBRA(I,J)-IX
     150    ITEM=ITEM+IX
C CAR E ER SYSTEM LOSS FOR CAREER WITH COMPLETED BASE TOUR
            DO 400 L=1,4
            Y=JCLC(L)
            XJCLCT1=XJCLCT1+RLOSS1*Y
            IX=XJCLCT1
            XJCLCT1=XJCLCT1-IX
            JCLC(L)=JCLC(L)-IX
     400    ITEM=ITEM+IX
```

```
C CAR E ER SYSTEM LOSS FOR PERMANENTLY NONDEPLOYABLE CAREER
          Y=NOPLP
          X-XJCLCT1
          ) RLOSS1AY+X
          IX=X
          X=X-IX
          NOPLP=NOPLP-IX
          ITEM=ITEM+IX
C CAR E ER SYSTEM LOSS FOR SHORT TOUR CAREER
          DO 26 L=1,4
          DO 26 I=1,LS
          Y=JS(I,L)
          XJST2=XJST2+RLOSS3*Y
          IX=XJST2
          XJST2=XJST2-IX
          JS(I,L)=JS(I,L)-IX
   26     ITEM=ITEM+IX
C LOS S (NT) = TOTAL ATTRITION LOSSES TO CAREER AND NONCAREER FOR MONTH NT
          LOSS(NT)=ITEM
C**** *     *     *     *     *     *     *     *     *     **
C RET E NTION AFTER NONCAREER COMMITMENT FOR NONCAREER(A) BASE TOUR W/O ST  EXP
          X=RETNT1*IBAUSN(LAUS)+.5
          IX=X
          X = IX
          IBAUSN(LAUS)=IBAUSN(LAUS)-IX
          R=1.-RPNOPL
          IF(LAUS-LC) 27,28,28
   27     Y=R*X+.5
          IY=Y
          JC(LAUS,1)=JC(LAUS,1)+IY
          IX=0
          NOPLP=NOPLP+X-IY
   28     CONTINUE
C RET E NTION AFTER NONCAREER COMMITMENT FOR NONCAREER(B) BASE TOUR W/O ST  EXP
          Y=RETNT2*IBRAN(LRA)+.5
          IY=Y
          IBRAN(LRA)=IBRAN(LRA)-IY
          X=IX+IY
C PER M ANENTLY NONDEPLOYABLE ATTRITION OF THOSE RETAINED
          R=1-RPNOPL
          Y=R*X+.5
          IY=Y
          JCLC(1)=JCLC(1)+IY
```

```
            NDPLP=NDPLP+ X=IY
            ITEM=X
            X=0
C RET E NTION AFTER NONCAREER COMMITMENT FOR NONCAREER(A) BASE TOUR RETURN EES
            DO 36 I=1,LAUS
            Y=IBAUS(LAUS,I)
            X=RETNT1*Y+X
            IX=X
            X=IX
            IBAUS(LAUS,I)=IBAUS(LAUS,I)-IX
            ITEM=ITEM+IX
C PER M ANENTLY NONDEPLOYABLE ATTRITION OF THOSE RETAINED
            Y=R*X+.5
            IY=Y
            X=X-IX
            NDPLP=NDPLP+IX-IY
            LCM1=LC-1
C IF  L ESS THAN LC MONTHS IN BASE, ADD TO CAREER WITH LESS THAN LC MONTHS
C IF  L C MONTHS OR MORE IN BASE, ADD TO CAREER WITH MORE THAN LC MONTHS
            IF(I-LCM1)37,37,36
   37       J=I+1
            JC(J,2)=JC(J,2)+IY
            GO TO 38
   36       JCLC(2)=JCLC(2)+IY
   38       CONTINUE
   35       CONTINUE
C RET E NTION AFTER NONCAREER COMMITMENT FOR NONCAREER(B) BASE TOUR RETURN EES
            DO 151 I=1,LRA
            Y=IBRA(LRA,I)
            X=RETNT2*Y+X
            IX=X
            X=X-IX
            IBRA(LRA,I)=IBRA(LRA,I)-IX
            ITEM=ITEM+IX
C PER M ANENTLY NONDEPLOYABLE ATTRITION OF THOSE RETAINED
            Y=R*IX+.5
            IY=Y
            NDPLP=NDPLP+IX-IY
            LCM1=LC-1
C IF  L ESS THAN LC MONTHS IN BASE, ADD TO CAREER WITH LESS THAN LC MONTHS
C IF  L C MONTHS OR MORE IN BASE, ADD TO CAREER WITH MORE THAN LC MONTHS
            IF(I-LCM1)152,152,153
```

```
      150   JC(J,2)=JC(J,2)+IY
            GO TO 151
  153       JCLC(2)=JCLC(2)+IY
      151   CONTINUE
C RETENTION AFTER NONCAREER COMMITMENT FOR NONCAREER(A) SHORT TOUR
            DO 39 I=1,LS
            Y=IAUS(LAUS,I)
            X=RETNT1*Y+X
            IX=X
            X=X-IX
            IAUS(LAUS,I)=IAUS(LAUS,I)-IX
            NRET(NT)=NRET(NT)+IAUS(LAUS,I)
C ADD   THOSE RETAINED TO CORRESPONDING MONTH IN CAREER SHORT TOUR
            JS(I,1)=JS(I,1)+IX
   39       ITEM=ITEM+IX
C RETENTION AFTER NONCAREER COMMITMENT FOR NONCAREER(B) SHORT TOUR
            DO 154 I=1,LS
            Y=IRA(LRA,I)
            X=RETNT2*Y+X
            IX=X
            IRA(LRA,I)=IRA(LRA,I)-IX
            NRET(NT)=NRET(NT)+IRA(LRA,I)
C ADD   THOSE RETAINED TO CORRESPONDING MONTH IN CAREER SHORT TOUR
            JS(I,1)=JS(I,1)+IX
            X=X-IX
  154       ITEM=ITEM+IX
C RETENTION NT(NT) = TOTAL NUMBER RETAINED FROM NONCAREER COMMITMENT FOR CAREER
            IRETNT(NT)=IRETNT(NT)+ITEM
C****** *     *       *       *       *       *       *       *   12
C SUM   OF ETS FOR NONCAREER GROUPS
            ITEM=IBAUSN(LAUS)+IBRAN(LRA)
            DO 40 I=1,LS
   40       ITEM=ITEM+IAUS(LAUS,I)+IRA(LRA,I)
            DO 41 I=1,LAUS
   41       ITEM=ITEM+IBAUS(LAUS,I)
            DO 155 I=1,LRA
  155       ITEM=ITEM+IBRA(LRA,I)
C RETENTION (NT) = NUMBER TERMINATING SERVICE IN MONTH NT
            IETS(NT)=IETS(NT)+ITEM
C****** *     *       *       *       *       *       *       *   13
C MOVE  NONCAREER BASE TOUR UP ONE TIME PERIOD
```

```
      LUSM1=LAUS-1
      LUSP1=LAUS+1
      LRAM1=LRA-1
      LRAP1=LRA+1
      DO 42 I=1,LUSM1
      J=LUSP1-I
      K=J-1
      IBAUSN(J)=IBAUSN(K)
      DO 42 II=1,LAUS
   42 IBAUS(II,J)=IBAUS(II,K)
      DO 156 I=1,LRAM1
      J=LRAP1-I
      K=J-1
      IBRAN(J)=IBRAN(K)
      DO 156 II=1,LRA
  156 IBRA(II,J)=IBRA(II,K)
      DO 43 I=1,LUSM1
      J=LUSP1-I
      K=J-1
      DO 43 II=1,LAUS
   43 IBAUS(J,II)=IBAUS(K,II)
      DO 157 I=1,LRAM1
      J=LRAP1-I
      K=J-1
      DO 157 II=1,LRA
  157 IBRA(J,II)=IBRA(K,II)
      DO 44 I=1,LAUS
      IBAUS(1,1)=0
   44 IBAUS(I,1)=0
      JTEM=0
      MTEM=0
      ITEM=0
      K=0
      IBAUSN(1)=0
      DO 158 I=1,LRA
      IBRA(1,I)=0
  158 IBRA(I,1)=0
      IBRAN(1)=0
C     C000 0    0    0    0    0    0    0    0    0    10
C IEO U T=NUMBER OF MONTHS EARLY RELEASE
      DO 45 I=1,LUSM1
      NRET(NT)=NRET(NT)+IAUS(I,LS)
```

```
      JA(I,1)=1
      IF(LAUS-I-IEOUT)602,602,601
  601 X=RSIN(I)*IAUS(I,LS)+X
      IX=X
      X=X-IX
      Y=R*IX+.5
      IY=Y
      NDPLP=NDPLP*IX-IY
      NTEM=NTEM*IAUS(I,LS)*IX
      JC(1,2)=JC(1,2)*IY
      JTEM=JTEM*IX
      ITEM=ITEM*IX
      GO TO 46
  602 JTEM=JTEM*IAUS(I,LS)
      IBAUS(J,1)=IBAUS(J,1)*IAUS(I,LS)
   45 CONTINUE
      DO 150 I=1,LRAN
      NRET(NT)=NRET(NT)*IRA(I,LS)
      JA(I,1)=1
      IF(LRA-I-IEOUT)604,604,603
  603 X=RSIN(I)*IRA(I,LS)
      IX=X
      X=X-IX
      Y=R*IX+.5
      IY=Y
      NDPLP=NDPLP*IX-IY
      NTEM=NTEM*IRA(I,LS)-IX
      JC(1,2)=JC(1,2)*IY
      JTEM=JTEM*IX
      ITEM=ITEM*IX
      GO TO 150
  604 JTEM=JTEM*IRA(I,LS)
      IBRA(JV)=IBRA(JV)*IRA(I,LS)
   54 CONTINUE
      IRETNT(NT)=IRETNT(NT)*ITEM
      IETS(NT)=IETS(NT)*NTEM
C                                                                    19
C UPD A TE NONCARFER SMART TOURS
      DO 46 I=1,LUSM1
      J=LUSP1-I
      N=J-1
      DO 46 II=1,LS
```

```
      46    IAUS(J,II)=IAUS(K,II)
            DO 160 I=1,LRAM1
            J=LRAP1-I
            K=J-1
            DO 160 II=1,L6
  160       IRA(J,II)=IRA(K,II)
            LSM1=LS-1
            LSP1=LS+1
            DO 47 I=1,LSM1
            J=LSP1-I
            K=J-1
            DO 161 II=1,LAUS
  161       IAUS(II,J)=IAUS(II,K)
            DO 162 II=1,LRA
  162       IRA(II,J)=IRA(II,K)
   47       CONTINUE
            DO 48 I=1,L6
            IRA(1,I)=0
   48       IAUS(1,I)=0
            DO 49 I=1,LAUS
   49       IAUS(1,1)=0
            DO 163 I=1,LRA
  163       IRA(1,1)=0
C MRE T (NT)=TOTAL NONCAREER RETURNED TO BASE TOURS FROM SHORT TOUR IN MON TH NT
            MRET(NT)=JTEM
C****  •    •    •    •    •    •    •    •  16
C RET U RN CAREER AT END OF SHORT TOUR TO BASE TOUR
            DO 449 L=1,3
            LP1=L+1
            JC(1,LP1)=JC(1,LP1)+JS(LS,L)
  449       MRET(NT)=MRET(NT)+JS(LS,L)
            JC(1,4)=JC(1,4)+JS(LS,4)
C MRE T (NT) = TOTAL CAREER AND NONCAREER RETURNING FROM SHORT TOUR IN MON TH NT
            MRET(NT)=MRET(NT)+JS(LS,4)
            MRET(NT)=MRET(NT)+MRET(NT)+JTEM
C****  •    •    •    •    •    •    •    •  17
C UPD A TE CAREER SHORT TOURS
            DO 450 L=1,4
            DO 50 I=1,LSM1
            J=LSP1-I
            K=J-1
   50       JS(J,L)=JS(K,L)
  450       JS(1,L)=0
C
```

```
C**** *    *    *    *    *    *    *    *    *    18
C COM P UTE LOSSES TO SHORT TOUR
C
      ITEM=0
      X=0
C CAR E ER SYSTEM RETURNEES FROM SHORT TOUR
      DO 164 I=1,LS
      XJST3=X
      DO 433 L=1,4
      Y=JS(I,L)
      XJST3=XJST3+R2*Y
      IX=XJST3
      XJST3=XJST3-IX
      ITEM=ITEM+IX
      IF(L.EQ.4) 430,431
430   LP1=L
      GO TO 432
431   LP1=L+1
432   JC(I,LP1)=JC(I,LP1)+IX
433   JS(I,L)=JS(I,L)-IX
      X=XJST3
C NON C AREER(A) SYSTEM RETURNEES FROM SHORT TOUR
      DO 32 J=1,LAUS
      Y=IAUS(J,I)
      X=R2*Y+X
      IX=X
      X=X-IX
      ITEM=ITEM+IX
      IAUS(J,I)=IAUS(J,1)=IX
32    IBAUS(J,1)=IBAUS(J,1)+IX
C NON C AREER(B) SYSTEM RETURNEES FROM SHORT TOUR
      DO 164 J=1,LRA
      Y=IRA(J,I)
      X=R2*Y+X
      IX=X
      X=X-IX
      ITEM=ITEM+IX
      IRA(J,I)=IRA(J,1)-IX
164   IBRA(J,1)=IBRA(J,1)+IX
C KAS 2 (NT) = TOTAL SHORT TOUR EARLY RETURNEES TO BASE
      KAS2(NT)=ITEM
      ITEM=0
```

```
C****  *    *         *         *         *         *         *         *   19
C SUM    OF ALL SHORT TOURS
         DO 165 I=1,LS
         DO 451  L=1,4
451      ITEM=ITEM+JS(I,L)
         DO 51 J=1,LAUS
 51      ITEM=ITEM+IAUS(J,I)
         DO 165 J=1,LRA
165      ITEM=ITEM+IRA(J,I)
C NEE D S = SHORT TOUR QUOTA MINUS NUMBER ON HAND
         NEEDS=MQUOT(NT)-ITEM
         IF(NEEDS)232,232,234
232      NEEDS=0
234      CONTINUE
         MEN=0
         MON=0
C INE E DS(NT) = SHORT TOUR NEEDS FOR MONTH NT
         INEED(NT)=NEEDS
         Y=NEEDS
C****  *    *         *         *         *         *         *         *   20
C CAL C ULATE PERCENTAGE OF NEEDS THAT ARE NEW
         X=RNEW*Y+.5
C NOO    = NUMBER OF NEW OR INEXPERIENCED
         NOO=X
         NEDEXP=NEEDS-NOO
C****  *    *         *         *         *         *         *         *   21
         IF(JUMP1-2)700,701,700
C****  *    *         *         *         *         *         *         *   22
701      ITEMM=0
         DO 702 J=1,4
         DO 702 I=1,LS
702      ITEMM=ITEMM+JS(I,J)
         NN=(1.-RNEW)*MQUOT(NT)
         NEDEX2=NN-ITEMM
         IF(NEDEX2)703,704,704
703      NEDEX2=0
704      IF(NEDEXP-NEDEX2)706,706,707
707      NEDEXP=NEDEX2
706      NOO=NEEDS-NEDEXP
         IF(NOO)705,700,700
705      NOO=0
```

```
C**** *    *         *         *         *         *         *      23
 709    IF(JUMP1-1)99,98,99
C**** *    *         *         *         *         *         *      24
C SUB ROUTINE FLOW TO SHORT TOUR
  98    X=MQUOT(NT)
        Y=LS
        Z=X/Y*(R1+R2)*MQUOT(NT)+.5
        Y=NEEDS
        IF(1.1*Z-Y)103,103,99
 103    X=NST-ITEM
        DELTAX=MQUOT(NT)-NST
        Y=X+.90*RNEW*DELTAX
        IY=Y
        IF(IY-NEEDS)104,99,99
 104    NEEDS=Y
        NEDEXP=(1.-RNEW)*X+.5
        NOO=NEEDS-NEDEXP
  99    JNEED(NT)=NEEDS
C**** *    *         *         *         *         *         *      25
        IF(JUMP2-2)126,126,127
C**** *    *         *         *         *         *         *      26
C TRA I N TO AUTHORIZATION OR SCHOOL CAPACITY
 127    IF(MAXSYS-NTOT+KAS(NT)+LOSS(NT)+IETS(NT)-NEW(NT))125,238,238
 125    NEW(NT)=MAXSYS-NTOT+KAS(NT)+LOSS(NT)+IETS(NT)
        IF(NEW(NT))128,238,238
 128    NEW(NT)=0
        GO TO 238
C**** *    *         *         *         *         *         *      27
 126    IF(JUMP2-1)238,238,239
C**** *    *         *         *         *         *         *      28
C TRA I N TO MAINTAIN SYSTEM
 239    NEW(NT)=KAS(NT)+LOSS(NT)+IETS(NT)
 238    CONTINUE
        Y=NEW(NT)
C**** *    *         *         *         *         *         *      29
C RRA = RATE OF NEW TRAINEES TO BE ASSIGNED TO NONCAREER(R)
        RAUS=1.-RRA
        X=RAUS*Y+.5
        IX=X
        IBAUSN(1)=IBAUSN(1)+IX
        IBRAN(1)=IBRAN(1)+NEW(NT)-IX
```

```
C****** *     *     *     *     *     *     *     *     30
               R=1.-RNOUSE
               K=LEVTNG+1
               Y=R*IBAUSN(K)
               IY=Y
               IF(IY-NOO)247,248,248
      248      IAUS(K,1)=IAUS(K,1)+NOO
               IBAUSN(K)=IBAUSN(K)-NOO
               NEEDS=NEEDS-NOO
               INOO(NT)=INOO(NT)+NOO
               NOO=0
               GO TO 169
      247      NOO=NOO-IY
               NEEDS=NEEDS-IY
               IAUS(K,1)=IAUS(K,1)+IY
               INOO(NT)=INOO(NT)+IY
               IBAUSN(K)=IBAUSN(K)-IY
               Y=R*IBRAN(K)
               IY=Y
               IF(IY-NOO)170,172,172
      172      IRA(K,1)=IRA(K,1)+NOO
               IBRAN(K)=IBRAN(K)-NOO
               NEEDS=NEEDS-NOO
               INOO(NT)=INOO(NT)+NOO
               NOO=0
               GO TO 169
      170      NOO=NOO-IY
               NEEDS=NEEDS-IY
               IRA(K,1)=IRA(K,1)+IY
               INOO(NT)=INOO(NT)+IY
               IBRAN(K)=IBRAN(K)-IY
               LL=LRA-MINTUR
               LLP1=LL+1
               LLM1=LL-LEVTNG-1
               KK=LAUS-MINTUR
               KKP1=KK+1
               KKM1=KK-LEVTNG-1
C****** *     *     *     *     *     *     *     *     31
               IF(JUMP4-1)243,243,244
C****** *     *     *     *     *     *     *     *     32
C  ADJUST AREA SEARCHED TO ALLOW MINBSN MONTHS OTHER ASSIGNMENT
      244      KKM1=KK-(MINBSN+LEVTNG+1)
               LLM1=LL-(MINBSN+LEVTNG+1)
```

```
      243   CONTINUE
C***** *     *       *       *       *       *       *       *   33
C AVA L ILABLE NONCAREER(A) BASE TOUR WITHOUT SHORT TOUR EXP TO NONCAREER  ST
        R=1.-RINDPL
        DO 52 I=1,KKM1
        J=KKP1-I
        Y=R*IBAUSN(J)+.5
        IY=Y
        IF(IY-NOO)53,54,54
   54   IAUS(J,1)=IAUS(J,1)+NOO
        IBAUSN(J)=IBAUSN(J)-NOO
        NEEDS=NEEDS-NOO
        INOO(NT)=INOO(NT)+NOO
        NOO=0
        GO TO 169
   53   NOO=NOO-IY
        NEEDS=NEEDS-IY
        IAUS(J,1)=IAUS(J,1)+IY
        INOO(NT)=INOO(NT)+IY
   52   IBAUSN(J)=IBAUSN(J)-IY
C AVA I LABLE NONCAREER(B) BASE TOUR WITHOUT SHORT TOUR EXP TO NONCAREER S T
        DO 166 I=1,LLM1
        J=LLP1-I
        Y=R*IBRAN(J)+.5
        IY=Y
        IF(IY-NOO)167,168,168
  168   IRA(J,1)=IRA(J,1)+NOO
        IBRAN(J)=IBRAN(J)-NOO
        NEEDS=NEEDS-NOO
        INOO(NT)=INOO(NT)+NOO
        NOO=0
        GO TO 169
  167   NOO=NOO-IY
        NEEDS=NEEDS-IY
        IRA(J,1)=IRA(J,1)+IY
        INOO(NT)=INOO(NT)+IY
  166   IBRAN(J)=IBRAN(J)-IY
  169   CONTINUE
C***** *     *       *       *       *       *       *       *   34
        IF(JUMP7) 191,191,190
C***** *     *       *       *       *       *       *       *   35
  190   LA=1
```

```
C SEN D  BASE TOUR WITH ZERO AND ONE SHORT TOUR TO FIRST AND SECOND SHORT  TOUR
      LB=2
      GO TO 490
191   CONTINUE
C**** *    *         *         *         *         *         *         *  36
C CHE C K ALL CAREER BASE TOURS FOR SENDING TO SHORT TOUR
      LA=1
      LB=4
C**** *    *         *         *         *         *         *         *  37
C RET U RN POINT FOR SENDING BASE TOUR WITH 2 AND 3+ ST TO 3RD AND 4TH+ ST
490   IX=0
C**** *    *         *         *         *         *         *         *  38
C RTN D PL = RATE OF TEMPORARILY NONDEPLOYABLE
      R=1.-RINDPL
C SEN D  CAREER BASE TOUR WITH MORE THAN LC MONTHS TO SHORT TOUR
C CHA R GE TO NEEDS(EXPERIENCED)
      DO 472 L=LA,LB
      Y=JCLC(L)
      XJCLCT2=XJCLCT2+R*Y
      IXT(L)=XJCLCT2
      XJCLCT2=XJCLCT2-IXT(L)
472   IX=IX+IXT(L)
C**** *    *         *         *         *         *         *         *  39
      IF(NEDEXP-IX) 71,72,72
C**** *    *         *         *         *         *         *         *  40
72    DO 473 L=LA,LB
      JCLC(L)=JCLC(L)-IXT(L)
      NEDEXP=NEDEXP-IXT(L)
      NEEDS=NEEDS-IXT(L)
      GO TO (473,572,573),L
572   JS2=JS2+IXT(L)
      GO TO 473
573   JS3=JS3+IXT(L)
473   JS(1,L)=JS(1,L)+IXT(L)
C**** *    *         *         *         *         *         *         *  41
      IF(JUMP2-1)73,75,75
C**** *    *         *         *         *         *         *         *  42
C CAL C ULATE ADDITIONAL INPUT
C NEE W (NT) = ADDITIONAL INPUT FOR MONTH NT
73    NEEW(NT)=NEEW(NT)+NOO
      LVP1=LEVTNG+1
      IY=RAUS*NOO+.5
```

```
C ADD I TIONAL INPUT ADDED TO NONCAREER SHORT TOURS
      IAUS(LVP1,1)=IAUS(LVP1,1)+IY
      IRA(LVP1,1)=IRA(LVP1,1)+NOO-IY
      NEEDS=NEEDS-NOO
      NOO=0
      GO TO 75
C***** *    *    *    *    *    *    *    *    *  43
   71 IF(JUMP2-1)76,7?,77
C***** *    *    *    *    *    *    *    *    *  44
C CAL C ULATE ADDITIONAL INPUT
   76 IF(NEEDS-IX)78,79,79
C***** *    *    *    *    *    *    *    *    *  45
C SEN D  CAREER BASE WITH MORE THAN LC MONTHS TO SHORT TOUR
C CHA R GE TO NEEDS
78    DO 478 L=LA,LB
      NEEDST=NEEDS-IXT(L)
      IF(NEEDST) 475,475,474
474   JS(1,L)=JS(1,L)+IXT(L)
      NEEDS=NEEDST
      JCLC(L)=JCLC(L)-IXT(L)
      GO TO (478,574,575)L
574   JS2=JS2+IXT(L)
      GO TO 478
575   JS3=JS3+IXT(L)
      GO TO 478
475   JS(1,L)=JS(1,L)+NEEDS
      JCLC(L)=JCLC(L)-NEEDS
      GO TO (476,576,577)L
576   JS2=JS2+NEEDS
      GO TO 476
577   JS3=JS3+NEEDS
      GO TO 476
478   CONTINUE
476   NEDEXP=0
      NOO=0
      GO TO 171
C***** *    *    *    *    *    *    *    *    *  46
C SEN D  CAREER BASE TOUR WITH MORE THAN LC MONTHS TO SHORT TOUR
C CHA R GE TO NEEDS
79    DO 479 L=LA,LB
      JS(1,L)=JS(1,L)+IXT(L)
      GO TO (479,578,579)L
```

```
      JS2=JS2+IXT(L)
      GO TO 479
  579 JS3=JS3+IXT(L)
  479 JCLC(L)=JCLC(L)-IXT(L)
      NEDEXP=0
      NEEDS=NEEDS-IX
C**** *    *         *         *         *         *         *         *   47
      NOO=NEEDS
      LVP1=LEVTNG+1
C NEE W (NT) = ADDITION AL INPUT FOR MONTH NT
      NEEW(NT)=NEEW(NT)+NOO
C**** *    *         *         *         *         *         *         *   48
      IAUS(LVP1,1)=IAUS(LVP1,1)+NOO*RAUS
      IRA(LVP1,1)=IRA(LVP1,1)+NOO-NOO*RAUS
      NEEDS=NEEDS-NOO
      NOO=0
      GO TO 171
C**** *    *         *         *         *         *         *         *   49
C TRA I N TO MAINTAIN SYSTEM OR FIXED INPUT SUPPLIED BY USER
C CAR E ER BASE WITH MORE THAN LE MONTHS SENT TO CAREER SHORT TOUR
C CHA R GE TO NEEDS(EXPERIENCED)
   77 DO 477 L=LAVLB
      NEDEXPT=NEDEXP-IXT(L)
      IF(NEDEXPT) 480,480,481
  481 JCLC(L)=JCLC(L)-IXT(L)
      NEDEXP=NEDEXPT
      NEEDS=NEEDS-IXT(L)
      JS(1,L)=JS(1,L)+IXT(L)
      IX=IX-IXT(L)
      GO TO (580,581,582)L
  581 JS2=JS2+IXT(L)
      GO TO 580
  582 JS3=JS3+IXT(L)
  580 IXT(L)=0
      GO TO 477
  480 JCLC(L)=JCLC(L)-NEDEXP
      JS(1,L)=JS(1,L)+NEDEXP
      NEEDS=NEEDS-NEDEXP
      IXT(L)=IXT(L)-NEDEXP
      IX=IX-NEDEXP
      GO TO (482,583,584)L
  583 JS2=JS2+NEDEXP
      GO TO 482
```

```
      584     JS3=JS3+NEDEXP
              GO TO 482
      477     CONTINUE
      482     NEDEXP=0
      C****** *    *    *    *    *    *    *    *    *    *    50
              IF(NEEDS) 171,171,465
      C****** *    *    *    *    *    *    *    *    *    *    51
      465     IF(NOO) 171,171,81
      C IF  N OO GREATER THAN ZERO,SEND CAREER WITH MORE THAN LC MONTHS TO SHORT  TOUR
      C CHA R GE TO NEEDS(INEXPERIENCED)
      81      IF(IX-NOO) 83,83,82
      83      DO 483 L=LA,LB
              JS(1,L)=JS(1,L)+IXT(L)
              JCLC(L)=JCLC(L)-IXT(L)
              NOO=NOO-IXT(L)
              GO TO (483,585,586)L
      585     JS2=JS2+IXT(L)
              GO TO 483
      586     JS3=JS3+IXT(L)
      483     NEEDS=NEEDS-IXT(L)
              GO TO 75
      82      DO 486 L=LA,LB
              NOOT =NOO-IXT(L)
              IF(NOOT) 485,485,484
      484     JS(1,L)=JS(1,L)+IXT(L)
              JCLC(L)=JCLC(L)-IXT(L)
              NEEDS=NEEDS-IXT(L)
              NOO=NOO-IXT(L)
              GO TO (486,587,588)L
      587     JS2=JS2+IXT(L)
              GO TO 486
      588     JS3=JS3+IXT(L)
              GO TO 486
      485     JS(1,L)=JS(1,L)+NOO
              JCLC(L)=JCLC(L)-NOO
              NEEDS=NEEDS-NOO
              GO TO (487,589,590)L
      589     JS2=JS2+NOO
              GO TO 487
      590     JS3=JS3+NOO
              GO TO 487
      486     CONTINUE
      487     NOO=0
```

```
1059     C****  .    .    .    .    .    .    .    .    52
1060          75 CONTINUE
1061             IF(NEDEXP.EQ.NEEDS) 610,611
1062     611     NEDEXP=NEDEXP+100
1063     C****  .    .    .    .    .    .    .    .    53
1064     610     IF(JUMP4-1) 230,229,230
1065     C****  .    .    .    .    .    .    .    .    54
1066     C SEC 0 ND SHORT TOUR FOR NONCAREER
1067       230   LAUSM=LAUS-MINTIR+2
1068             M1=LAUSM-MINBAS-1
1069     C****  .    .    .    .    .    .    .    .    55
1070     C POS S IBLE TO SEND NONCAREER(A) TO SECOND SHORT TOUR
1071             IF(M1)68,68,231
1072     C SEM D  NONCAREER(A) TO SECOND SHORT TOUR
1073       231   DO 68 I=1,M1
1074             J=LAUSM-I
1075             DO 68 K=1,M1
1076             L=LAUSM-K
1077             Y=IBAUS(J,L)
1078             X=RSY+.5
1079             IX=X
1080     C****  .    .    .    .    .    .    .    .    56
1081             IF(IX-NEDEXP)69,70,70
1082     C****  .    .    .    .    .    .    .    .    57
1083          70 IBAUS(J,L)=IBAUS(J,L)-NEDEXP
1084             IAUS(J,1)=IAUS(J,1)+NEDEXP
1085             NEEDS=NEEDS-NEDEXP
1086             JS2=JS2+NEDEXP
1087             IF(JUMP5)94,95,94
1088          94 MEN=MEN+NEDEXP
1089             MON=MON+L*NEDEXP
1090          95 CONTINUE
1091             NEDEXP=0
1092             GO TO 171
1093     C****  .    .    .    .    .    .    .    .    58
1094          69 IBAUS(J,L)=IBAUS(J,L)-IX
1095             IAUS(J,1)=IAUS(J,1)+IX
1096             NEEDS=NEEDS-IX
1097             NEDEXP=NEDEXP-IX
1098             JS2=JS2+IX
1099             IF(JUMP5)96,97,96
1100          96 MEN=MEN+IX
1101             MON=MON+L*IX
```

```
      97   CONTINUE
      68   CONTINUE
C**** *    *         *         *         *         *         *         *  59
           LRAM=LRA-MINTUR+2
           M1=LRAM-MINBAS-1
C**** *    *         *         *         *         *         *         *  60
C POS S IBLE TO SEND NONCAREER(B) TO SECOND SHORT TOUR
           IF(M1)229,229,173
C SEN D  NONCAREER(A) TO SECOND SHORT TOUR
  173      DO 174 I=1,M1
           J=LRAM-I
           DO 174 K=1,M1
           L=LRAM-K
           Y=IBRA(J,L)
           X=R*Y+.5
           IX=X
C**** *    *         *         *         *         *         *         *  61
           IF(IX-NEDEXP)175,176,176
C**** *    *         *         *         *         *         *         *  62
  176      IBRA(J,L)=IBRA(J,L)-NEDEXP
           IRA(J,1)=IRA(J,1)+NEDEXP
           NEEDS=NEEDS-NEDEXP
           JS2=JS2+NEDEXP
           IF(JUMP5)177,178,177
  177      MEN=MEN+NEDEXP
           MON=MON+L*NEDEXP
  178      CONTINUE
           NEDEXP=0
           GO TO 171
C**** *    *         *         *         *         *         *         *  63
  175      IBRA(J,L)=IBRA(J,L)-IX
           IRA(J,1)=IRA(J,1)+IX
           NEEDS=NEEDS-IX
           NEDEXP=NEDEXP-IX
           JS2=JS2+IX
           IF(JUMP5) 179,174,179
  179      MEN=MEN+IX
           MON=MON+L*IX
  174      CONTINUE
  229   CONTINUE
C
C**** *    *         *         *         *         *         *         *  64
```

```
      C BEG I N STEAL DOWN IN CAREER BASE TOURS
C
            LCM=LC-MINBAS
            LCP1=LC+1
C**** *     *     *     *     *     *     *     *     * 65
            DO 57 I=1,LCM
            IX=0
            J=LCP1-I
C**** *     *     *     *     *     *     *     *     * 66
            DO 459 L=LA,LB
            Y=JC(J,L)
            X=R*Y+.5
            IXT(L)=X
459         IX=IX+IXT(L)
C**** *     *     *     *     *     *     *     *     * 67
            IF(IX-NEDEXP) 59,58,59
C**** *     *     *     *     *     *     *     *     * 68
59          DO 458 L=LA,LB
            NEDEXPT=NEDEXP-IXT(L)
            IF(NEDEXPT) 457,457,456
456         JS(1,L)=JS(1,L)+IXT(L)
            JC(J,L)=JC(J,L)-IXT(L)
            NEEDS=NEEDS-IXT(L)
            NEDEXP=NEDEXPT
            GO TO (458,556,557)L
556         JS2=JS2+IXT(L)
            MEN=MEN+IXT(L)
            MON=MON+J*IXT(L)
            GO TO 458
557         JS3=JS3+IXT(L)
            MEN=MEN+IXT(L)
            MON=MON+J*IXT(L)
            GO TO 458
457         JS(1,L)=JS(1,L)+NEDEXP
            JC(J,L)=JC(J,L)-NEDEXP
            NEEDS=NEEDS-NEDEXP
            GO TO (455,554,555)L
554         JS2=JS2+NEDEXP
            MEN=MEN+NEDEXP
            MON=MON+J*NEDEXP
            GO TO 455
555         JS3=JS3+NEDEXP
```

```
                MON=MON+J*NEDEXP
                MEN=MEN+NEDEXP
                GO TO 455
458             CONTINUE
455             NEDEXP=0
                GO TO 171
C****** *       *       *       *       *       *       *       *       69
58              DO 57 L=LA,LB
                JS(1,L)=JS(1,L)+IXT(L)
                JC(J,L)=JC(J,L)-IXT(L)
                NEDEXP=NEDEXP-IXT(L)
                GO TO (57,566,567)L
566             JS2=JS2+IXT(L)
                MEN=MEN+IXT(L)
                MON=MON+J*IXT(L)
                GO TO 57
567             JS3=JS3+IXT(L)
                MEN=MEN+IXT(L)
                MON=MON+J*IXT(L)
57              NEEDS=NEEDS-IXT(L)
C****** *       *       *       *       *       *       *       *       70
171             IF(NEDEXP.EQ.0) 499,492
C****** *       *       *       *       *       *       *       *       71
492             GO TO (493,493,494,499) LB
C****** *       *       *       *       *       *       *       *       72
C CHE C K CAREER BASE WITH 2 SHORT TOURS TO MEET NEEDS
493             LA=3
                LB=3
                GO TO 490
C****** *       *       *       *       *       *       *       *       73
C CHE C K CAREER BASE WITH 3+ SHORT TOURS TO MEET NEEDS
494             LA=4
                LB=4
                GO TO 490
C NEE D S = 0+ OR NOT POSSIBLE TO FILL NEEDS
C****** *       *       *       *       *       *       *       *       74
499             JNEED(NT)=JNEED(NT)+NEEDS
C JS2 T (NT) = NUMBER OF CAREER SENT TO 2ND SHORT TOUR IN MONTH NT
                JS2T(NT)=JS2
C JS3 T (NT) = NUMBER OF CAREER SENT TO 3RD+ SHORT TOURS IN MONTH NT
                JS3T(NT)=JS3
C INO 0 (NT) = TOTAL NEW REPLACEMENTS SENT IN MONTH NT
```

```
      INOO(NT)=INOO(NT)+NEEN(NT)
1229  XTR(NT)=LC
      IF(MEN)60,60,61
1231     61 X=MON
      Y=MEN
1233  C XTR ( NT) = AVERAGE BASE TOUR LENGTH
      XTR(NT)=X/Y-1.
1235  C IRE T (NT) = TOTAL REPLACEMENTS WITH LESS THAN DESIRED BASE TOUR
      IRET(NT)=MEN
1237     60 CONTINUE
      ITEM=0
1239  KTEM=0
      DO 62 I=1,LS
1241  DO 462 L=1,4
      462 KTEM=KTEM+JS(I,L)
1243  DO 181 J=1,LRA
      181 ITEM=ITEM+IRA(J,I)
1245  DO 62 J=1,LAUS
      62 ITEM=ITEM+IAUS(J,I)
1247  C MST A CT(NT) = TOTAL ON HAND IN SHORT TOUR FOR MONTH NT
      NSTACT(NT)=ITEM+KTEM
1249  ITEM=0
      DO 63 L=1,4
1251  DO 63 I=1,LC
      63 ITEM=ITEM+JC(I,L)
1253  C ICA R (NT) = TOTAL CAREER IN BASE WITH LESS THAN LC MONTHS
      IGAR(NT)=ITEM
1255  JCLCT=0
      DO 463 L=1,4
1257  463 JCLCT=JCLCT+JCLC(L)
      C NTO T CR(NT) = TOTAL CAREER IN MONTH NT
1259  NTOTCR(NT)=KTEM+ITEM+NDPLP+JCLCT
      DO 64 I=1,LAUS
1261  ITEM=ITEM+IBAUSN(I)
      DO 64 J=1,LAUS
1263     64 ITEM=ITEM+IBAUS(I,J)
      DO 182 I=1,LRA
1265  ITEM=ITEM+IBRAN(I)
      DO 182 J=1,LRA
1267     182 ITEM=ITEM+IBRA(I,J)
      C IGR A ND(NT) = SYSTEM TOTAL FOR MONTH NT
1269  IGRAND(NT)=NSTACT(NT)+ITEM+NDPLP+JCLCT
      DO 65 I=1,LS
```

```
      MAUS(I)=0
      MRA(I)=0
      DO 183 J=1,LRA
  183 MRA(I)=MRA(I)+IRA(J,I)
      DO 65 J=1,LAUS
   65 MAUS(I)=MAUS(I)+IAUS(J,I)
      DO 66 I=1,LAUS
      IAUSMT(I)=0
      DO 66 J=1,LS
   66 IAUSMT(I)=IAUSMT(I)+IAUS(I,J)
      DO 67 I=1,LAUS
      IBUSMT(I)=0
      MBAUS(I)=0
      DO 67 J=1,LAUS
      IBUSMT(I)=IBUSMT(I)+IBAUS(I,J)
   67 MBAUS(I)=MBAUS(I)+IBAUS(J,I)
      DO 184 I=1,LRA
      IRAMT(I)=0
      DO 184 J=1,LS
  184 IRAMT(I)=IRAMT(I)+IRA(I,J)
      DO 185 I=1,LRA
      IBRAMT(I)=0
      MBRA(I)=0
      DO 185 J=1,LRA
      IBRAMT(I)=IBRAMT(I)+IBRA(I,J)
  185 MBRA(I)=MBRA(I)+IBRA(J,I)
C**** +    .    .    .    .    .    .    .   75
      IF(JUMP2-1)210,224,211
C
C**** +    .    .    .    .    .    .    .   76
C PRI N T MONTHLY MATRICES AND VECTORS
C
  211 CONTINUE
      PRINT 321,MT
      PRINT 201
      DO 202 I=1,LAUS
  202 PRINT 301,(IAUS(I,J),J=1,LS)
      PRINT 204
      DO 205 I=1,LAUS
  205 PRINT 301,(IBAUS(I,J),J=1,LAUS)
      PRINT 249
      DO 250 I=1,LRA
```

```
      250   PRINT 301,(IRA(I,J),J=1,LS)
            PRINT 251
            DO 252 I=1,LRA
      253   PRINT 301,(IBRA(I,J),J=1,LRA)
      220   CONTINUE
C
C****** *     *     *     *     *     *     *     *  77
C PRINT MONTHLY VECTORS
C
            PRINT 225
C NON C AREER(A) TIME IN SHORT TOUR
            PRINT 301,(MAUS(I),I=1,LS)
            PRINT 226
C NON C AREER(A) SHORT TOUR BIS SCHEDULE
            PRINT 301,(IAUSMT(I),I=1,LAUS)
            PRINT 252
C NON C AREER(B) TIME IN SHORT TOUR
            PRINT 301,(MRA(I),I=1,LS)
            PRINT 254
C NON C AREER(B) SHORT TOUR BIS SCHEDULE
            PRINT 301,(IRAMT(I),I=1,LRA)
            PRINT 227
C NON C AREER(A) RETURNEE TIME IN BASE
            PRINT 301,(MBAUS(I),I=1,LAUS)
            PRINT 228
C NON C AREER(A) RETURNEE BIS SCHEDULE
            PRINT 301,(IBUSMT(I),I=1,LAUS)
            PRINT 255
C NON C AREER(B) RETURNEE TIME IN BASE
            PRINT 301,(MBRA(I),I=1,LRA)
            PRINT 256
C NON C AREER(B) RETURNEE BIS SCHEDULE
            PRINT 301,(IBRAMT(I),I=1,LRA)
            PRINT 203
            DO 470 L=1,4
            PRINT 500,L
C CAREER SHORT TOUR
  470       PRINT 301,(JS(I,L),I=1,LS)
            PRINT 206
C NON C AREER(A) BASE TOUR WITHOUT SHORT TOUR EXPERIENCE
            PRINT 301,(IBAUSN(I),I=1,LAUS)
            PRINT 257
```

```
      C NON C AREER(B) BASE TOUR WITHOUT SHORT TOUR EXPERIENCE
            PRINT 301,(IGRAN(I),I=1,LRA)
            PRINT 223
            DO 471 L=1,4
            N=L-1
            PRINT 501,N
      C CAR E ER BASE TOUR
  471       PRINT 301,(JC(I,L),I=1,LCC)
      C NUM B ER PERMANENTLY NONDEPLOYABLE
            PRINT 207,NOPLP
      C CAR E ER WITH COMPLETED BASE TOUR
            PRINT 208, JOLGT
            PRINT 502
            PRINT 301,(JCLG(I),I=1,6)
   21     CONTINUE
      C NUM B ER ACTUALLY ON HAND IN SHORT TOUR
            NST=NSTACT(NT)
      C SYS T EM TOTAL
            NTOT=IGRAND(NT)
      C
C     C****  *    *    *    *    *    *    *    *  78
      C END  OF MONTHLY ITERATIONS
   10     CONTINUE
      C
      C
C     C****  *    *    *    *    *    *    *    *  79
            IF(LEVTNG)90,90,91
      C LEV T NG = DELAY AFTER ENTERING SYSTEM BEFORE ASSIGNMENT
C     C****  *    *    *    *    *    *    *    *  80
   91       NTM=NTIME-LEVTNG
            DO 92 I=1,NTM
            J=I+1
            K=I+LEVTNG
      C ADD  ADDITIONAL INPUT TO APPROPRIATE MONTHLY GRAND TOTAL
            DO 92 II=J,K
   92       IGRAND(II)=IGRAND(I)+NEW(III)
            J=NTM+1
            DO 93 I=J,NTIME
   93     IGRAND(I)=-9999
            K=NTIME-LEVTNG
C     C****  *    *    *    *    *    *    *    *  81
            DO 94 I=1,K
```

```
                      IPL=I+LEVTNG
                   44 NEEW(I)=NEEW(IPL)
                      KP1=K+1
                      DO 47 I=KP1,NIImF
                   47 NEEW(I)=-999
                   48 CONTINUE
C
C.....A.....B.....C.....D.....E.....F.....G.....H.....82
C PRI N T OUT SUMMARY
C
                      PRINT 320,(FMT(I),I=1,9)
                      PRINT 324
                      PRINT 325
                      PRINT 326
C.....A.....B.....C.....D.....E.....F.....G.....H.....83
                      DO 327 I=1,IFY
                  327 PRINT 328,I,NOUOT(I),NRET(I),KAS(I),KAS2(I),INEED(I),JNEED(I),INOU
                     1 T(I),IRET(I),JS2T(I),JS3T(I),XTR(I),NSTACI(I),IOAR(I),IRETNT(I),
                     2 NTOTCR(I),NEW(I),NEEW(I),LOSS(I),IETS(I),IGRAND(I)
                      XTOT=0
                      JS2TT=JS3TT=0
                      DO 330 I=1,12
                  330 ITT(I)=0
C.....A.....B.....C.....D.....E.....F.....G.....H.....84
                      DO 331 J=1,IFY
                      ITT(1)=ITT(1)+NOGT(J)
                      ITT(2)=ITT(2)+KAS(J)
                      ITT(3)=ITT(3)+KAS2(J)
                      ITT(4)=ITT(4)+INEED(J)
                      ITT(5)=ITT(5)+JNEED(J)
                      ITT(6)=ITT(6)+INOO(J)
                      ITT(7)=ITT(7)+IRET(J)
                      JS2TT=JS2TT+JS2T(J)
                      JS3TT=JS3TT+JS3T(J)
                      XTOT=XTOT+XTR(J)+IRET(J)
                      ITT(8)=ITT(8)+IRETNT(J)
                      ITT(9)=ITT(9)+NEW(J)
                      ITT(10)=ITT(10)+NEEW(J)
                      ITT(11)=ITT(11)+LOSS(J)
                  331 ITT(12)=ITT(12)+IETS(J)
                      Y=ITT(7)
                      IF(Y+13.+13.)4
```

```
1439          13   XTOT=LC
1440               GO TO 15
1441          14   XTOT=XTOT/Y
1442     C****** *    *    *    *    *    *    *    *    *    *    *    *    86
1443          15   PRINT 332,(ITT(I),I=1,3),(ITT(J),J=5,7),JS2TT,JS3TT,XTOT,(ITT(K),K
1444              1 =8,12)
1445     C****** *    *    *    *    *    *    *    *    *    *    *    *    86
1446               K=(NTIME-IFY)/12
1447     C****** *    *    *    *    *    *    *    *    *    *    *    *    87
1448               DO 333 III=1,K
1449     C****** *    *    *    *    *    *    *    *    *    *    *    *    88
1450               II=IFY+1+(III-1)*12
1451               JJ=II+11
1452               XTOT=0
1453               JS2TT=JS3TT=0
1454               DO 336 J=1,12
1455         336   ITT(J)=0
1456               DO 335 J=II,JJ
1457               ITT(1)=ITT(1)+NDET(J)
1458               ITT(2)=ITT(2)+KAS(J)
1459               ITT(3)=ITT(3)+KAS2(J)
1460               ITT(4)=ITT(4)+INEED(J)
1461               ITT(5)=ITT(5)+JNEED(J)
1462               ITT(6)=ITT(6)+INOO(J)
1463               ITT(7)=ITT(7)+IDET(J)
1464               JS2TT=JS2TT+JS2T(J)
1465               JS3TT=JS3TT+JS3T(J)
1466               XTOT=XTOT+XTR(J)*IDET(J)
1467               ITT(8)=ITT(8)+IRETNT(J)
1468               ITT(9)=ITT(9)+NEW(J)
1469               ITT(10)=ITT(10)+NEEW(J)
1470               ITT(11)=ITT(11)+LOSS(J)
1471         335   ITT(12)=ITT(12)+IETS(J)
1472     C**** *    *    *    *    *    *    *    *    *    *    *    *    89
1473               DO 337 I=II,JJ
1474          337  PRINT 338,I,NOUNT(I),NRET(I),KAS(I),KAS2(I),INEED(I),JNEED(I),INOU
1475              1 (I),IRET(I),JS2T(I),JS3T(I),XTR(I),NSTACT(I),IDAR(I),IRETNT(I),
1476              2 NTOTCR(I),NEW(I),NEE=(I),LOSS(I),IETS(I),IDRAND(I)
1477               Y=ITT(7)
1478               IF(Y)11,11,12
1479         11    XTOT=LC
1480               GO TO 333
1481         12    XTOT=XTOT/Y
```

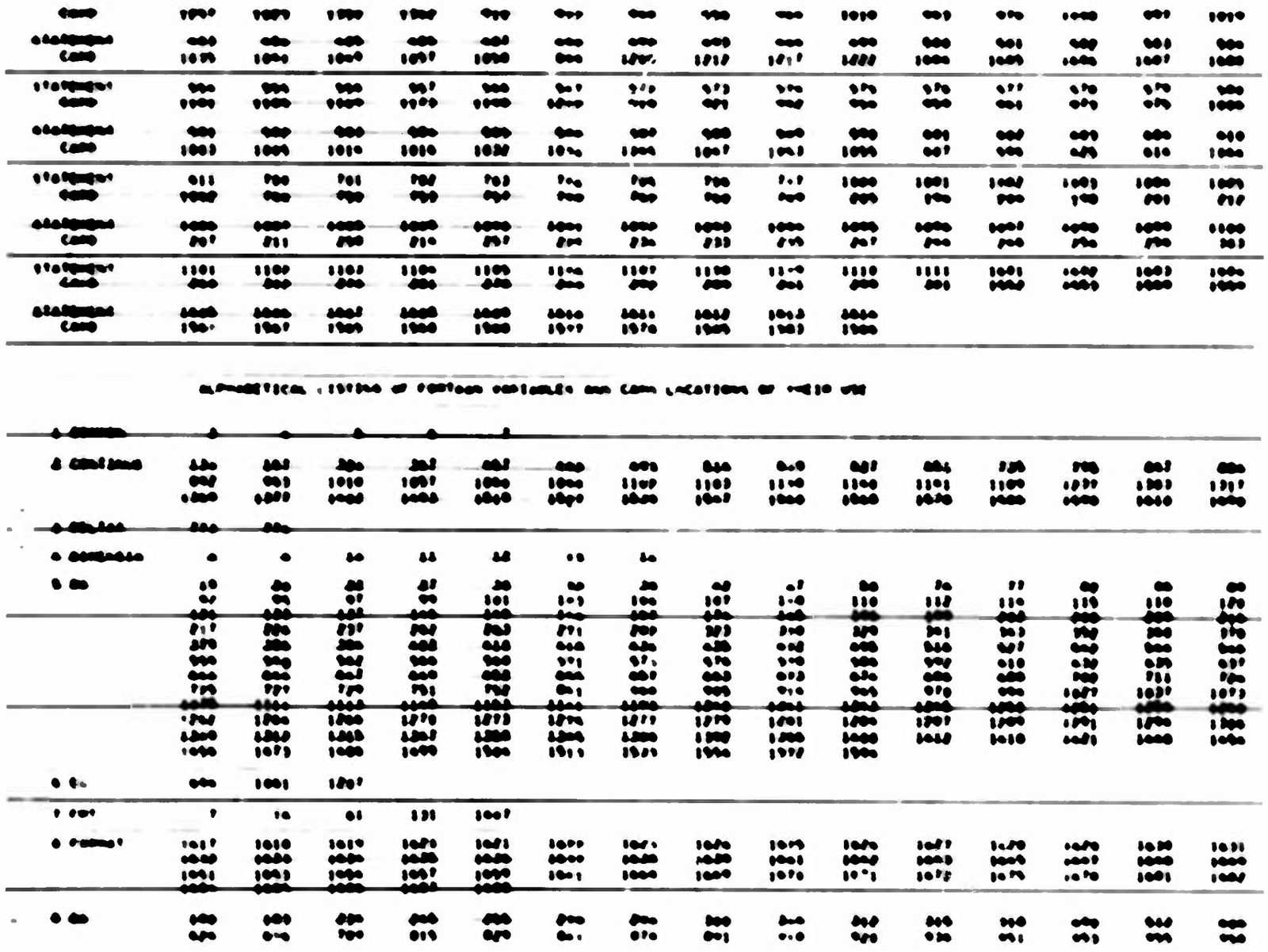
```
      333      PRINT 332,(III(I),I=1,2),(III(J),J=5,7),JSQ,I,(JJJ,XIQ),(III(M),
     1 K1=8,12)
C     .    .    .    .    .    .    .    .    .    .    .    .    .    .    90
      338   PRINT 328,I,NQUOT(I),NRET(I),KAS(I),KAS2(I),INFED(I),JNEED(I),INQU
     1 (I),INET(I),JSQ(I),JS3(I),NTR(I),NSTAT(I),ICAR(I),INETNT(I),
     2 NTOTCR(I),NEW(I),NEEW(I),LOSS(I),IETS(I),IGRAND(I)
C     .    .    .    .    .    .    .    .    .    .    .    .    .    .    91
      IF(JUMP6) 118,119,118
C     .    .    .    .    .    .    .    .    .    .    .    .    .    .    92
  119 CONTINUE
      R=1.-RNEW
      R100=100.*R
      RN=1.-RLOSS2
      RC=1.-RLOSS1
      ITM=NTIME-LEVTNG
      DO 110 I=LC,ITM
      J=I-LC+1
      ISYS(J)=NSTACT(I)
      ISYS(J)=R*NSTACT(I)+.5
      JJ=I-LEVTNG+1
      DO 111 JJJ=JJ,I
  111 ISYS(J)=ISYS(J)+NEW(JJJ)+NEEW(JJJ)
      ILAUS=LS+LC-LEVTNG-LAUS
      IF(ILAUS)112,112,113
  112 ILAUS=0
  113 NEWTOT=0
      NINCAR=0
      NCARER=0
      JJ=I+1+ILAUS-LC
      DO 114 K=JJ,I
      KK=I-K
      NRETN=NRET(K)+KAS2(K)
      L=K-LS
      IF(L)55,55,56
   55 L=1
  56  CONTINUE
      X=NTOTCR(L)
      Y=IGRAND(L)
      RCR=X/Y
      IF(RCR-R)133,133,134
```

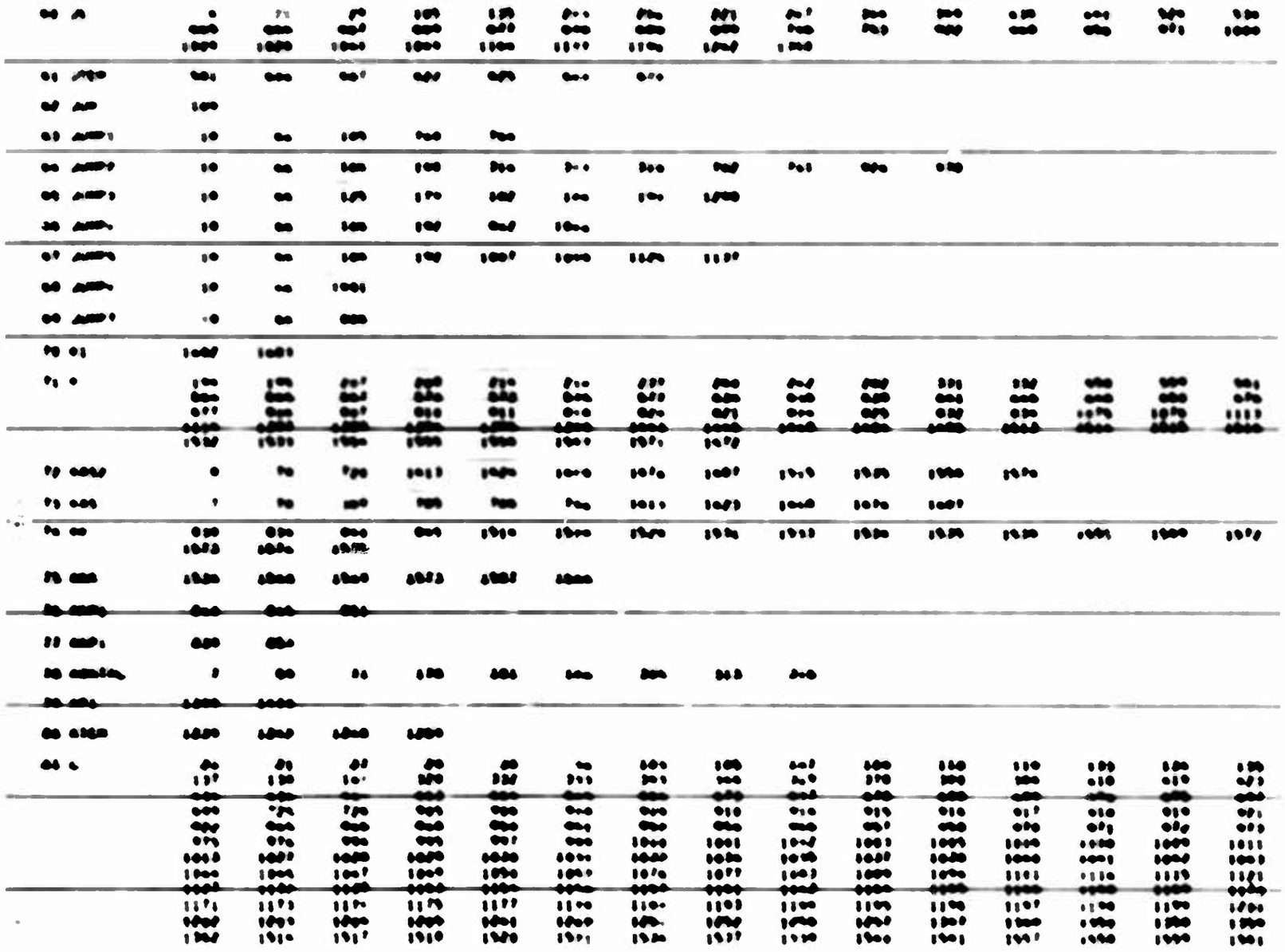
```
      P=RCR
      GO TO 135
  132 P=R
  135 CONTINUE
      NEWIOI=NEWIOI+NOETN*R*RC**KK
      NINCAR=NINCAR+NOETN*R*RC**KK
      NCARER=NCARER+NOETN*R*RC**KK
  114 JJ=I-LC+1
      KK=I-LC+LAUG
      DO 115 KK=JJ,K
      KKK=I-KK
      NRETN=NRET(KK)*RAS2(KK)
      L=KK-LS
      IF(L)85,85,88
   85 L=1
   88 CONTINUE
      X=NTOTCR(L)
      Y=IGRAND(L)
      RCR=X/Y
      IF(RCR-R)136,136,137
  137 P=RCR
      GO TO 138
  136 P=R
  138 CONTINUE
      NINCAR=NINCAR+NOETN*R*RC**KKK*NRETN*NEWIOI*(1.-RRA)*RN**KKK
  115 NCARER=NCARER+NOETN*P*RC**KKK*NRETN*(1.-P)*(1.-RRA)*RN**KKK
      ILRA=LS+LC-LEVTH0-LAA
      IF(ILRA)1601,1601,1602
 1601 ILRA=0
 1602 JJ=I+1+ILRA-LC
      DO 1603 K=JJ,I
      KK=I-K
      NRETN=NRET(K)*RAS2(K)
      L=K-LS
      IF(L)1604,1604,1603
 1604 L=1
 1603 CONTINUE
      X=NTOTCR(L)
      Y=IGRAND(L)
      RCR=X/Y
      IF(RCR-R)1606,1606,1607
 1607 P=RCR
      GO TO 1608
```

```
      1606      P=R
      1608      CONTINUE
      1609      NEWTOT=NEWTOT+NRETN*(1.-P)*RRA*RN**KK
                JJ=I-LC+1
                K=I-LC+ILRA
                DO 1609 KK=JJ,K
                KKK=I-KK
                NRETN=NRET(KK)+NAS2(KK)
                L=KK-LS
                IF(L)1610,1610,1611
      1610      L=1
      1611      CONTINUE
                X=NTOTCR(L)
                Y=IGRAND(L)
                RCR=X/Y
                IF(RCR-R)1612,1612,1613
      1613      P=RCR
                GO TO 1614
      1612      P=R
      1614      CONTINUE
                MINCAR=MINCAR+NRETN*RNEW*RRA*RN**KKK
      1609      NCARER=NCARER+NRETN*(1.-P)*RRA*RN**KKK
                ICSYS(J)=ICSYS(J)+MINCAR
      118       ISYS(J)=ISYS(J)+NEWTOT*NCARER
                ITOP=ISYS(1)
                MONTH=LC
                J=ITM-LC+1
                DO 116 I=2,J
                IF(ISYS(I)-ITOP)116,116,117
      117       ITOP=ISYS(I)
                MONTH=LC+I-1
      116       CONTINUE
      C
      C*****0*********0*********0*********0*********0*********0*********0**
      C P R I N T OUT MINIMUM SYSTEM DATA
      C
                PRINT 313,R100,LEVTNG,R100
                PRINT 311,LC,LC
                J=NTIME-LEVTNG-LC+1
                PRINT 301,(ISYS(I),I=1,J)
                PRINT 312,R
                PRINT 301,(ICSYS(I),I=1,J)
                PRINT 310,LC,ITOP,MONTH
```

```
      110  CONTINUE
C**** *    *         *         *         *         *         *         *   94
C RFA 0  PARAMETER CARD TO SEE IF THERE IS ANOTHER SAMPLE
      READ 4,ISTOP
C**** *    *         *         *         *         *         *         *   95
      IF(ISTOP)102,101,102
C IF  T HERE IS NOT ANOTHER SAMPLE . . . . . STOP
    2 FORMAT(11I5,8I3)
    3 FORMAT(9A8)
    4 FORMAT(16I5)
    5 FORMAT(10F5.3)
   17 FORMAT(8I10)
  201 FORMAT(25H0NONCAREER(A) SHORT TOUR          )
  203 FORMAT(20H0CAREER SHORT TOUR       )
  204 FORMAT(35H0NONCAREER(A) BASE TOUR RETURNEES          )
  206 FORMAT(54H0NONCAREER(A) BASE TOUR WITHOUT SHORT TOUR EXPERIENCE  )
  207 FORMAT(36H0PERMANENTLY NONDEPLOYABLE CAREER=     I8)
  208 FORMAT(43H0CAREER PEOPLE WITH COMPLETED BASE TOUR=     4I8)
  223 FORMAT(20H0CAREER BASE TOUR          )
  225 FORMAT(40H0NONCAREER(A) TIME IN SHORT TOUR          )
  226 FORMAT(40H0NONCAREER(A) SHORT TOUR ETS SCHEDULE          )
  227 FORMAT(40H0NONCAREER(A) RETURNEES TIME IN BASE          )
  228 FORMAT(40H0NONCAREER(A) RETURNEES ETS SCHEDULE          )
  249 FORMAT(30H0NONCAREER(B) SHORT TOUR          )
  251 FORMAT(37H0NONCAREER(B) BASE TOUR RETURNEES          )
  253 FORMAT(34H0NONCAREER(B) TIME IN SHORT TOUR          )
  254 FORMAT(40H0NONCAREER(B) SHORT TOUR ETS SCHEDULE          )
  255 FORMAT(40H0NONCAREER(B) RETURNEES TIME IN BASE       )
  256 FORMAT(40H0NONCAREER(B) RETURNEES ETS SCHEDULE       )
  257 FORMAT(57H0SECOND NONCAREER BASE TOUR WITHOUT SHORT TOUR EXPERIENC
     1E   )
  301 FORMAT(1H 12I10)
  302 FORMAT(1H 12F10.3)
  303 FORMAT(1H 8X2HR18X2HR24X6HRLOSS14X6HRLOSS24X6HRLOSS34X6HRETNT14X6H
     1RETNT24X6HRNOUSE4X6HRPNUPLA6X6HRINDRL6X4HRNEW7X3HRRA    )
  304 FORMAT(/1H 8X2HLS8X2HLC6X4HLAUS7X3HLRA5X5HNTIME4X6HMINTUR4X6HLEVTN
     1G4X6HMINBAS4X6HMINBSN5X5HIEOUT7X3HIFY5X5HJUMP1)
  305 FORMAT(/H 5X5HJUMP25X5HJUMP35X5HJUMP45X5HJUMP55X5HJUMP65X5HJUMP7)
  306 FORMAT(/14H KONTRL VECTOR    )
  307 FORMAT(9X2HLS8X2HLC6X4HLAUS7X3HLRA4X6HMINTUR4X6HLEVTNG4X6HMINBAS4X
     16HMINBSN5X5HIEOUT6X5HJUMP15X5HJUMP25X5HJUMP3)
  308 FORMAT(9X2HR18X2HR24X6HRLOSS14X6HRLOSS24X6HRLOSS34X6HRETNT14X6HRET
```

```
1652          1 NI24X6HNONUSE4X6HRENDPL4X6HRINDPL6X4HRNEW7X3HRRA     )
1653      309   FORMAT(/1H 5X5HJUMP45X5HJUMP5  )
1654      310   FORMAT(///1THEFOR BASE TOUR = I3.36H MONTHS THE MINIMUM SYSTEM TOI
1655          1 AL IS   I5.40H . THIS TOTAL IS FIRST REQUIRED BY MONTH   I3.19H OF
1656          2  THE SIMULATION.     )
1657      311   FORMAT(//20HOSTARTING WITH MONTH  I3.45H THE MINIMUM SYSTEM TOTALS
1658          1  FOR A BASE TOUR OF  I3.14H MONTHS FOLLOW     )
1659      312   FORMAT(4HOFOR F5.3.67H CAREER EXPERIENCED IN SHORT TOUR THE MINIMU
1660          1 M CAREER TOTALS FOLLOW     )
1661      313   FORMAT(56H1THE FOLLOWING COMPUTATIONS ARE BASED ON 4 ASSUMPTIONS--
1662          1 //13H (1) AT LEAST F3.0.57H PERCENT OF THE MEN IN SHORT TOUR ARE
1663          2 CAREER EXPERIENCED.  //46H (2) NONCAREER MEN SERVE ON ONE HARDSHIP
1664          3  TOUR.  //41H (3) NONCAREER MEN GO TO SHORT TOUR AFTER  I3. 26H M
1665          4 ONTH(S) IN THE SYSTEM.  //18H (4) IF MORE THAN  F3.0.105H PERCENT
1666          5  OF THE TOTAL AGE CAREER MEN A CORRESPONDING PROPORTION OF CAREER
1667          6 ARE ASSIGNED TO SHORT TOUR.     )
1668      320   FORMAT(1H1  888)
1669      321   FORMAT(10H1PERIOD     I8)
1670      322   FORMAT(20HOSTARTING INVENTORY     )
1671      323   FORMAT(15HOSYSTEM TOTAL=    I10)
1672      324   FORMAT(1HOMONTH9X2HST4X3HEND5H PERM3X2HST3X4HREPL3X4HREPL4X3HNEW4X
1673          1 3HRET3X3H2ND2X4H3RD.4X3HAVG7H  ST ON7H  NBASE2X5HRETNT4X3HCAR5H IN
1674          2 PTOH ABOLSH ATTRT2X3HET99X4HSYST     )
1675      325   FORMAT(1H 7X5HQUOTA3X4HTOUR2X3HCAS2X3HCAS4X3HRFQ3X4HSENT3X4HREPL4X
1676          1 3H LOSS4HTOUR. TH  OF TRG4H-AND3H-H  LOSS5HABSNS4X3HTOTG4H
1677          2  SCHD5H INPT2X4HLOSS4X3HTOT     )
1678      326   FORMAT(1HO(1)3X(2)3X(3)3X(4)3X(5)4X3H(6)4X3H(7)4X
1679          1 3H(8)3X3H(9)2X4H(10)3X4H(11)3X4H(12)3X4H(13)3X4H(14)3X4H(15)1X4H(1
1680          2 6)3X4H(17)2X4H(18)3X4H(19)3X4H(20)     )
1681      327   FORMAT(1H I5.2I7.2I5.4I7.2I6.F7.1.4I7.I6.I4.I6.I6.I8)
1682      328   FORMAT(1H0F5.1.I4.I6    I6.2I6.F8.1.2I7.2I8.I7.I5.F7.1.I4.I4X.I7.I5X.I7.I6
1683          1 .I6.I8//.1H     )
1684      500   FORMAT(6H     TOURS)
1685      501   FORMAT(6H     .I1.2X11HSHORT TOURS)
1686      502   FORMAT(1H0I2.9X.3H1.9X.3H2.9X.3H3.I3H  SHORT TOURS)
1687      503   FORMAT(26H0SCHEDULED TRAINING OUTPUT)
1688      504   FORMAT(1H0I2.9X.3H4. TOUR OUTPUT)
1689      C     .    .    .    .    .    .    .    .    .  96
1690      100   CONTINUE
1691            END
```





[illegible]

105 LSM1	642	644	674												
106 LSP1	643	645	675												
107 LUSM1	552	556	568	592	632										
108 LUSP1	553	557	569	633											
109 LVP1	929	932	933	981	985	9[illegible]									
110 M1	1068	1071	1073	1075	1106	11[illegible]	1111	1113							
111 M	138	139	1359	1360											
112 MAUS	8	88	91	1271	1276	13[illegible]									
113 MAXSYS	38	78	786												
114 MBAUS	7	1283	1286	1336											
115 MBRA	13	1293	1296	1342											
116 MEN	736	1088	1100	1126	1138	117[illegible]	117[illegible]	1182	1187	11[illegible]7	1203	1230	1232	1236	
117 MINBAS	17	63	105	109	1060	11[illegible]6	1146								
118 MINBSN	17	63	105	109	865	8[illegible]4									
119 MINCAR	1510	1529	1548	1587	1589										
120 MINTUR	17	63	105	109	835	8[illegible]8	1067	1105							
121 MON	737	1089	1101	1127	1139	117[illegible]	117[illegible]	1183	1186	1208	1204	1231			
122 MONTH	1502	1507	1609												
123 MOUOT	6	56	162	732	754	7[illegible]7	789	773	1013	1076	1087				
124 MRA	14	87	94	1272	1276	13[illegible]									
125 MRET	8	78	660	666	669	67[illegible]	1514	1538	1546	1574					
126 MTEN	582	602	629	629											
127 NCAR	9	79													
128 NCARED	511	153[illegible]	1549	1588	1590										
129 NDPLP	38	123	141	426	431	644	664	683	945	801	819	1250	1260	1304	
130 NEDE=2	755	756	757	758	759										
131 NEDE=P	44	766	75[illegible]	790	768	77[illegible]	778	812	9[illegible]8	984	977	995	998	1008	1009
	[illegible]010	[illegible]011	[illegible]018	[illegible]014	[illegible]016	[illegible]019	[illegible]001	[illegible]002	[illegible]004	[illegible]005	[illegible]006	[illegible]008	[illegible]006	[illegible]008	[illegible]009
	1091	1097	1119	1121	1122	1123	1124	1126	1127	1129	1135	1159	1162	1167	1177
	[illegible]170	[illegible]170	[illegible]101	[illegible]102	[illegible]103	[illegible]106	[illegible]108	[illegible]107	[illegible]100	[illegible]106	[illegible]207				
[illegible]30 NEDEAD1	[illegible]05	[illegible]06	[illegible]08	[illegible]102	[illegible]103	[illegible]10[illegible]									
[illegible]33 NEEDG	[illegible]4	[illegible]30	[illegible]33	[illegible]34	[illegible]38	[illegible]40	[illegible]44	[illegible]60	[illegible]06	[illegible]38	[illegible]33	[illegible]30	[illegible]56	[illegible]12	[illegible]17
	826	831	858	863	875	8[illegible]8	917	934	[illegible]41	946	949	956	957	959	961

	978 1179	984 1205	984 1222	999	1019	1021	1038	1042	1041	1061	1089	1090	1123	1130	1100
134 NEEDST	966	967	969												
135 NEEm	6	78	920	983	1220	1304	1308	1401	1415	1434	1440	1470	1480	1505	
136 NEn	6 1505	58	104	705	706	707	708	704	706	803	1415	1433	1448	1470	1480
~~137 NEnOUT~~	~~1500~~	~~1520~~	~~1540~~	~~1600~~											
138 nn	954	955													
139 nNN	765	784	790	791	792	799	800	810	811	812	813	814	816	838	854
	825	826	827	828	838	845	854	857	868	859	860	862	872	873	874
	895	896	898	899	900	904	905	906	908	908	909	909	906	906	908
	988	1023	1026	1030	1038	1043	1044	1050	1051	1053	1055	1058	1062		
140 NOOT	1038	1039													
141 NRET	10	78	223	269	522	592	594	611	678	1413	1422	1457	1476	1487	
142 NRETn	1515	1528	1529	1530	1535	1540	1544	1556	1569	1576	1587	1588			
143 NST	106	772	773	1371											
144 NSTACT	10	81	1268	1269	1371	1414	1475	1488	1541	1582					
145 NT	174	175	176	181	184	187	222	223	234	238	231	241	242	251	252
	268	269	276	278	276	284	287	296	297	308	308	313	316	360	443
	522	537	538	549	593	611	628	629	648	666	669	678	728	732	739
	784	263	268	223	288	705	284	287	708	784	786	803	813	818	823
	833	850	865	876	882	928	903	1222	1234	1226	1228	1229	1234	1236	1248
	~~1254~~	~~1258~~	~~1268~~	~~1269~~	~~1371~~	~~1373~~									
146 NTIME	17 1498	56 1604	58	59	63	71	103	104	174	1384	1392	1394	1488	1446	1486
147 NTM	1304	1305	1301												
148 NTOT	85	91	93	105	106	108	111	113	116	122	123	144	705	706	1373
149 NTOTCR	9	78	1259	1415	1478	1489	1524	1548	1561	1579					
~~150 NTR~~	~~3~~	~~138~~													
151 P1	100														
152 P	1524	1526	1528	1530	1544	1544	1548	1565	1567	1569	1583	1585	1588		
~~153 PL~~	~~30~~	~~307~~													
154 PRINT	61	62	63	65	66	67	68	78	71	131	132	134	135	136	139
	140	141	142	143	144	145	147	148	149	151	152	153	155	156	158
	159	160	161	162	163	164	165	166	167	188	189	191	197	308	309
	318	1304	1305	1307	1308	1314	1311	1313	1315	1316	1322	1324	1325	1327	1328
	~~1330~~	~~1331~~	~~1332~~	~~1334~~	~~1336~~	~~1340~~	~~1340~~	~~1340~~	~~1342~~	~~1343~~	~~1345~~	~~1346~~	~~1348~~	~~1350~~	~~1351~~
	1353	1354	1356	1357	1360	1362	1364	1366	1367	1368	1407	1408	1409	1410	1413
▲	1443	1476	1482	1487	1503	1504	1504	1507	1508	1509					

159 PROCESS	1															
166 A100	1406	1409														
167 A1	25	60	306	310	348	3[illegible]	3[illegible]	3[illegible]								
168 A2	26	66	306	316	606	7[illegible]	71[illegible]	760								
169 A	450	450	4[illegible]	4[illegible]	4[illegible]	5[illegible]	5[illegible]	617	6[illegible]	807	821	850	863	870	902	
	987	1078	1116	1155	1494	1495	1502	1523	1526	1529	1543	1546	1548	1564	1567	
	1582	1589	1607													
100 AAVS	700	800	930	985	986											
101 AC	1407	1520	1530	1568	1569											
102 ACR	1[illegible]	1[illegible]	1[illegible]	1[illegible]	1[illegible]	1[illegible]	1[illegible]	1[illegible]	1[illegible]	1[illegible]	1[illegible]	1[illegible]				
103 AEAD	16	17	26	29	34	38	41	44	46	48	52	54	56	58	60	
	105	306	1613													
104 AETNT1	25	60	210	227	230	240	306	310	446	476	518	596				
105 AETNT2	25	60	204	272	283	293	304	310	449	497	529	614				
106 ALOSS1	25	60	306	310	381	429	428	1497								
107 ALOSS2	25	60	306	310	388	304	404	412	1408							
108 ALOSS3	25	60	306	310	437											
109 AN	1496	1520	1568	1569	1509	1507	1508									
170 ANEW	20	60	307	311	703	7[illegible]	77[illegible]	778	1404	1568	1587					
171 ANOUSE	25	60	306	310	805											
172 APNDPL	25	60	306	310	490	4[illegible]										
173 ARA	20	60	307	311	709	1520	1508	1569	1569	1587	1588					
174 ATND	25	306														
175 ATNDPL	60	311	850	902												
176 TO	180	181	234	265	295	270	298	300	304	312	315	318	490	512	606	
	630	606	708	810	828	8[illegible]	8[illegible]	901	9[illegible]	930	936	981	989	998	998	
	966	962	966	972	976	980	1002	1004	1007	1013	1015	1017	1031	1033	1036	
	1044	1046	1048	1052	1054	1056	1092	1130	1168	1172	1176	1180	1184	1188	1191	
	1197	1201	1209	1214	1219	1464	1488	1525	1545	1566	1584					
177 B	215	218	219	220	227	228	229	238	249	240	246	249	250	281	284	
	308	306	308	333	334	3[illegible]	3[illegible]	3[illegible]	3[illegible]	3[illegible]	3[illegible]	3[illegible]	3[illegible]	3[illegible]	3[illegible]	
	355	356	36[illegible]	363	364	374	376	388	389	390	396	397	398	404	405	
	407	410	413	414	423	4[illegible]	4[illegible]	4[illegible]	4[illegible]	4[illegible]	4[illegible]	4[illegible]	4[illegible]	4[illegible]	4[illegible]	
	468	469	473	474	475	47[illegible]	48[illegible]	482	487	498	499	518	519	528	529	
	530	535	606	606	603	6[illegible]	614	615	616	606	607	700	706	708	706	
	713	716	715	743	745	747	789	772	774	778	806	801	1078	1079	1116	
	1[illegible]	1[illegible]	1[illegible]	1[illegible]	1[illegible]	1[illegible]	1[illegible]	1[illegible]	1[illegible]	1[illegible]	1[illegible]	1[illegible]	1[illegible]			
178 BASELOS1	600	480	484	488	483											

```
179 RJCLC?2      169    907    908    909
180 RJC?1        169    37n    301    302    303
181 RJST1        169    342    345    346    347    3nn
182 RJST2        169    437    438    439
183 RJST3        1n9    687    690    691    692    7n8
184 RTOI         1416   1431   1438   1441   1442   1446   1478   1481   1482
185 RTA            0    122n   123n   1414   1431   1446   1474   1480
186 Y            344    345    353    354    361    3n7    38n    381    3n7    388    395    396    402    404    411
                 412    419    420    426    428    43n    437    452    453    459    468    465    466    473    474
                 480    481    488    497    503    5n8    517    518    528    529    530    537    538    607    609
                 698    783    784    712    713    74n    749    768    749    778    771    774    775    777    796
                 806    807    808    881    882    8n3    83n    879    871    906    907    1n77   1n78   1118   1119
                 1154   1155   1232   1234   1437   143n   1441   1477   1478   1481   1521   1522   1541   1542   1562
                 1563   1580   1581
187 RETVAL       1
188 I            769    771
I FTN 060 ( STOP )
```

APPENDIX E

DATA REQUIREMENTS AND CARD DECK SETUP

The Career-Noncareer Model requires a base inventory of individuals who are in the system at the start of simulation. This inventory must separate career personnel from those in their first term of service. The duration of the first term is variable, with the present upper limit, 96 months, defined by the dimension statement of the computer program. The inventory of noncareer persons may be subdivided into two separate classes, or only one class of noncareer personnel need be represented in the model. For each class represented, it is necessary to prepare four matrices showing the number of individuals by months in tour and months in service. Since the model considers only two tour categories, two matrices are required for each class of noncareer personnel represented, showing time in tour and time in service. One matrix shows those in short tour and the other those having already served in short tour. In addition, for each class of noncareer personnel, a separate breakout and classification by time in service is made of individuals who have not yet been assigned to short tour. This last classification results in a vector arrangement, since time in tour and time in service are equal. Thus, two matrices and one vector are input for each class of noncareer persons being represented.

The inventory of career persons is arranged in vectors, with position in vector showing time in tour. Separate vectors are required for persons presently assigned to duty outside the short tour area who have had no short tour, one short tour, two short tours, or three short tours. Other vectors are required for those in the short tour at the start of simulation, one vector for first short tour, others for two, three, and four or more short tours. Persons permanently nondeployable to the short tour are kept in a pool node (a single number). This number also must be determined and input to the computer at the start of the simulation. The vectors of career persons are of limited length--presently defined by the computer program as 96 months. Individuals who have had an excess of the time designated by an input parameter are grouped in pool nodes and input as separate numbers.

Besides a starting inventory, certain parameters defining the system must be input. These appear in card 2 of the data deck and include such values as tour duration, periods to be simulated, and minimum time remaining in system for short tour assignment. A full list of these parameters is shown below in the card-by-card listing of data requirements. The same card contains simulation options. These options concern assignment practices, renewal procedures, and computer output.

Certain rates must also be input to the simulation. These rates are used deterministically by the model, causing no variation in simulation runs that use the same data base. Rates must be input for combat losses (both permanent losses and early returns), for attrition to the

separate career and nonCareer systems, for retention from the nonCareer to career system, for deployability, for rate of use of new personnel for tours other than short tour, for allowable proportion of new personnel in short tour, and for proportion of scheduled or calculated renewal assigned as nonCareer B as opposed to nonCareer A. Rates have been historically supplied by model users.

Also required by the model are short tour quotas for the period being simulated, and scheduled additions to the system for the same time. Finally, a control vector scheduled re-simulation changes planned by the program user. For example, new rates may be input at month 6 by putting a 6 in column 24 of the first card in the control vector and providing the rates in a card behind the last card of the control vector. A card-by-card description of the data deck follows.

Card 1: PMT - Identification of up to 72 alphanumeric characters
FORMAT is (18A4)

Card 2:

LS - Duration of the short tour
LC - Duration of the base tour
LACS - Duration of nonCareer (A) commitment
LBA - Duration of nonCareer (B) commitment
NTIME - Number of months simulated (maximum of 120)
NINTYR - Months before ETS for deployment to short tour
LDYTHC - Delay after entering system before assignment
MINBAS - Minimum acceptable base tour for career men
MINBEN - Minimum acceptable base tour for new people
IRENT - Allowable term for early release for nonCareer men completing short tour
IFY - Number of months before end of first fiscal year
JCHP - Limits on short tour replacements
0 - Flow to short tour is not smoothed
1 - Smoothed flow to short tour
2 - Limits career to percentage specified
JCHP - Training end input
0 - Calculated additional input
1 - Fixed input supplied by user
2 - Train to maintain system total
4 - Train to authorization or school capacity

JSKIP1 - Print control

0 - Summary only

1 - Monthly vectors and summary

2 - Monthly matrices, vectors, and summary

JSKIP2 - NonCareer short tours

0 - Extend short tour for noncareer persons if they have MINTOR months left before ETS

1 - No second tour for noncareer

2 - Assignment of noncareer man to MINBOS tour when not needed immediately for short tour

JSKIP3 - Option on people included in summary calculation of retirees

0 - Career only

1 - Career and noncareer

JSKIP4 - Minimum system

0 - Calculate minimum system

1 - No calculation of minimum system

JSKIP5 - Maximize base tour length vs. minimize 3rd short tours

1 - Emphasis on minimum use of 3rd short tour for career

0 - Emphasis on equal base tours for all retirees

FORMAT (3I1, 2I1)

Card 3:

B1 - Combat tour permanent loss rate (BIA)

B2 - Loss rate to combat tour (early retirees)

BLOSS1 - Career system loss rate for base tours

BLOSS2 - Noncareer system loss rate

BLOSS3 - Career system loss rate for short tour

RETNT1 - Retention rate after noncareer (A) commitment

RETNT2 - Retention rate after noncareer (B) commitment

RNEWB - Rate of assignment of new trainees to areas other than short tour. A tour of MINBOS is simulated for these people.

RTNDPL - Rate of permanent nondeployability

RTNDPL - Rate of temporary nondeployability

RNEW - Maximum allowable proportion of new men sent to short tour

RNA - Rate of assignment of new people to noncareer (B) tours, the balance assigned to noncareer (A)

FORMAT (10F5.3)

```
Career Short Tours - JS LS,1
   1 vectors with LS numbers per vector
   Vector 1 - Number of persons on 1st short tour
   Vector 2 - Number on 2nd short tour
   Vector 3 - Number on 3rd short tour
   Vector 4 - Number on 4th short tour
      FORMAT (4I5)

Remainder Short Tours - LAST(LAST,LS)
   LAST vectors with LS numbers per vector
   Vector 1 - Persons in first month of commitment
   Vector 2 - Persons in 2nd month of commitment
      .
      .
      .
   Vector (LAST) - Persons in LASTth month of commitment
      FORMAT (5I5)  one card per vector if LS = 5

Remainder (B) Short Tour - LBA (LBA,LS)
   LBA number of vectors with LS numbers per vector
   Vector 1 - Persons on 1st month of commitment
   Vector 2 - Persons on 2nd month of commitment
      .
      .
      .
   Vector (LBA) - Persons in LBAth month of commitment
      FORMAT (5I5)

Career Base Tour - JC LC,1
   Reads 1 vectors with LC numbers per vector, 15 numbers per
   card
   (Note: if LC = 45, 3 cards; then there are 15 numbers on
   the first 2 cards, 5 on the third)
   Vector 1 - Persons with 0 short tours
   Vector 2 - Persons with 1 short tour
   Vector 3 - Persons with 2 short tours
   Vector 4 - Persons with 3 short tours
      FORMAT (15I5)
```

Enlisted (A) Base Tour Extension - IBASE (LAST,LAST)

Reads LAST vectors with LAST numbers per vector, 16 numbers per card

(Note: If LAST = 24, then there are 16 numbers on the first card and 8 on the second)

Vector 1 - Persons in 1st month of commitment

Vector 2 - Persons in 2nd month of commitment

.
.
.

Vector (LAST) - Persons in LAST th month of commitment

FORMAT (16I5)

Enlisted (B) Base Tour Extension - IBBA(LBA,LBA)

Reads LBA vectors with LBA numbers per vector, 16 numbers per card

(Note: If LBA = 72, then there are 16 numbers on the first 2 cards and 8 on the third)

Vector 1 - Persons in first month of commitment

Vector 2 - Persons in second month of commitment

.
.
.

Vector (LBA) Persons in LBAth month of commitment

FORMAT (16I5)

Enlisted (A) Base Tour without Short Tour experience - IBASEN

Reads one vector with LAST numbers, 16 numbers per card

FORMAT (16I5)

Enlisted (B) Base Tour without Short Tour Experience - IBBAN

Reads one vector with LBA numbers, 16 numbers per card

FORMAT (16I5)

One card: (4 numbers on card)

1st - NEWLP (Permanently Nondeployable Career)

2nd - 4th - JCLC(4) (Career with completed base tour)

2nd - 0 short tours

3rd - 1 short tour

4th - 2 short tours

5th - 3 or more short tours

5th - NBASTS (Total number allowed in system)

FORMAT (16I5)

[illegible] (NMAX, STIME)

Reads one vector with STIME numbers, 1e per card

1st number = $ quote for 1st month of simulation

2nd number = $ quote for 2nd month of simulation

.

.

.

STIME = $ quote for STIME1th month of simulation

FORMAT (1e1*)

Input rate option (NRO, STIME)

Reads one vector with STIME numbers, 1e per card

1st number = new input for 1st month of simulation

2nd number = new input for 2nd month of simulation

.

.

.

STIME = new input for STIME1th month of simulation

FORMAT (1e1*)

Control Vector (CONTRL, STIME)

Read one vector with STIME numbers, 1e per card. Allows possible changes in controls, rates or other parameters during the course of the simulation. One of the following may be used for any month to cause the indicated change:

0 = no change

1 = JUMP1 = 0

2 = JUMP2 = 0

4 = JUMP4 = 0

6 = Read new parameter card number 1: B1, B2, BLOSS1, BLOSS2, BLOSS4, RETNT1, RETNT2, RRDEMS, STRDPL, RSHV, RRA

FORMAT (1e1*)

7 = Read modified parameter card number 2: LLS, LLC, LLACR, LLRA, MINTIB, LEVTRC, MINBAS, MINBSR, IRENT, JUMP1, JUMP2, JUMP4, JUMP6, JUMP7

8 = JUMP8 = 0

9 = JUMP9 = 0

FORMAT (1e1*)

APPENDIX F

DEMONSTRATION RUNS

This section contains a series of runs (Table F-1) using basically the same input deck along with different combinations of program options (Table F-2). The parameters, short tour quotas, and system input are listed for the first run. The parameter changes that were made to this set are then stated for the other runs (see Table F-3). A series of graphs (Figures F-1 through F-10) compare the results of these runs. When interpreting these runs, it must be kept in mind that they were made with a specific data deck. Many of the parameter values may also be unique. Loss rates, retention rates, minimum base tour length, and delay-before-assignment, to name a few, may change when simulating a different manpower system.

Another important factor is predicting the consequences of using a particular option. This is due to the large number of variables that are considered in reaching a solution, the complexity of the interrelationships among the various parts of the system, and, perhaps more important, the dynamic nature of this type of simulation. As an example, run 7 increased the retention rate for the career group from the noncareer group (Figure F-7). As might be expected, with a larger career group relative to run 1, the short tour requirements can be met with less need for additional input. From this it would follow that, if the retention rate were reduced as in run 6, need for additional input would increase relative to run 1. From the graph it can be seen that this is not the case; inputs are basically the same.

The explanation is that the career personnel can be used to fill inexperienced needs provided they have completed the desirable base tour (24 months). Both runs, 1 and 6, can meet their experienced personnel quota, but in doing so, they do not have any career personnel with completed base tours. Therefore additional input must be used to meet the noncareer needs. In run 7, during the last year there are several months with a 24-month average base tour (column 11), and correspondingly no career personnel being sent with less than 24 months (zeros in column 4). This suggests that there are career personnel with completed base tours that can be sent against the noncareer needs, thereby reducing the requirement for additional output.

That the results of using a given policy or program option are not entirely predictable is not an undesirable feature. It actually is a strong point for the use of the model; there may be solutions to a specific problem that are not subjectively apparent; or what seems to be an obvious solution may, in the light of the system dynamics, be an unwise choice.

PROGRAM OPTIONS

JUMP1 = 2, Limits career to percentage specified

= 1, Smoothed flow to short tour. Present algorithm tests increment in short tour quotas plus replacements and, if large, (1.1 times average monthly flow) sends replacements plus x% of the increment times the ratio of inexperienced people allowed.

= 0, Skips the smooth flow

JUMP2 = 3, Train within capability and to meet authorizations

= 2, Train to replace losses

= 1, Use training output scheduled

= 0, Compute additional training output needed.

JUMP3 = 2, Computer output lists node matrices for each update of system plus output for JUMP5 = 1 and 0.

= 1, Computer output lists border sums (vectors) for each update, plus output for JUMP5 = 0.

= 0, Computer output lists summary of the full simulation

JUMP4 = 2, Noncareer held back from short tour assignment MINBAS months if not immediately used following graduation leave and other transient time.

= 1, Only one short tour for noncareer

= 0, Noncareer held in readiness for assignment to short tour; given a second ST if required.

JUMP5 = 1, Returnees and average base tour on summary sheet computed on the basis of both career and noncareer persons.

= 0, Career only

JUMP6 = 1, Suppress computation of minimum system for given policy.

JUMP7 = 0, Career people have equal probabilities of short tour after two or one previous ST assignment. (Equal opportunity)

= 1, Career people have increased probability of ST after one ST when compared with those after two ST. (Minimizes third tours)

KONTRL (I), I = month being simulated

KONTRL (I) = 1, Change from fixed training output to allow output of additional people as simulation

KONTRL (I) = 2, Change JUMP2 to 2

KONTRL (I) = 3, Change JUMP2 to 3

KONTRL (I) = 4, Read and print new loss rates

KONTRL (I) = 5, Read and print new parameters

KONTRL (I) = 6, JUMP3 = 2

KONTRL (I) = 7, JUMP3 = 0

Table F-1

POLICY OPTIONS USED IN DEMONSTRATION RUNS

Policy Options	Top ST Quota 8800		Top ST Quota 2700
	All returnees given equal Base tours	Second time returnees favored with longer time in Base	All returnees given equal Base tours
Assignment pool for new aviator	Run 1	Run 15	Run [illegible]
Limiting career to one hardship tour in first commitment. Use assignment pool. JUMP4 = 1	2	16	[illegible]
Assign to other areas if not needed immediately in ST. No limit on number of ST. JUMP1 = 1	3	17	10
Smooth flow to ST. JUMP1 = 1	4	18	11
Train to authorization if within training capacity.	5	19	12
Reduce retention rate starting in month 16.	6	20	13
Increase retention rate starting in month 16	7	21	14

Table F-2

DATA INPUT FOR DEMONSTRATION RUNS

RUN I

1. Short tour quotas (see list on page ??)

2. Training output (see list on page 98)

3. Rates and parameters:

Ident	1st 4 months	Next 8 months	13th month to end
R1	.004	.008	.004
	Full Simulation Period		
R2	.004		
RLOSS1	.012		
RLOSS2	.002		
RLOSS3	.010		
RETNT1	.100		
RETNT2	.300		
RNOUSE	0		
RPNDPL	.020		
RTNDPL	0		
RNEW	.750		
RRA	1.000		
LS	12		
LC	25		
LAUS	24		
LRA	36		
NTIME	48		
MINTUR	6		
LEVTNG	2		
MINBAS*	18	.008	.004
IEOUT	0	Same	Same
IFY	10		

*At the time of these runs, the value for MINBAS was used for the MINBSN parameter.

Table F-2 continued

---

4. Program option (JUMPS)

JUMP1 = 0

2 = 1

3 = 0

4 = 0

5 = 1

6 = 0

7 = 0

5. Control vector (for in-simulation changes of rates, parameters, or JUMPS.) 1 in month 25, 4 in months 8 and 13.

RUN II Same as Run I, except JUMP4 = 1

RUN III Same as Run I, except JUMP4 = 2

RUN IV Same as Run I, except JUMP1 = 1

RUN V Same as Run I, except:

MAXSYS = 22,900, and 600 as monthly input through month 48;
KONTRL (25) = 3

RUN VI Same as Run I, except RETNT2 changes to .20 in month 16

RUN VII Same as Run I, except RETNT2 changes to .40 in month 16

RUNS VII to XIV Use quotas listed on attached sheet. Same as Runs I-VII otherwise

RUNS XV to XXI Same as I to VII except JUMP7 = 1

RUN XXII Same as I except RTNDPL = .50

RUN XXIII Same as I except RHOUSE =.25 and JUMP4 = 2

Table F-2 continued

RUN I		Short Tour Quotas	Training Output
Month	1	5700	400
	2	5800	400
	3	5900	400
	4	6000	400
	5	6100	400
	6	6200	400
	7	6300	450
	8	Increase by 100 each month to month 30 (8600); hold for remaining months	475
	9		500
	10		525
	11		550
	12		575
	13		600
	14		
	15		
	16		
	17		
	18		
	19		
	20		
	21		
	22		600
	23		400
	24		
	25		
	26		
	27		
	28		
	29		
	30	8600	400 at End

Table F-2 continued

RUN VII	Short Tour Quotas
Month 1	5700
2	5800
3	5900
4	6000
5	6500
6	6500
7	6500
8	7000
9	7000
10	7000
11	7500
12	7500
13	7500
14	7800
15	7800
16	7800
17	8500
18	8500
19	8500
20	8800
21	8800
22	8800
23	9300
⋮	⋮
48	9300

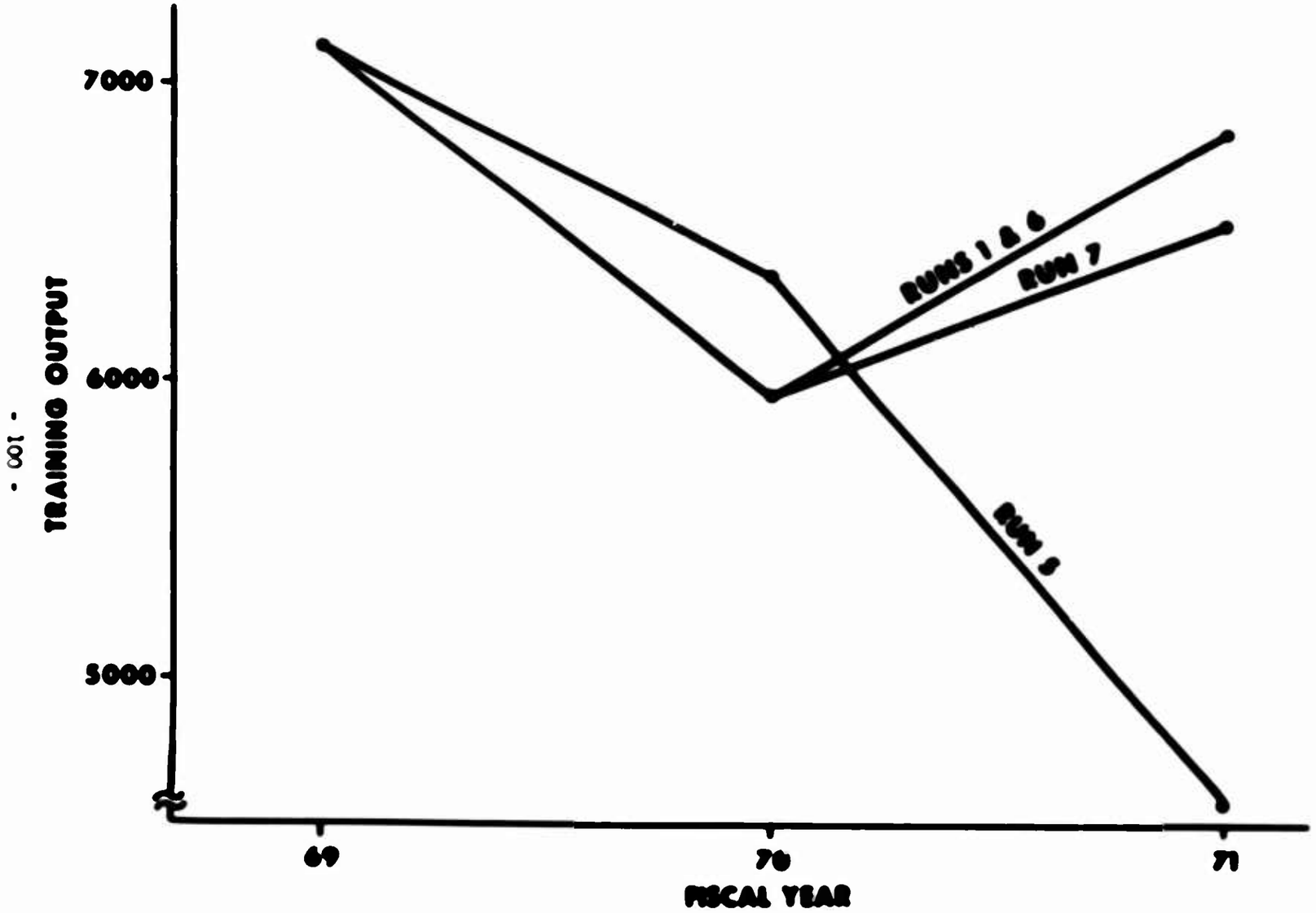


Figure F-1. Comparison of training output for runs 1, 5, 6, and 7

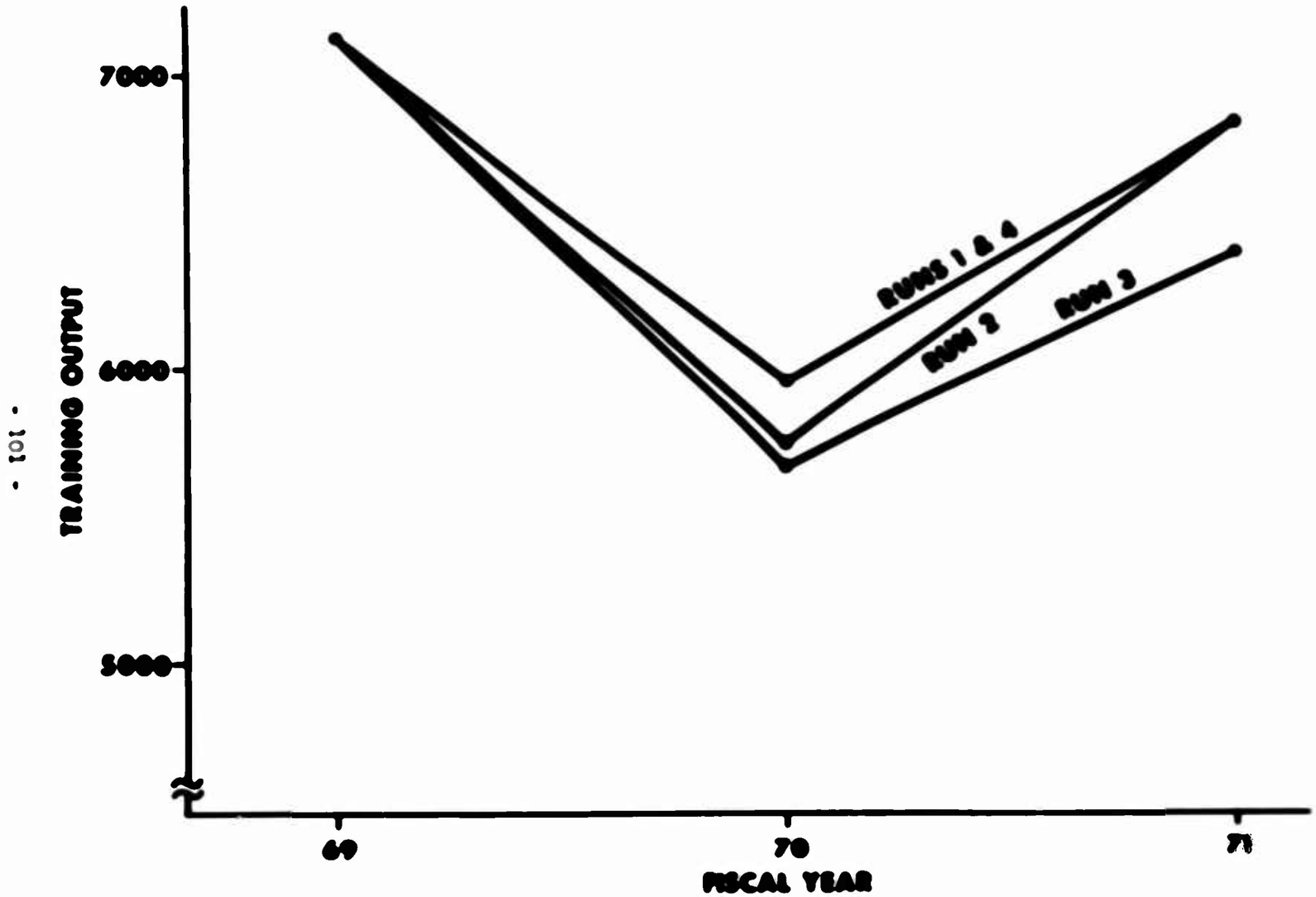


Figure F-2. Comparison of training output for runs 1, 2, 3, and 4

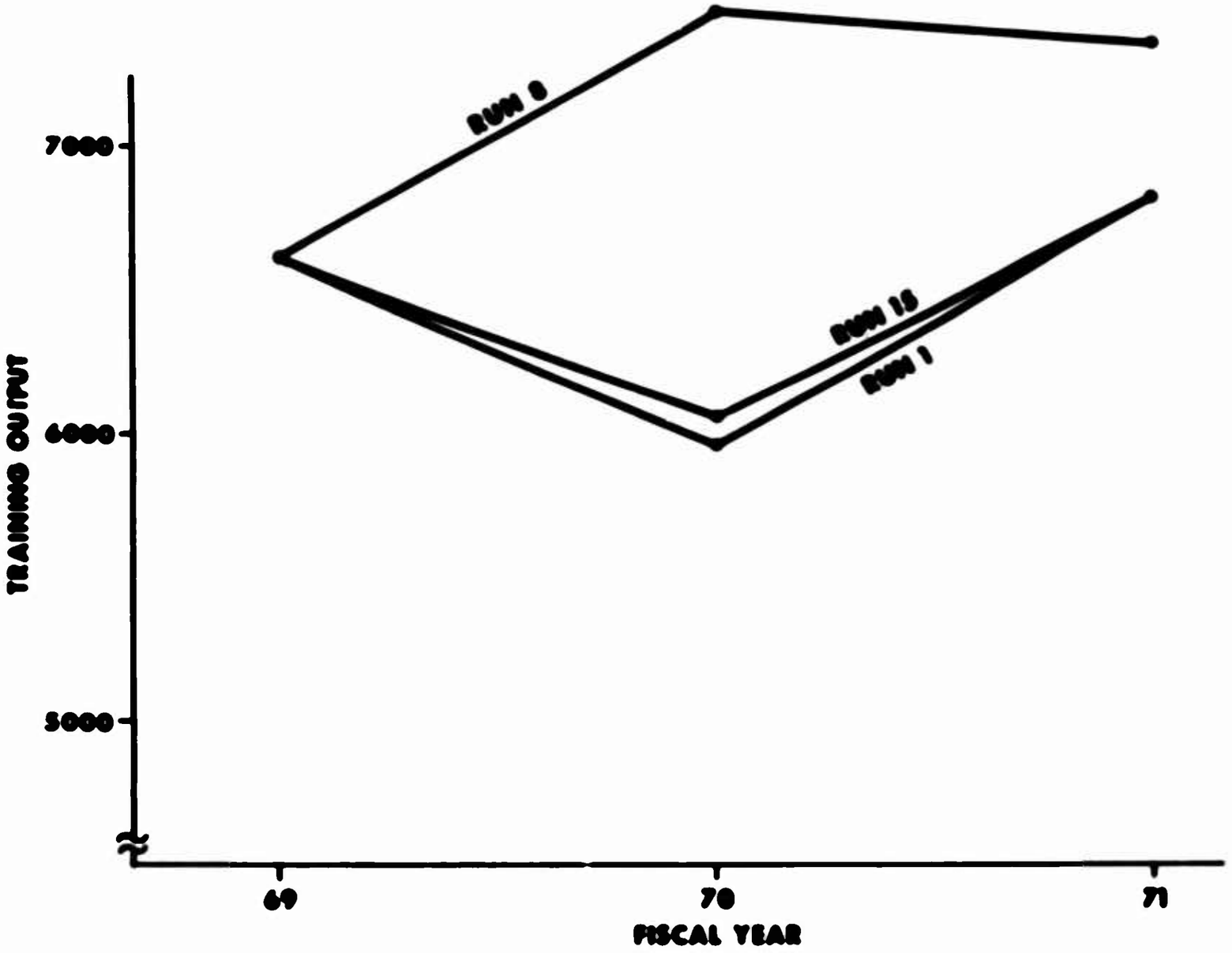


Figure F-3. Comparison of training output for runs 1, 8, and 15

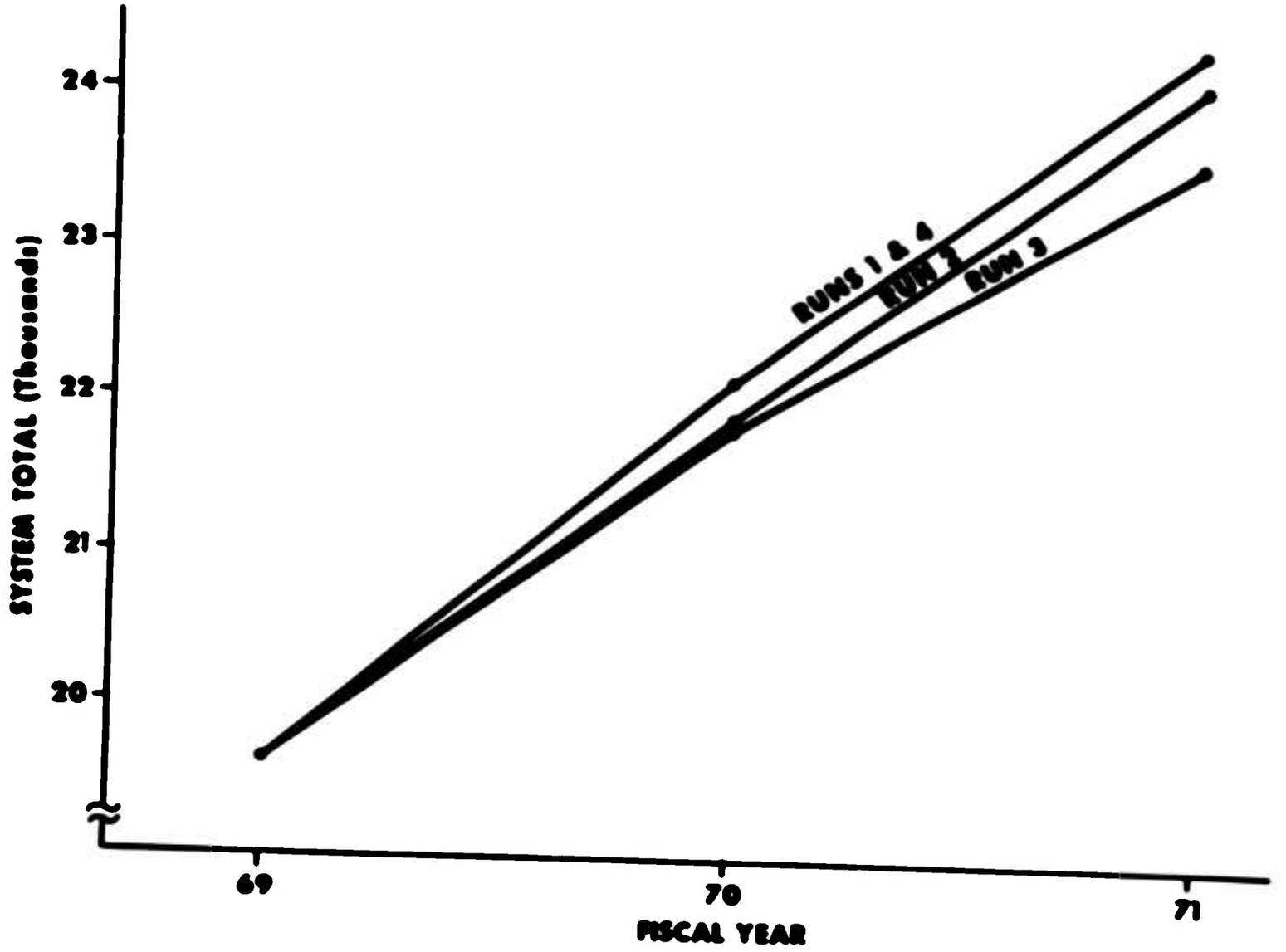


Figure F-4. Comparison of system total for runs 1, 2, 3, and 4

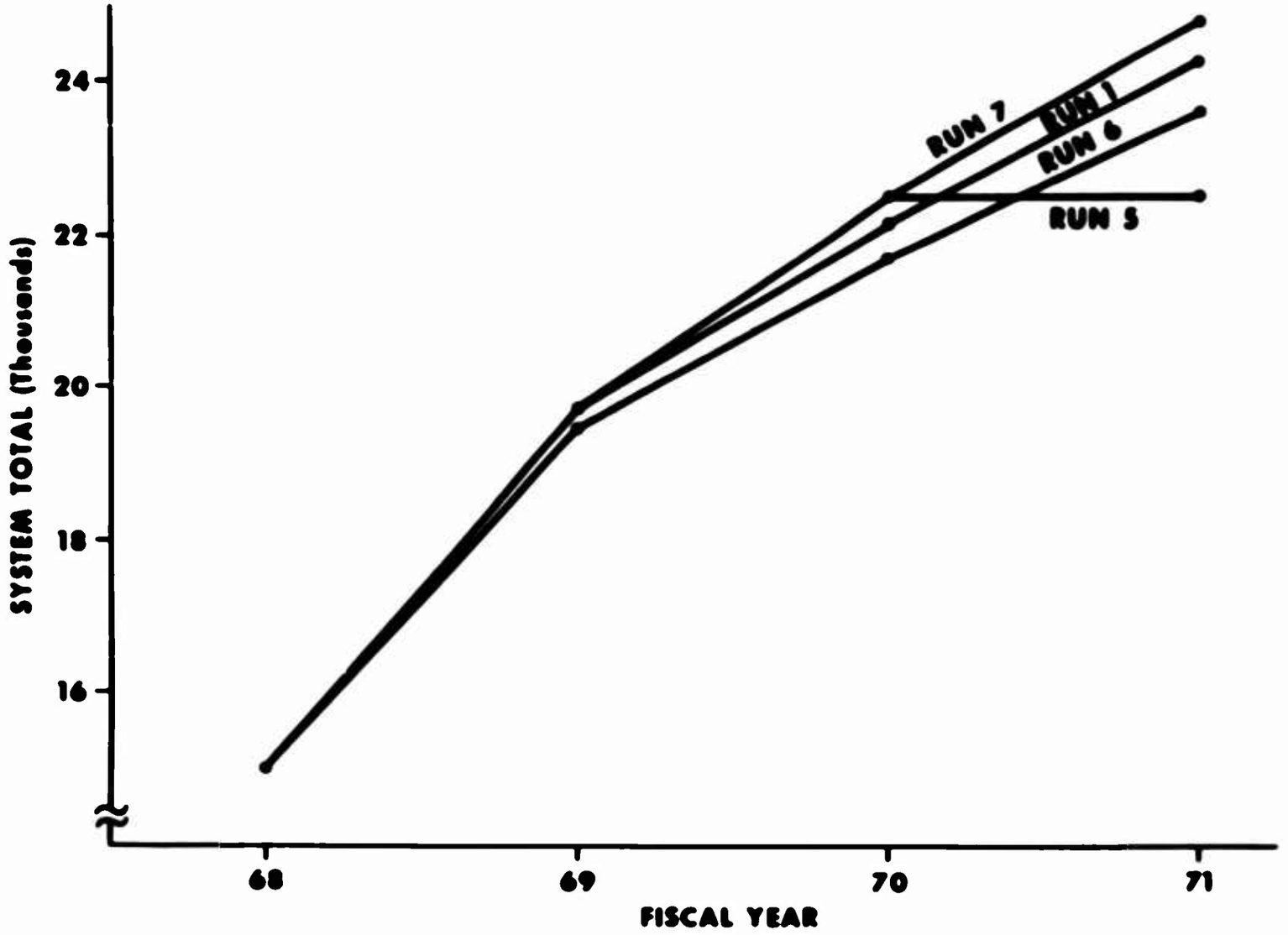


Figure F-5. Comparison of system total for runs 1, 5, 3, and 7

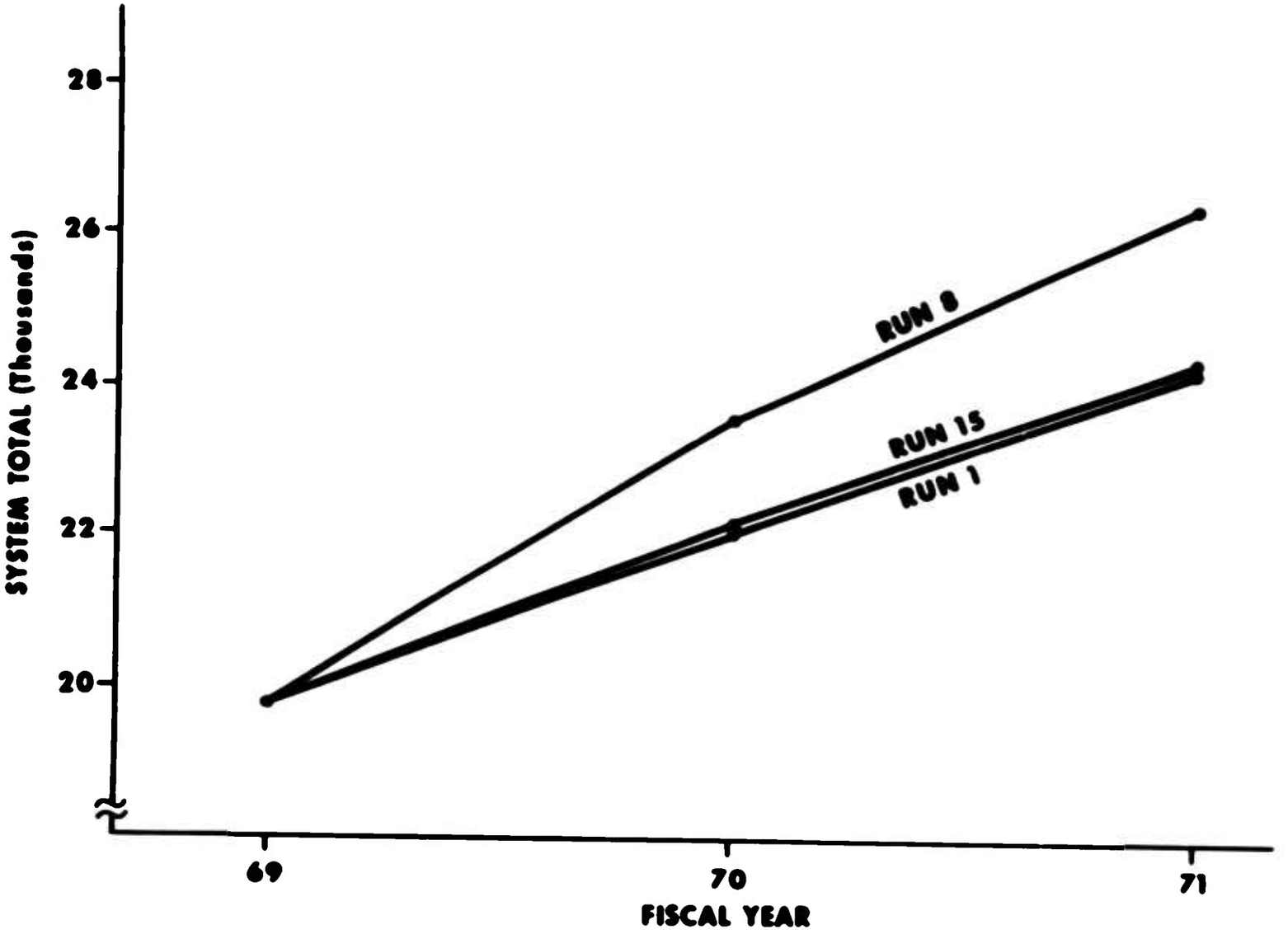


Figure F-3. Comparison of system total for runs 1, 9, and 15

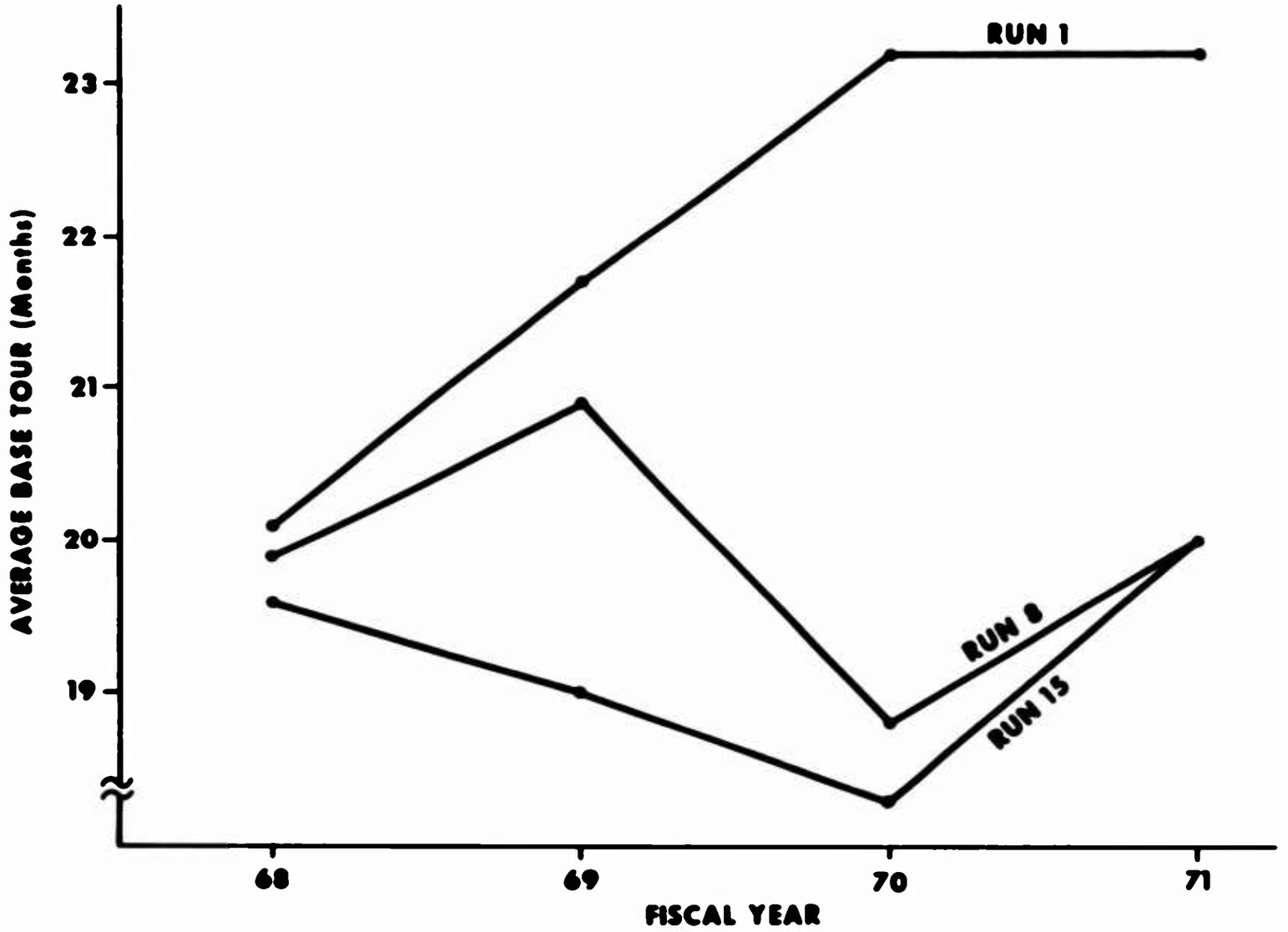


Figure F-7. Comparison of average base tours for runs 1, 9, and 15

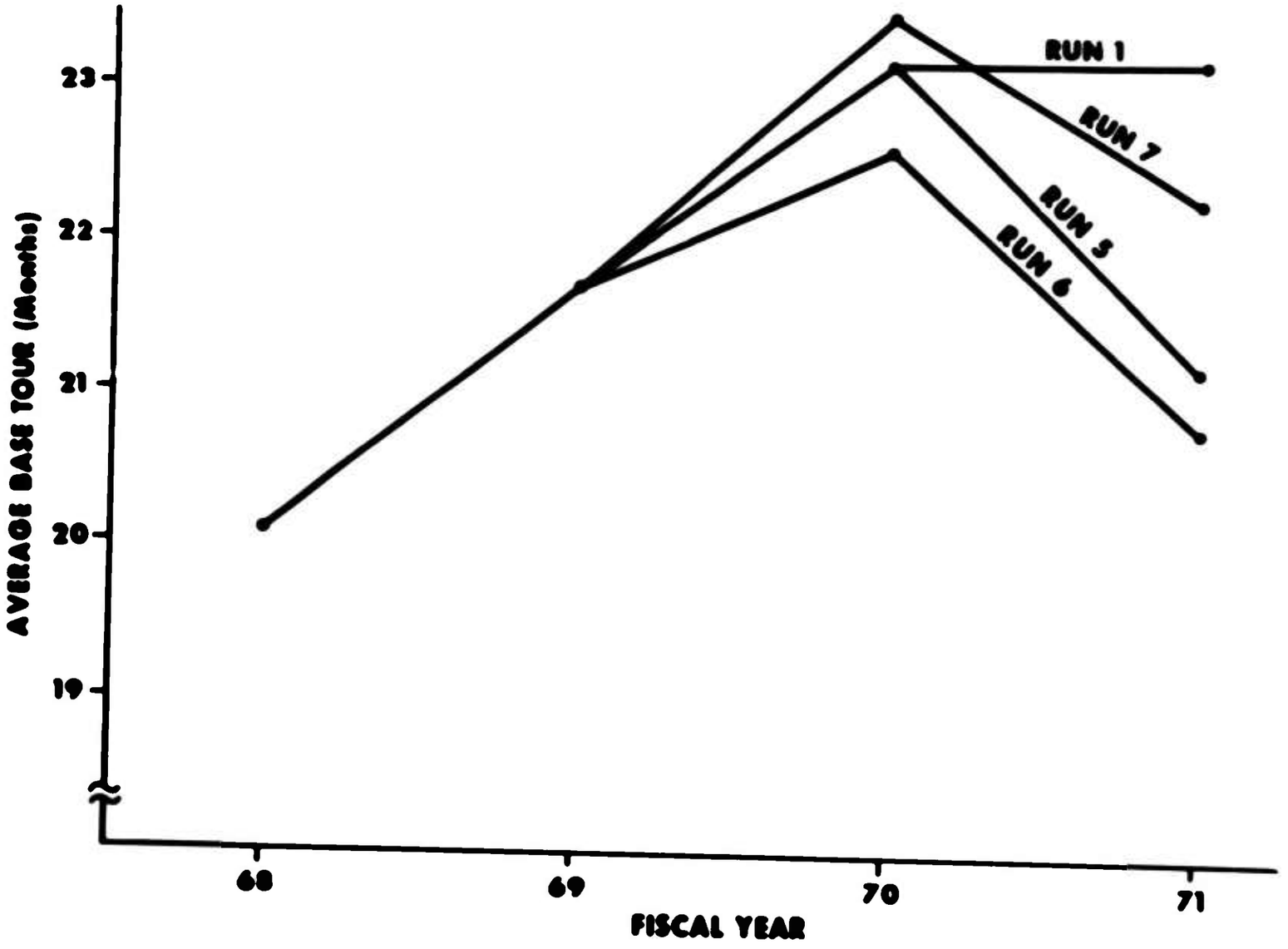


Figure F-8. Comparison of average base tours for runs 1, 5, 6, and 7

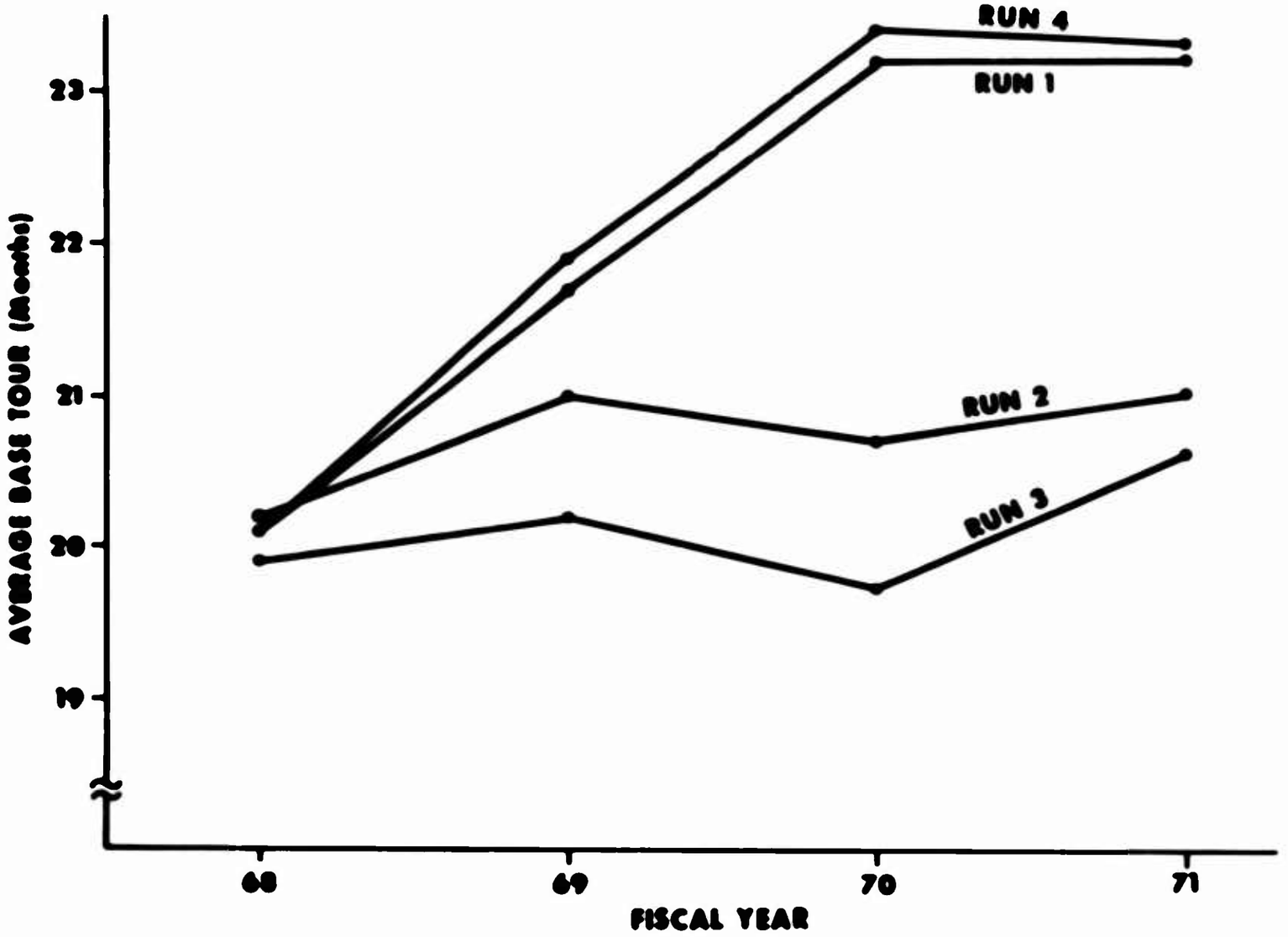


Figure F-9. Comparison of average base tours for runs 1, 2, 3, and 4

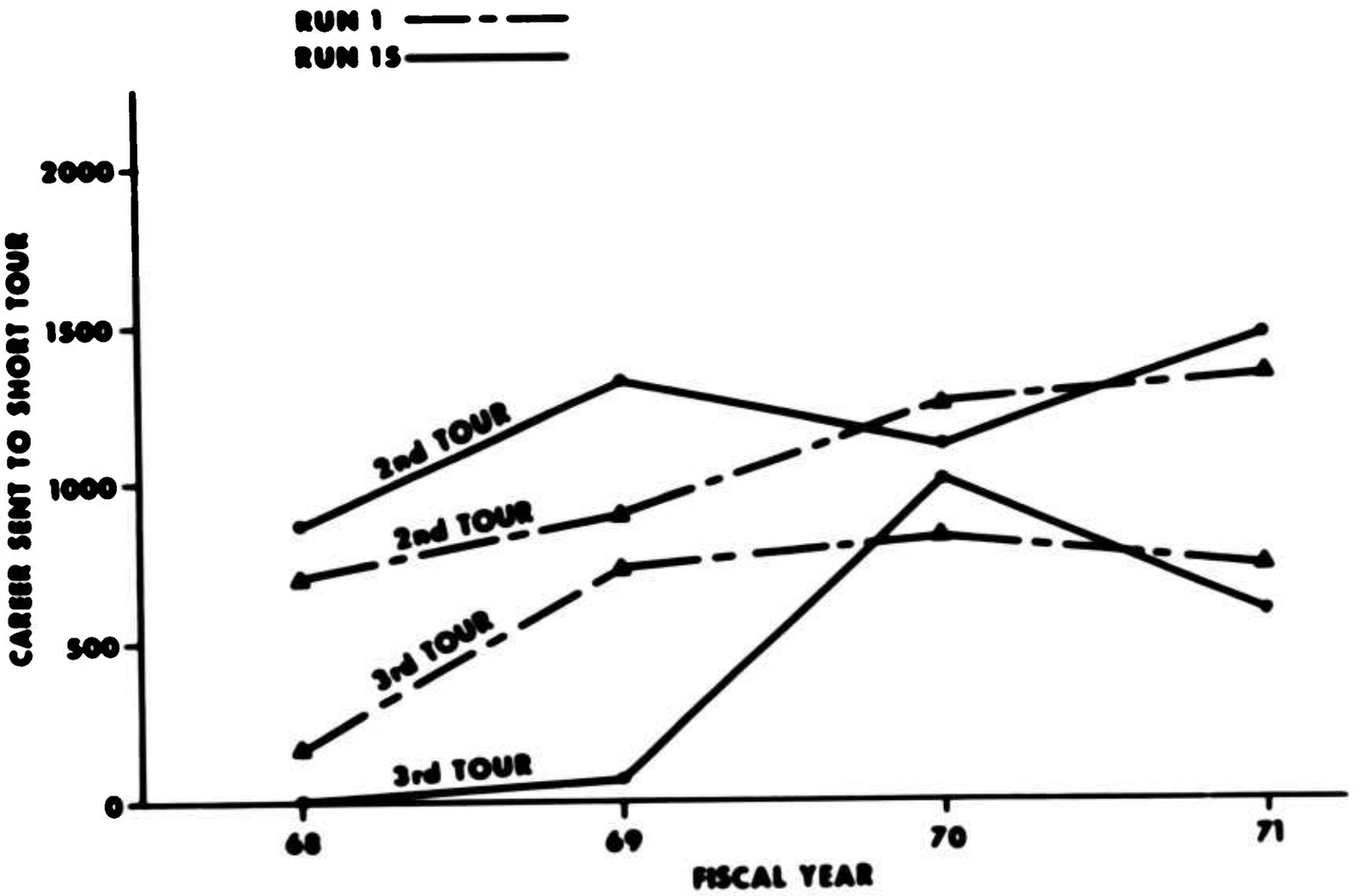


Figure F-13. Comparison of career short tours for runs 1 and 15

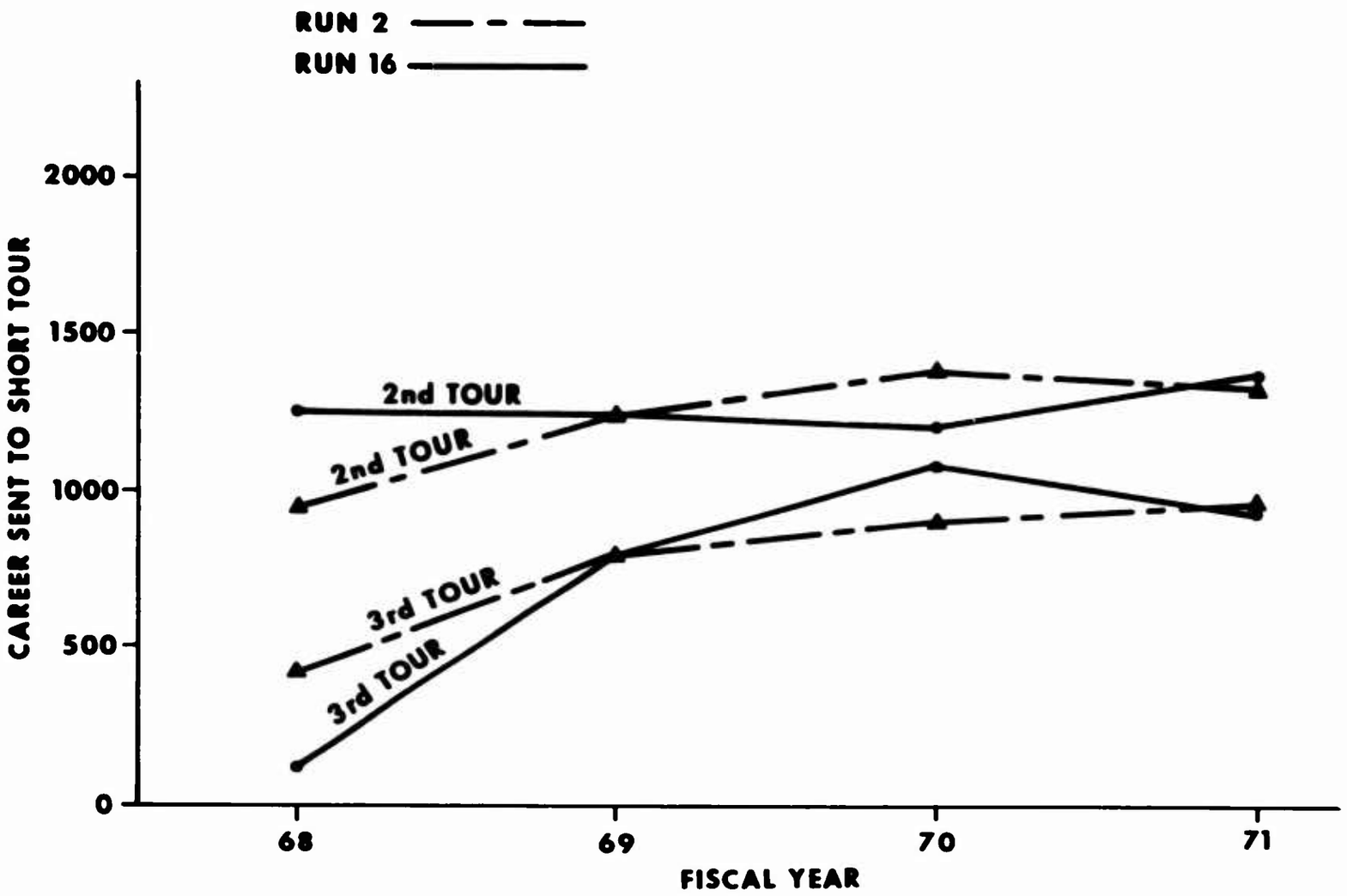


Figure F-11. Comparison of career short tours for runs 2 and 16

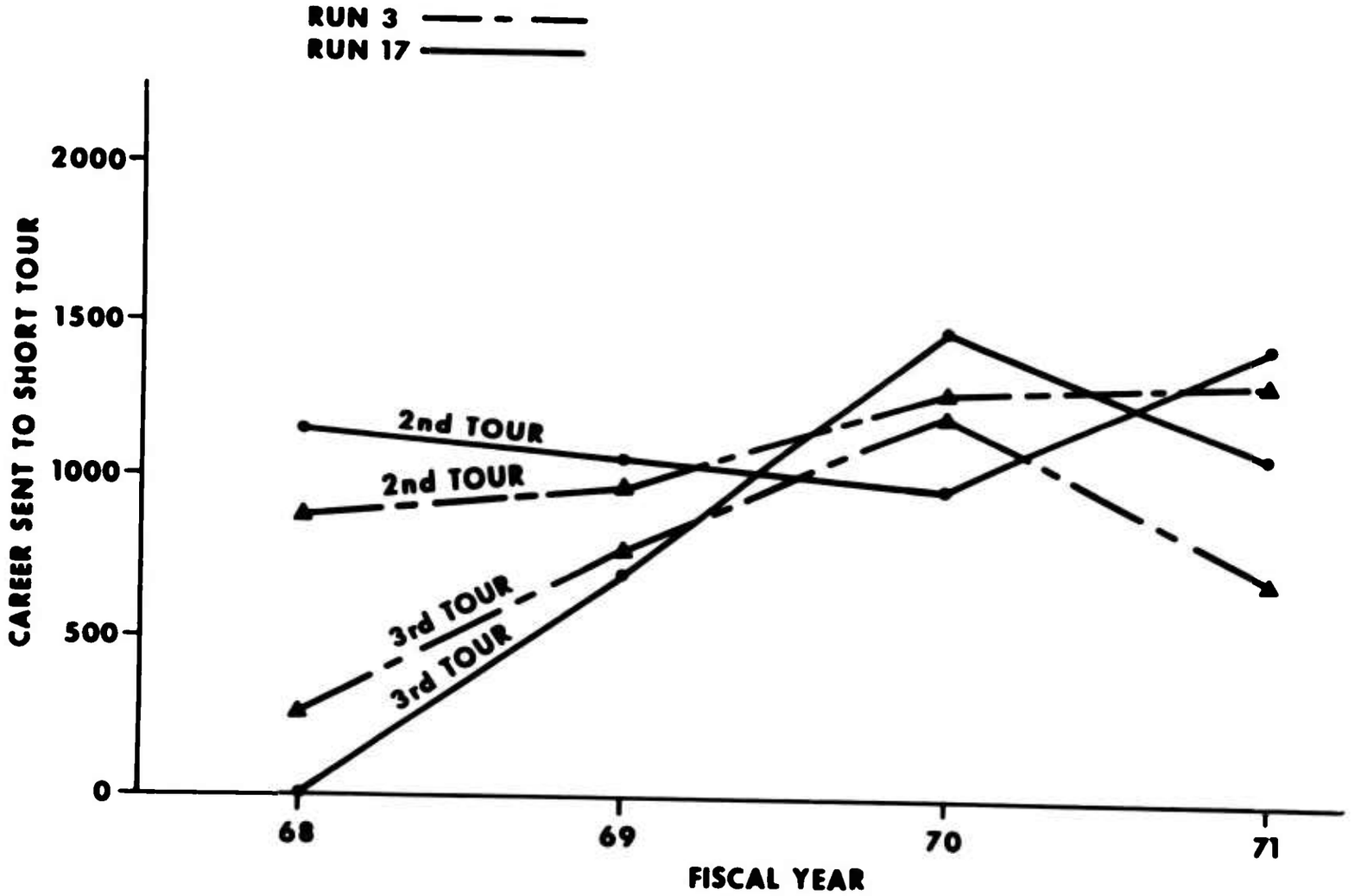


Figure F-12. Comparison of career short tours for runs 3 and 17

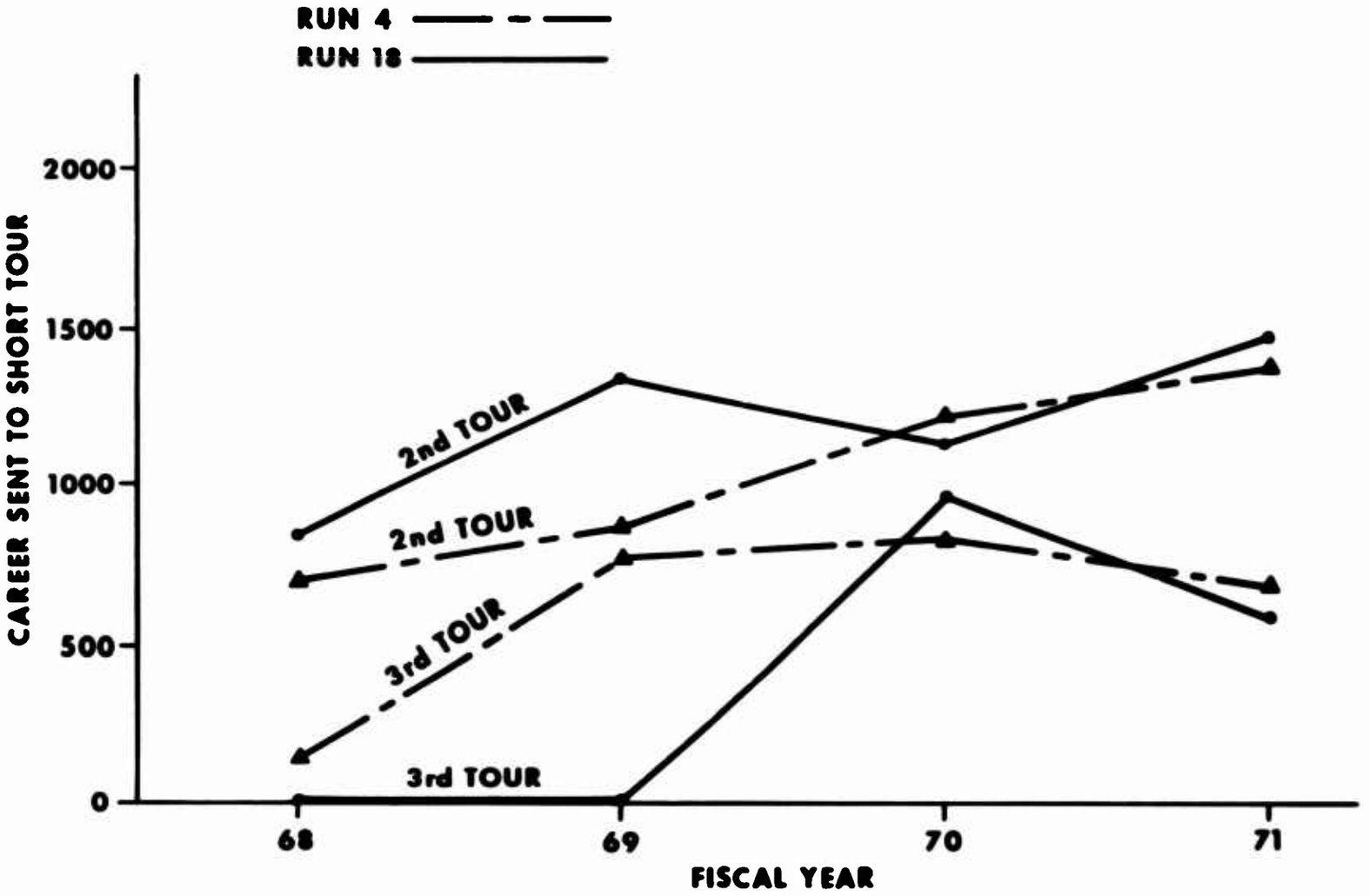


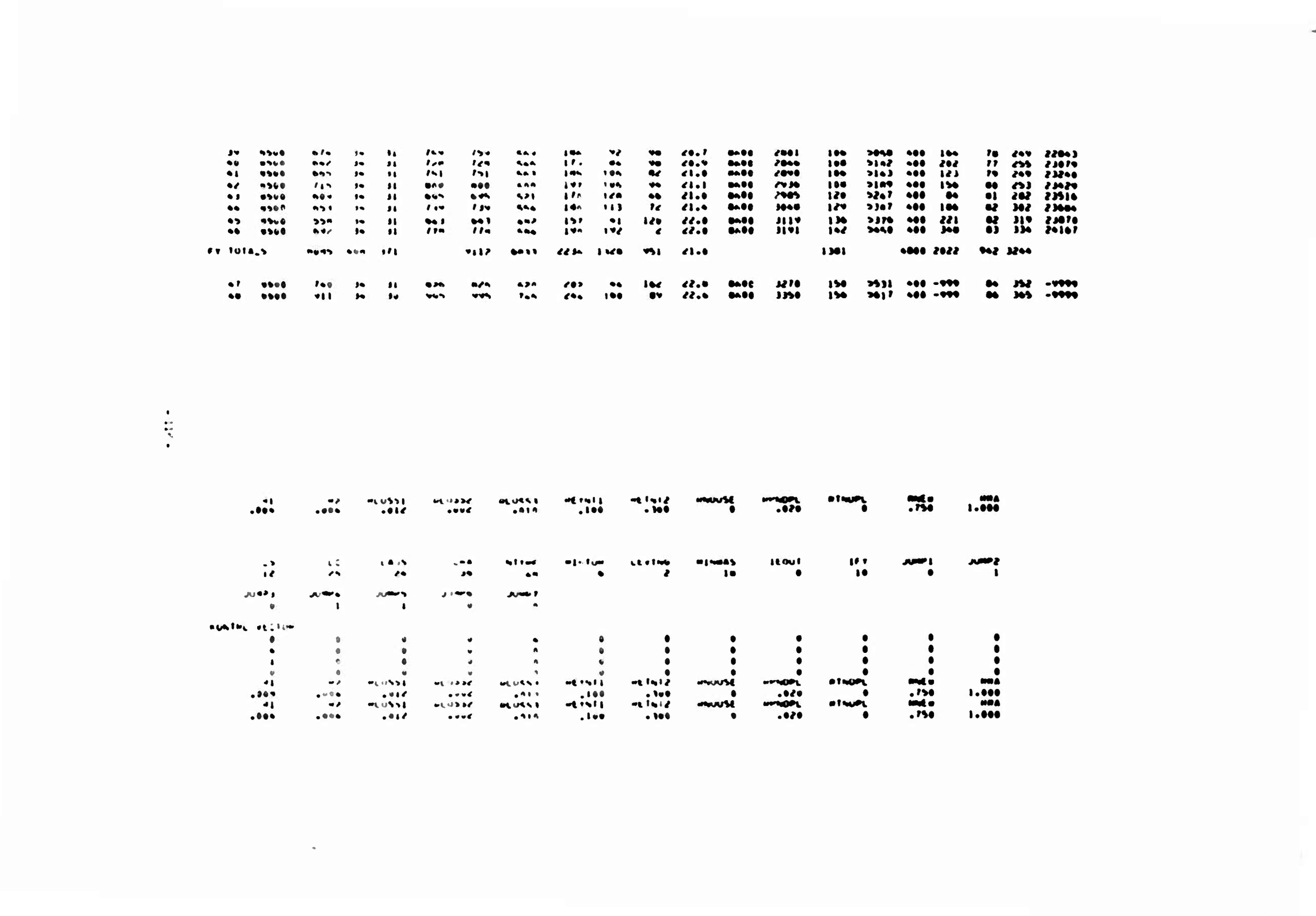
Figure F-13. Comparison of career short tours for runs 4 and 18

EXAMPLE NUMBER ONE

MONTH	ST QUOTA	END TOUR	PERM CAS	ST CAS	REPL REQ	REPL SENT	NEW REPL	NET -25	2ND TOUR	3RD+ TOUR	AVG MS TR	ST ON HAND	NBASE -25	NETNT ADDNS	CAR TNT	INPT SCHD	ADDL INPT	ATTRT LOSS	ETS	SYST TOT
(COL)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
1	5700	119	21	21	473	433	325	0	108	0	25.0	5700	3280	34	5004	400	0	65	81	12700
2	5800	282	22	21	449	449	337	28	65	39	18.2	5800	3308	30	5051	400	0	65	72	12949
3	5900	395	23	21	563	563	422	94	99	10	21.9	5900	3315	34	5021	400	0	64	81	13177
4	6000	339	23	22	587	587	388	127	85	11	21.6	6000	3310	35	4994	400	0	66	83	13405
5	6100	352	48	22	543	543	407	136	67	10	19.9	6100	3372	30	4964	400	0	65	94	13598
6	6200	405	48	22	599	599	449	149	78	15	19.6	6200	3420	46	4943	400	0	65	110	13775
7	6300	401	49	22	592	592	444	147	14	12	18.6	6300	3523	48	4916	450	0	66	94	14016
8	6400	434	50	23	648	648	486	162	88	11	19.9	6400	3508	48	4889	475	0	63	95	14283
9	6500	289	51	24	543	543	377	124	45	33	20.1	6500	3500	33	4855	500	0	65	78	14500
10	6600	479	52	23	701	701	526	174	76	36	20.6	6600	3493	30	4822	525	0	65	71	14826
FY TOTALS		3496	387	221		5538	4153	1146	705	183	20.1			361		4350	0	649	890	
11	6700	552	52	23	743	783	587	196	82	84	21.4	6700	3470	30	4788	550	0	65	71	15200
12	6800	796	53	23	1032	1032	774	258	129	92	22.3	6800	3355	29	4752	575	0	66	68	15676
13	6900	378	27	25	682	682	462	158	57	53	22.1	6900	3294	33	4726	600	0	65	80	16104
14	7000	376	27	25	591	591	443	148	69	21	21.6	7000	3247	29	4699	600	0	65	68	16504
15	7100	468	28	25	680	680	510	184	34	66	20.8	7100	3217	27	4669	600	0	66	60	16904
16	7200	419	28	26	828	828	621	38	56	73	18.8	7200	3148	26	4635	600	0	67	62	17427
17	7300	439	28	26	639	639	479	31	73	56	18.8	7300	3067	15	4604	600	0	66	36	17907
18	7400	485	29	26	679	679	509	67	59	44	18.8	7400	3032	21	4569	600	0	67	52	18360
19	7500	449	29	27	646	646	485	56	86	67	19.6	7500	2969	41	4568	600	0	68	98	18794
20	7600	531	29	27	739	739	554	94	98	79	23.5	7600	2930	98	4573	600	0	69	213	19643
21	7700	413	30	28	633	633	475	118	68	92	23.6	7700	2881	84	4568	600	0	69	199	19349
22	7800	584	30	28	776	776	582	194	147	39	23.3	7800	2852	83	4623	600	0	70	194	19981
FY TOTALS		5888	390	309		8628	6321	1668	988	766	21.7			588		7125	0	803	1287	
23	7900	665	31	28	859	859	644	215	109	59	23.3	7900	2849	113	4678	600	0	70	266	19886
24	8000	894	31	27	1116	1116	836	279	170	108	23.8	8000	2829	109	4735	600	0	72	256	19729
25	8100	511	32	29	702	702	527	176	103	63	23.2	8100	2825	100	4762	600	0	72	235	19786
26	8200	490	32	30	683	683	512	171	83	88	23.3	8200	2766	90	4761	600	0	71	138	19944
27	8300	572	32	30	756	756	567	189	120	58	23.2	8300	2764	101	4803	600	0	72	237	20004
28	8400	562	33	30	727	727	545	182	98	76	23.1	8400	2785	112	4847	600	18	71	263	20094
29	8500	550	33	31	737	737	553	184	108	72	23.0	8500	2805	110	4904	600	80	73	297	20172
30	8600	562	34	31	751	751	563	188	103	78	23.0	8600	2809	108	4967	600	152	72	256	20304
31	8600	552	34	31	637	637	478	159	77	66	22.9	8600	2763	14	4981	600	88	72	33	20713
32	8600	648	34	31	735	735	551	184	92	77	23.1	8600	2722	13	4981	600	101	72	31	21157
33	8600	561	34	31	648	648	486	162	101	63	22.7	8600	2728	54	4964	600	239	74	127	21901
34	8600	684	34	31	772	772	579	193	102	77	23.1	8600	2729	53	4934	600	407	73	176	22135
FY TOTALS		7231	394	360		9121	6841	2280	1258	839	23.2			966		6800	1165	866	2223	
35	8600	760	34	31	848	858	638	213	94	99	23.2	8600	2784	108	4888	600	133	74	253	22387
36	8600	982	34	30	1073	1073	805	268	168	85	23.5	8600	2826	108	4926	600	122	75	252	22660
37	8600	618	34	31	789	789	592	197	95	65	23.1	8600	2876	105	4969	600	170	76	268	22888
38	8600	605	34	31	694	694	521	173	104	51	23.0	8600	2931	106	5013	600	151	76	250	23071

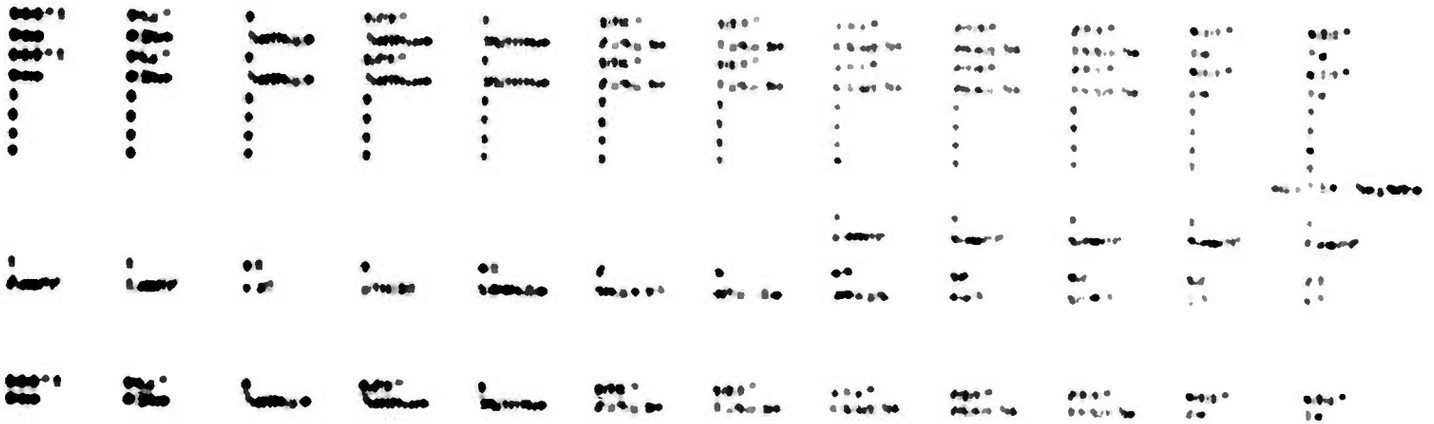
EXAMPLE NUMBER TWO

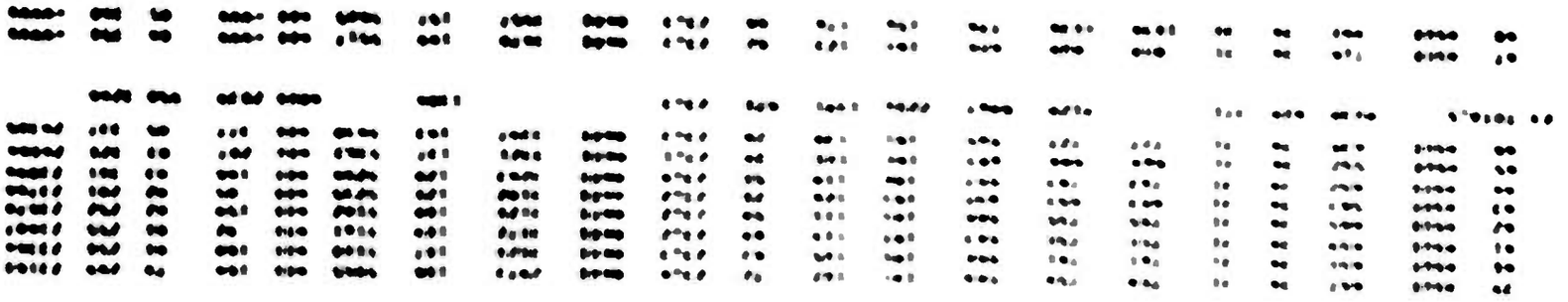
MONTH	ST DJUTA	ENG TOUR	PERM CAS	ST CAS	REPL INFO	REPL SENT	NEW RCPL	NET -2%	2ND TOUR	3RD+ TOUR	AVG DS TR	ST UN MAND	BASE -25	NET AT ADDNS	CUR TOT	INPT SCHD	ADDL INPT	ATTRT LOSS	ETS	SYST TOT
(COL)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
1	5700	119	21	21	433	433	325	0	100	0	25.0	5700	3200	34	5000	400	0	65	81	12704
2	5800	282	22	21	449	449	337	28	73	39	24.0	5800	3200	30	5051	400	0	65	72	12904
3	5900	395	23	21	543	543	429	124	121	20	23.1	5900	3295	34	5021	400	0	64	80	13177
4	6000	334	23	22	508	508	381	127	110	17	20.3	6000	3220	35	5004	400	0	66	83	13405
5	6100	352	48	22	544	544	408	134	110	20	19.2	6100	3231	46	5045	400	0	65	94	13598
6	6200	405	48	22	600	600	450	144	102	48	18.8	6200	3223	46	5041	400	0	65	110	13775
7	6300	399	44	22	582	582	444	147	99	50	19.2	6300	3200	40	5012	450	0	65	95	14616
8	6400	437	50	23	638	638	479	157	94	65	19.7	6400	3140	48	5005	475	0	63	90	14282
9	6500	287	51	24	487	487	365	120	122	0	20.2	6500	3112	33	4950	500	0	66	77	14500
10	6600	479	52	25	685	685	514	171	22	148	21.1	6600	3055	38	4914	525	0	64	72	14925
FY TOTALS		3494	387	221		5499	4125	1154	951	422	20.2			362		4350	0	649	860	
11	6700	554	52	23	746	746	560	187	133	56	21.2	6700	3011	30	4770	550	0	66	73	15206
12	6800	797	53	23	1008	1008	756	254	141	111	21.1	6800	2886	28	4761	575	0	65	67	15670
13	6900	372	27	25	560	560	405	136	76	61	21.6	6900	2839	35	4718	600	0	65	83	16101
14	7000	385	27	25	554	554	416	139	88	50	21.4	7000	2790	30	4661	600	0	65	71	16530
15	7100	486	28	25	696	696	522	174	118	66	21.0	7100	2738	27	4662	600	0	65	65	16980
16	7200	437	28	26	668	668	464	152	87	65	20.9	7200	2688	25	4657	600	0	66	60	17426
17	7300	449	28	26	648	648	488	164	99	91	20.8	7300	2627	10	4586	600	0	66	38	17864
18	7400	517	29	26	698	698	518	173	104	67	20.2	7400	2573	21	4566	600	0	68	50	18347
19	7500	516	29	27	689	689	517	172	75	62	20.1	7500	2533	41	4533	600	0	66	96	18756
20	7600	556	30	27	731	731	548	183	179	0	20.4	7600	2542	92	4568	600	0	67	210	19063
21	7700	425	30	28	602	602	452	150	81	69	21.4	7700	2555	85	4503	600	0	70	201	19362
22	7800	667	30	28	783	783	587	196	92	100	21.5	7800	2548	81	4617	600	0	67	192	19683
FY TOTALS		6121	391	304		8457	6106	2040	1241	782	21.0			511		7175	0	796	1212	
23	7900	668	31	28	846	846	635	211	130	81	21.4	7900	2582	115	4672	600	0	70	270	19982
24	8000	800	31	27	1065	1065	799	266	203	63	21.1	8000	2602	109	4723	600	0	70	257	19724
25	8100	681	32	29	861	861	646	184	181	96	20.6	8100	2622	99	4763	600	0	70	234	19788
26	8200	691	32	30	873	873	655	182	95	73	20.5	8200	2594	90	4743	600	0	71	139	19946
27	8300	583	32	30	744	744	573	198	116	75	20.5	8300	2611	101	4804	600	0	71	238	20005
28	8400	539	33	30	722	722	542	180	105	75	20.5	8400	2644	112	4845	600	0	70	264	20038
29	8500	565	33	31	749	749	562	188	88	107	20.4	8500	2668	110	4904	600	0	71	250	20075
30	8600	616	34	31	802	802	602	198	120	80	20.1	8600	2694	100	4942	600	100	72	254	20223
31	8600	600	34	31	693	693	520	173	127	66	20.1	8600	2666	13	4907	600	70	71	33	20055
32	8600	668	34	31	736	736	551	182	107	76	20.4	8600	2599	13	4845	600	107	73	31	21004
33	8600	537	34	32	626	626	469	154	101	55	21.0	8600	2595	53	4864	600	228	72	125	21401
34	8600	497	34	31	782	782	587	193	92	103	21.1	8600	2591	54	4838	600	373	72	129	21939
FY TOTALS		7321	394	361		9119	6840	2254	1377	898	20.7			966		6800	966	853	2233	
35	8600	769	34	31	975	975	731	204	138	71	20.7	8600	2635	108	4886	600	107	74	252	22806
36	8600	904	34	34	1028	1028	771	256	128	129	20.5	8600	2674	107	4918	600	112	74	253	22237
37	8600	589	34	31	675	675	506	184	103	66	20.6	8600	2719	105	4871	600	171	76	268	22650
38	8600	595	34	31	681	681	511	187	97	73	20.6	8600	2763	106	5016	600	148	76	268	22660



EXAMPLE OUTPUT - TABLE

MONTH	DAY																		
(COL)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
1	5700	119	21	21	611	611	595	1	104	0	25.0	5700	3200	36	5004	000	0	65	81	12704
2	5000	242	22	21	609	609	587	22	99	19	18.2	5000	3300	30	5051	000	0	65	72	12969
3	5000	255	23	21	583	583	566	17	119	15	22.1	5000	3201	36	5021	000	0	66	81	13177
4	5000	114	23	22	566	566	549	17	77	10	21.0	5000	3200	35	5006	000	0	66	83	13069
5	5100	151	24	22	568	568	550	18	90	0	19.0	5100	3330	39	5045	000	0	65	93	13909
6	5200	105	24	22	568	568	550	18	117	27	19.2	5200	3330	47	5063	000	0	65	110	13776
7	5200	100	24	22	561	561	542	19	38	00	18.0	5100	3305	40	5015	050	0	66	94	14017
8	5000	117	24	23	653	653	634	19	124	65	19.0	5000	3203	40	5008	075	0	64	95	14203
9	5200	208	21	20	565	565	546	19	47	01	19.7	5000	3203	32	5052	500	0	66	77	14509
10	5000	170	22	23	702	702	671	22	107	0	20.2	5000	3220	30	5019	525	0	64	71	14927
BY TOTALS		1655	227	221		5944	5665	1024	675	200	19.9			361		0350	0	650	857	
11	5700	554	22	23	707	707	690	299	00	107	21.0	5700	3110	30	5700	550	0	66	72	15207
12	5000	175	23	23	1054	1054	1031	223	227	20.7	5000	2751	20	5761	575	0	65	67	15677
13	5000	202	23	23	612	612	600	153	00	10.3	5000	2000	24	5710	000	0	66	82	16102
14	7000	175	23	23	599	599	580	134	01	00	19.2	7000	2000	29	5002	000	0	67	00	16539
15	7100	000	20	20	000	000	616	174	30	51	19.1	7100	2050	27	5049	000	0	66	04	16981
16	7200	010	20	20	620	620	601	157	71	32	19.1	7200	2037	25	5012	000	0	67	61	17425
17	7100	000	20	20	000	000	000	100	0	35	10.0	7100	2000	15	5070	000	0	66	30	17893
18	7000	070	20	20	070	070	051	100	0	0	10.0	7000	2777	21	5054	000	0	60	50	18344
19	7000	001	20	20	002	002	002	100	01	05	21.0	7000	2722	00	5013	000	0	60	90	18752
20	7000	527	20	20	736	736	002	100	119	50	21.2	7000	2707	92	5100	000	0	67	215	19021
21	7700	010	20	20	037	037	020	135	70	03	21.0	7700	2723	00	5075	000	0	00	199	19364
22	7000	575	20	20	707	707	000	130	101	31	21.9	7000	2700	02	5000	000	0	00	196	19051
BY TOTALS		5050	200	210		0070	0015	2001	077	707	20.2			507		7125	0	000	1207	
23	7000	050	21	20	050	050	007	021	119	107	21.0	7003	2007	113	5000	000	120	70	200	19020
24	0000	072	21	21	1100	1100	007	001	115	220	20.0	0000	2550	110	5700	000	122	70	257	19000
25	0100	023	22	22	717	717	000	170	00	70	10.0	0100	2550	100	5705	000	00	70	230	20140
26	0200	000	22	20	003	001	000	170	100	00	10.0	0200	2503	00	5700	000	120	71	139	20032
27	0300	070	22	20	705	705	000	100	110	00	10.0	0100	2507	101	5705	000	123	71	237	20015
28	0000	010	21	20	700	700	000	170	00	70	10.0	0000	2515	113	5030	000	125	71	204	20772
29	0300	007	21	21	007	007	001	170	101	00	10.0	0500	2501	107	5005	000	0	72	250	20011
30	0000	005	21	21	007	007	001	170	101	20	10.1	0000	2073	107	5030	000	0	73	250	20040
31	0000	003	21	21	051	051	000	101	00	103	10.5	0000	2030	10	5002	000	0	74	35	21105
32	0000	050	21	21	730	730	000	100	135	10	10.0	0000	2005	10	5030	000	27	73	33	21302
33	0000	007	21	21	000	000	001	101	0	100	20.2	0000	2022	00	5007	000	0	73	131	21004
34	0000	700	21	21	703	703	000	100	01	103	10.1	0000	2020	00	5010	000	130	73	130	21051
BY TOTALS		7135	200	200		7155	0017	2020	1200	1207	10.7			052		0000	000	001	2230	
35	0000	000	21	21	007	007	001	210	01	112	10.7	0005	2002	100	5000	000	2	75	257	21007
36	0000	001	21	21	1010	1010	000	201	00	00	10.0	0000	2005	100	5012	000	15	75	253	21040
37	0100	031	21	21	700	779	000	101	107	07	20.1	0005	2010	105	5050	000	50	76	200	22043
38	0000	000	21	21	701	701	001	170	112	00	20.2	0000	2005	105	5002	000	111	77	200	22107





39	3500	865	34	31	1453	1351	446	371	226	129	22.8	8600	2787	106	3052	359	0	77	248	22500
40	3500	841	34	31	1443	1331	481	372	248	110	21.8	8600	2650	107	3097	361	0	77	250	22500
41	3500	852	34	31	1447	1347	457	341	231	140	20.7	8600	2504	107	3136	364	0	79	251	22500
42	3500	857	34	31	1453	1351	454	334	123	253	19.3	8600	2352	107	3174	364	0	80	250	22500
43	3500	863	34	31	1453	1344	482	288	122	143	19.3	8585	2302	120	3229	396	0	79	283	22500
44	3500	844	34	31	1434	1315	482	211	133	59	19.7	8614	2350	129	3289	416	0	80	302	22500
45	3500	876	33	31	1460	1334	466	249	145	75	19.6	8578	2362	135	3355	431	0	81	317	22500
46	3500	872	33	30	1449	1329	414	232	141	93	19.9	8608	2394	144	3430	450	0	81	336	22500
FY TOTALS		8037	408	376		3841	5442	3347	1433	1305	21.2			1382		4584	0	942	3236	
47	3500	751	33	29	1142	1071	422	244	148	85	19.9	8096	2448	150	3510	468	-999	84	351	-9999
48	3500	945	32	29	1349	1031	443	253	184	73	19.9	7754	2549	158	3597	486	-999	84	370	-9999

R1	R2	RLOSS1	RLOSS2	RLOSS3	RETN11	RETN12	RNOUSE	RPNDPL	RTNDPL	RNEW	RRA
.004	.004	.012	.002	.010	.100	.300	0	.020	0	.750	1.000
L3	L2	LAM3	LRA	NTIME	MINFOR	LEVING	MINBAS	IEOUT	IFY	JUMP1	JUMP2
12	23	24	35	48	6	2	18	0	10	0	1
JUMP3	JUMP4	JUMP5	JUMP6	JUMP7							
0	0	1	0	0							

CONTROL VECTOR

0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
R1	R2	RLOSS1	RLOSS2	RLOSS3	RETN11	RETN12	RNOUSE	RPNDPL	RTNDPL	RNEW	RRA
.005	.004	.012	.002	.010	.100	.300	0	.020	0	.750	1.000
R1	R2	RLOSS1	RLOSS2	RLOSS3	RETN11	RETN12	RNOUSE	RPNDPL	RTNDPL	RNEW	RRA
.004	.004	.012	.002	.011	.100	.300	0	.020	0	.750	1.000

EXAMPLE NUMBER SIX

MONTH	ST QUOTA	END TOUR	PERM CAS	ST CAS	REPL REQ	REPL SENT	NEW REPL	RET -25	2ND TOUR	3RD+ TOUR	AVG BS TR	ST ON HAND	NBASE -25	RETNT ADDNS	CAR TOT	INPT SCHD	ADDL INPT	ATTRT LOSS	ETS	SYST TOT
(COL)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
1	5700	119	21	21	433	433	325	0	108	0	25.0	5700	3200	34	5084	400	0	65	81	12704
2	5800	282	22	21	449	449	337	28	45	39	18.2	5800	3308	30	5051	400	0	65	72	12945
3	5900	395	23	21	563	563	422	96	99	10	21.9	5900	3315	34	5021	400	0	64	81	13177
4	6000	339	23	22	507	507	380	127	85	11	21.6	6000	3318	35	4994	400	0	66	83	13405
5	6100	352	48	22	543	543	407	136	67	16	19.9	6100	3372	39	4966	400	0	65	94	13598
6	6200	405	48	22	599	599	449	149	78	15	19.6	6200	3420	46	4943	400	0	65	110	13775
7	6300	401	49	22	592	592	444	147	14	12	18.6	6300	3523	40	4916	450	0	66	94	14016
8	6400	434	50	23	648	648	486	162	88	11	19.9	6400	3508	40	4889	475	0	63	95	14283
9	6500	288	51	24	503	503	377	126	45	33	20.1	6500	3506	33	4855	500	0	65	78	14589
10	6600	479	52	23	701	701	526	175	76	36	20.6	6600	3493	30	4822	525	0	65	71	14926
FY TOTALS		3494	387	221		5538	4153	1145	705	183	20.1			361		4350	0	649	859	
11	6700	552	52	23	783	783	587	196	62	84	21.4	6700	3470	30	4788	550	0	65	71	15288
12	6800	796	53	23	1032	1032	774	258	129	92	22.3	6800	3355	29	4752	575	0	66	68	15676
13	6900	374	27	25	602	602	452	150	57	53	22.1	6900	3294	33	4726	600	0	65	80	16104
14	7000	374	27	25	591	591	443	148	69	21	21.6	7000	3247	29	4699	600	0	65	68	16544
15	7100	468	28	25	680	680	510	104	34	66	20.0	7100	3217	27	4669	600	0	66	66	16984
16	7200	419	28	26	634	634	476	31	54	73	18.0	7200	3143	17	4626	600	0	67	71	17418
17	7300	439	28	26	643	643	482	32	73	56	18.0	7300	3061	10	4580	600	0	66	41	17883
18	7400	487	29	26	684	684	513	68	59	44	18.0	7400	3025	14	4538	600	0	67	59	18328
19	7500	449	29	27	649	649	487	58	68	46	19.7	7500	2951	27	4505	600	0	68	111	18720
20	7600	531	29	27	742	742	557	90	96	81	23.5	7600	2888	61	4509	600	0	67	244	18980
21	7700	417	30	28	644	644	483	115	63	92	23.6	7700	2818	56	4506	600	0	68	226	19256
22	7800	577	30	28	773	773	580	193	143	42	23.2	7800	2758	55	4505	600	0	68	224	19534
FY TOTALS		5879	390	309		8457	6344	1452	907	750	21.7			388		7125	0	798	1329	
23	7900	662	31	28	861	861	646	215	113	56	23.2	7900	2716	76	4523	400	0	70	307	19526
24	8000	894	31	27	1120	1120	840	280	152	120	23.8	8000	2664	72	4539	400	0	67	292	19536
25	8100	505	32	29	698	698	524	174	87	77	23.1	8100	2630	66	4545	400	0	69	267	19568
26	8200	488	32	30	684	684	513	171	88	75	23.0	8200	2556	40	4526	400	0	69	160	19707
27	8300	566	32	30	750	750	563	187	89	86	22.7	8300	2520	67	4538	400	0	67	269	19739
28	8400	543	33	30	728	728	546	182	94	78	22.5	8400	2506	75	4557	400	40	69	301	19776
29	8500	546	33	31	734	734	551	183	94	76	22.3	8500	2492	73	4571	400	74	68	293	19856
30	8600	564	34	31	754	754	566	188	101	72	22.2	8600	2462	72	4583	400	155	68	292	20017
31	8500	545	34	32	631	631	473	158	51	91	22.0	8600	2407	9	4536	400	94	67	38	20372
32	8600	651	34	31	739	739	554	185	83	88	21.9	8600	2364	8	4485	400	177	69	35	20811
33	8600	570	34	31	656	656	492	164	95	52	21.7	8600	2359	36	4466	400	243	68	144	21208
34	8600	678	34	31	766	766	575	191	105	69	22.0	8600	2347	35	4442	400	408	70	144	21768
FY TOTALS		7212	394	361		9121	6843	2278	1152	940	22.6			629		4800	1191	821	2542	
35	8600	762	34	31	855	855	641	214	84	113	22.2	8600	2369	71	4455	400	131	70	288	21907
36	8600	985	34	30	1077	1077	808	269	137	116	21.5	8600	2382	72	4471	400	118	69	290	22032
37	8600	614	34	31	705	705	529	176	68	90	21.0	8600	2402	70	4483	400	169	72	283	22212
38	8600	600	34	31	689	689	517	172	79	74	20.8	8600	2425	70	4496	400	152	71	282	22377

39	8500	662	34	31	756	756	567	189	114	59	20.6	8600	2441	71	4510	400	156	71	285	22543
40	8500	663	34	31	736	736	552	184	107	39	20.4	8600	2461	71	4524	400	168	72	285	22720
41	8500	667	34	31	739	739	554	185	77	50	20.3	8600	2482	71	4535	400	85	73	286	22812
42	8500	663	34	31	755	755	566	189	81	49	20.0	8600	2501	72	4548	400	159	72	291	22974
43	8500	553	34	31	645	645	484	161	80	61	20.1	8600	2527	81	4573	400	101	74	324	23043
44	8500	652	34	31	743	743	557	186	86	80	20.4	8600	2559	85	4599	400	177	74	343	23169
45	8500	573	34	31	667	667	500	167	85	62	20.7	8600	2593	90	4633	400	237	74	365	23333
46	8500	673	34	31	766	766	575	191	97	75	21.2	8600	2631	95	4667	400	385	77	383	23624
FY TOTALS		4027	408	371		9133	6850	2283	1117	948	20.8			919		4800	2038	869	3705	
47	8500	751	34	31	846	846	635	211	100	94	21.1	8600	2669	99	4707	400	-999	75	400	-9999
48	8500	952	34	30	1065	1065	798	267	113	129	20.6	8600	2713	105	4754	400	-999	76	421	-9999

M1	M2	MLOSS1	MLOSS2	MLOSS3	RETNT1	RETNT2	RNOUSE	RPNDPL	RTNDPL	RNEW	RRA
.006	.006	.012	.002	.010	.100	.300	0	.020	0	.750	1.000

LS	LC	LAUS	LRA	NTIME	MINTUR	LEVTNG	MINBAS	IEOUT	IFY	JUMP1	JUMP2
12	25	24	36	48	6	2	18	0	10	0	1

JUMP3	JUMP4	JUMP5	JUMP6	JUMP7
0	0	1	0	0

MONTHLY SECTION

0	0	0	0	4	0	0	0	0	0	0	0
4	0	0	4	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
M1	M2	MLOSS1	MLOSS2	MLOSS3	RETNT1	RETNT2	RNOUSE	RPNDPL	RTNDPL	RNEW	RRA
.006	.006	.012	.002	.010	.100	.300	0	.020	0	.750	1.000
M1	M2	MLOSS1	MLOSS2	MLOSS3	RETNT1	RETNT2	RNOUSE	RPNDPL	RTNDPL	RNEW	RRA
.006	.006	.012	.002	.010	.100	.300	0	.020	0	.750	1.000
M1	M2	MLOSS1	MLOSS2	MLOSS3	RETNT1	RETNT2	RNOUSE	RPNDPL	RTNDPL	RNEW	RRA
.006	.006	.012	.002	.010	.100	.200	0	.020	0	.750	1.000

EXAMPLE NUMBER SEVEN

MONTH	ST ADJTA	END TOUR	PERM CAS	SI CAS	REPL REQ	REPL SENT	NFA REPL	RET -25	2ND TOUR	3RD+ TOUR	AVG BS TR	ST ON HAND	NBASE -25	RETNT ADDNS	CAR TOT	INPT SCHD	ADDL INPT	ATTRT LOSS	ETS	SYST TOT
(COL)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
1	5700	119	21	21	433	433	325	0	108	0	25.0	5700	3200	34	5084	400	0	65	81	12704
2	5900	282	22	21	449	449	337	28	45	39	18.2	5800	3308	30	5051	400	0	65	72	12945
3	5960	395	23	21	563	563	422	94	99	10	21.9	5900	3315	34	5021	400	0	64	81	13177
4	6000	339	23	22	507	507	380	127	85	11	21.6	6000	3318	35	4994	400	0	66	83	13405
5	6100	352	48	22	543	543	407	135	67	16	19.9	6100	3372	39	4946	400	0	65	94	13598
6	6200	405	48	22	599	599	449	140	78	15	19.6	6200	3420	46	4943	400	0	65	110	13775
7	6300	401	49	22	542	542	444	147	14	12	18.6	6300	3523	40	4916	450	0	66	94	14016
8	6400	434	50	23	648	648	486	162	88	11	19.9	6400	3508	40	4889	475	0	63	95	14283
9	6500	288	51	24	503	503	377	126	45	33	20.1	6500	3506	33	4855	500	0	65	78	14589
10	6600	479	52	23	701	701	526	175	76	36	20.6	6600	3493	30	4892	525	0	65	71	14926
FY TOTALS		3494	387	221		5538	4153	1145	705	183	20.1			361		4350	0	649	859	
11	6700	552	52	23	783	783	587	196	62	84	21.4	6700	3470	30	4788	550	0	65	71	15288
12	6800	796	53	23	1032	1032	774	258	129	92	22.3	6800	3355	29	4752	575	0	66	68	15676
13	6900	370	27	25	602	602	452	150	57	53	22.1	6900	3294	33	4726	600	0	65	80	16104
14	7000	374	27	25	591	591	443	148	69	21	21.6	7000	3247	29	4699	600	0	65	68	16544
15	7100	468	28	25	680	680	510	104	34	66	20.0	7100	3217	27	4669	600	0	66	66	16984
16	7200	419	28	26	621	621	466	28	54	73	18.0	7200	3151	35	4644	600	0	67	53	17436
17	7300	440	28	26	635	635	476	30	73	56	18.0	7300	3071	20	4608	600	0	66	31	17911
18	7400	484	29	27	675	675	506	68	59	44	18.0	7400	3039	29	4580	600	0	67	44	18371
19	7500	448	29	27	641	641	481	56	65	47	19.5	7500	2984	55	4575	600	0	69	84	18789
20	7600	531	30	27	735	735	551	93	99	77	23.5	7600	2973	122	4640	600	0	67	183	19109
21	7700	414	30	28	627	627	470	107	57	94	23.6	7700	2947	113	4692	600	0	70	170	19439
22	7800	591	30	28	781	781	586	195	149	38	23.3	7800	2947	110	4741	600	0	73	167	19769
FY TOTALS		5887	391	310		8403	6302	1430	907	745	21.7			632		7125	0	806	1085	
23	7900	668	31	28	860	860	645	215	108	60	23.3	7900	2981	152	4832	400	0	71	230	19837
24	8000	697	31	27	1108	1108	831	277	205	65	23.8	8000	2990	145	4914	400	0	73	218	19915
25	8100	511	32	29	701	701	526	117	68	97	23.2	8100	3017	134	4984	400	0	72	201	20010
26	8200	498	32	30	691	691	518	173	85	80	23.6	8200	2983	79	5000	400	0	73	121	20184
27	8300	575	32	30	759	759	569	190	120	58	23.5	8300	3013	134	5072	400	0	75	202	20275
28	8400	535	33	30	719	719	539	180	112	58	23.5	8400	3066	150	5161	400	0	74	227	20341
29	8500	555	33	31	742	742	557	185	94	78	23.5	8500	3128	147	5242	400	77	76	221	20488
30	8500	566	34	31	753	753	565	188	105	68	23.5	8600	3169	143	5317	400	156	75	215	20720
31	8500	547	34	31	633	633	475	152	122	21	23.4	8600	3121	18	5269	400	82	78	29	21061
32	8600	652	34	31	739	739	554	128	112	57	23.3	8600	3086	18	5218	400	186	78	28	21507
33	8500	554	34	31	640	640	480	81	83	59	22.7	8600	3103	72	5295	400	238	77	109	21925
34	8500	641	34	31	779	779	584	114	141	59	23.2	8600	3116	70	5226	400	405	79	107	22510
FY TOTALS		7249	394	360		9124	6843	2004	1335	760	23.5			1262		4800	1144	901	1908	
35	8600	757	34	31	848	848	636	97	118	77	22.9	8600	3199	145	5304	400	48	79	218	22627
36	8500	983	34	30	1072	1072	804	106	135	96	23.0	8600	3278	144	5381	400	128	79	216	22826
37	8500	610	34	31	700	700	447	0	169	84	25.0	8600	3255	140	5453	400	175	81	212	23074
38	8600	612	34	31	701	701	526	8	102	65	18.5	8600	3326	140	5523	400	117	84	211	23262

39	8500	671	34	31	744	744	573	23	110	53	19.1	8600	3412	142	5596	400	159	84	215	23488
40	8500	630	34	31	721	721	515	0	139	67	25.0	8600	3441	141	5667	400	167	86	212	23723
41	8500	638	34	31	747	747	557	0	126	64	25.0	8600	3503	143	5738	400	32	85	216	23820
42	8500	663	34	31	755	755	564	5	140	44	19.4	8600	3565	144	5808	400	160	87	216	24043
43	8500	557	34	31	648	648	471	0	153	64	25.0	8600	3582	162	5898	400	31	89	243	24108
44	8500	664	34	31	744	744	554	0	171	15	25.0	8600	3665	172	5996	400	185	89	260	24310
45	8500	558	34	31	662	662	430	0	168	64	25.0	8600	3696	181	6104	400	178	91	273	24490
46	8500	684	34	31	777	777	583	14	133	47	22.7	8600	3810	190	6215	400	348	94	287	24823
FY TOTALS		8042	408	371		9139	6626	252	1686	740	22.3			1844		4800	1728	1028	2779	
47	8500	749	34	31	862	862	576	0	189	77	25.0	8600	3862	200	6337	400	-999	93	300	-9999
48	8600	967	34	30	1041	1041	747	0	208	86	25.0	8600	3941	210	6468	400	-999	95	315	-9999

R1	R2	RLOSS1	RLOSS2	RLOSS3	RETNT1	RETNT2	RNOUSE	RPNDPL	RTNDPL	RNEW	RRA
.004	.004	.012	.002	.010	.100	.300	0	.020	0	.750	1.000

LS	LC	LAUS	LMA	NTIME	MINTUR	LEVTNG	MINBAS	IEOUT	IFY	JUMP1	JUMP2
12	25	24	36	48	6	2	18	0	10	0	1

JUMP3	JUMP4	JUMP5	JUMP6	JUMP7
0	0	1	0	0

KONTRL VECTOR

0	0	0	0	4	0	0	0	0	0	0	0
4	0	0	4	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
R1	R2	RLOSS1	RLOSS2	RLOSS3	RETNT1	RETNT2	RNOUSE	RPNDPL	RTNDPL	RNEW	RRA
.004	.004	.012	.002	.010	.100	.300	0	.020	0	.750	1.000
R1	R2	RLOSS1	RLOSS2	RLOSS3	RETNT1	RETNT2	RNOUSE	RPNDPL	RTNDPL	RNEW	RRA
.004	.004	.012	.002	.010	.100	.300	0	.020	0	.750	1.000
R1	R2	RLOSS1	RLOSS2	RLOSS3	RETNT1	RETNT2	RNOUSE	RPNDPL	RTNDPL	RNEW	RRA
.004	.004	.012	.002	.010	.100	.400	0	.020	0	.750	1.000

EXAMPLE NUMBER EIGHT

MONTH	ST QUOTA	END TOUR	PERM CAS	ST CAS	REPL REQ	REPL SENT	NEW REPL	NET -25	2ND TOUR	3RD+ TOUR	AVG BS TR	ST ON HAND	NBASE -25	RETNT ADDNS	CAR TOT	INPT SCHD	ADDL INPT	ATTRT LOSS	ETS	SYST TOT
(COL)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
1	5700	119	21	21	433	433	325	0	108	0	25.0	5700	3200	34	5084	400	0	65	81	12704
2	5800	282	22	21	449	449	337	28	45	39	18.2	5800	3308	30	5051	400	0	65	72	12945
3	5900	395	23	21	563	563	422	96	99	10	21.9	5900	3315	34	5021	400	0	64	81	13177
4	6000	339	23	22	507	507	380	127	85	11	21.6	6000	3318	35	4994	400	0	66	83	13405
5	6500	352	48	22	943	943	707	235	141	42	19.7	6500	3272	39	4966	400	0	65	94	13598
6	6500	405	52	24	505	505	379	125	67	2	18.7	6500	3346	46	4943	400	0	64	109	13773
7	6500	400	52	24	496	496	372	123	1	0	18.0	6500	3477	39	4916	450	0	64	94	14013
8	7000	435	52	23	1053	1053	790	257	156	44	19.9	7000	3361	39	4886	475	0	65	94	14277
9	7000	290	56	26	413	413	310	103	9	46	19.6	7000	3386	33	4852	500	0	63	77	14581
10	7000	478	56	25	608	608	456	152	13	77	20.3	7000	3396	30	4816	525	0	65	72	14913
FY TOTALS		3495	405	229		5970	4478	1246	724	271	19.9			359		4350	0	646	857	
11	7300	552	56	25	990	990	743	247	180	16	21.2	7300	3324	30	4782	550	0	65	71	15271
12	7300	795	58	25	939	939	524	415	158	219	21.9	7300	3057	28	4742	575	0	64	68	15656
13	7300	372	29	27	513	513	385	128	62	27	20.8	7300	3027	33	4716	600	0	64	80	16083
14	7800	370	29	27	993	993	736	257	90	107	21.2	7800	2877	28	4683	600	0	66	68	16520
15	7800	464	31	28	583	583	437	146	48	27	20.1	7800	2872	27	4650	600	0	64	64	16961
16	7800	424	31	29	542	542	407	135	41	20	20.0	7800	2874	25	4616	600	0	66	61	17403
17	8300	783	31	27	1391	1391	947	444	138	180	20.7	8300	2685	16	4574	600	0	65	38	17869
18	8300	404	33	31	511	511	383	128	0	0	18.0	8300	2735	21	4535	600	0	66	52	18318
19	8300	365	33	31	471	471	353	118	44	26	20.7	8300	2700	39	4516	600	0	67	94	18724
20	8800	887	33	29	1506	1506	1054	452	288	119	20.9	8800	2483	93	4551	600	0	67	217	19007
21	8800	329	35	33	465	465	349	116	88	23	20.9	8800	2462	84	4576	600	0	66	199	19307
22	8800	503	35	32	639	639	479	160	43	109	21.5	8800	2439	83	4600	600	0	68	195	19609
FY TOTALS		6248	434	344		9543	6797	2746	1180	873	20.9			507		7125	0	788	1207	
23	9300	844	35	31	1514	1514	964	550	302	241	20.1	9300	2119	113	4654	400	21	68	264	19663
24	9300	749	37	33	979	960	598	362	191	162	18.5	9281	2137	110	4701	400	315	68	258	20015
25	9300	430	37	35	558	558	419	139	106	25	18.0	9300	2161	99	4740	400	38	67	232	20117
26	9300	845	37	33	952	952	714	238	116	110	18.3	9300	2146	60	4740	400	6	68	140	20278
27	9300	681	37	35	581	581	436	145	67	64	18.0	9300	2180	101	4780	400	540	70	236	20875
28	9300	438	37	35	538	538	404	134	111	10	18.1	9300	2217	111	4831	400	0	69	262	20907
29	9300	1153	37	32	1250	1250	938	312	140	159	18.3	9300	2295	111	4881	400	0	70	260	20940
30	9300	381	37	35	482	482	362	120	77	27	18.3	9300	2310	108	4926	400	598	71	253	21577
31	9300	392	37	35	489	489	367	122	106	0	18.9	9300	2265	13	4875	400	15	73	32	21850
32	9300	1323	37	31	1418	1375	1044	311	76	220	19.1	9257	2324	12	4820	400	97	73	30	22207
33	9300	408	37	35	550	550	413	137	60	60	18.6	9300	2329	54	4815	400	672	74	128	23040
34	9300	564	37	34	660	650	495	155	59	78	18.7	9290	2350	54	4808	400	384	74	126	23587
FY TOTALS		8058	442	404		9849	7174	2725	1411	1156	18.8			946		4800	2686	845	2221	
35	9300	1320	37	31	1427	1320	1070	250	114	117	18.9	9193	2638	108	4853	400	100	74	252	23724
36	9300	840	36	33	1043	965	782	183	116	48	19.2	9222	2842	110	4902	400	312	77	257	24066
37	9300	693	36	34	845	851	699	152	126	5	19.4	9286	2894	105	4945	400	57	78	245	24164
38	9300	839	37	33	967	967	730	237	114	103	19.2	9300	2933	105	4986	400	27	79	246	24229

39	9300	509	37	34	606	606	455	151	100	31	20.1	9300	2982	105	5028	400	500	79	247	24766
40	9300	471	37	35	569	569	427	142	110	11	20.2	9300	3034	107	5073	400	0	79	252	24798
41	9300	1103	37	32	1197	1197	898	299	130	149	19.5	9300	3071	108	5118	400	0	80	253	24828
42	9300	425	37	35	525	525	394	131	100	6	20.9	9300	3122	106	5158	400	581	83	249	25440
43	9300	433	37	35	531	531	398	133	112	0	20.9	9300	3190	122	5217	400	39	81	286	25475
44	9300	1217	37	32	1312	1312	984	328	133	176	20.6	9300	3214	128	5279	400	102	85	299	25556
45	9300	483	37	35	582	582	437	145	165	0	21.4	9300	3285	135	5350	400	554	84	316	26073
46	9300	571	37	34	668	668	501	167	137	8	21.5	9300	3355	142	5425	400	314	87	334	26329
FY TOTALS		8705	442	403		9873	7555	2318	1417	654	20.0			1381		4800	2586	966	3236	
47	9300	1171	37	32	1269	1269	952	317	110	186	22.1	9300	3361	149	5505	400	-999	86	349	-9999
48	9300	852	37	33	951	951	713	238	199	18	21.7	9300	3394	157	5593	400	-999	87	368	-9999

R1	R2	RLOSS1	RLOSS2	RLOSS3	RETNT1	RETNT2	RNOUSE	RPNDPL	RTNDPL	RNEW	RRA
.004	.004	.012	.002	.010	.100	.300	0	.020	0	.750	1.000

LS	LC	LAUS	LHA	NTIME	MINTUR	LEVTNG	MINBAS	IEOUT	IFY	JUMP1	JUMP2
12	25	24	36	4M	6	2	18	0	10	0	1

JUMP3	JUMP4	JUMP5	JUMP6	JUMP7
0	0	1	0	0

CONTROL SECTION

0	0	0	0	4	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
R1	R2	RLOSS1	RLOSS2	RLOSS3	RETNT1	RETNT2	RNOUSE	RPNDPL	RTNDPL	RNEW	RRA
.004	.004	.012	.002	.010	.100	.300	0	.020	0	.750	1.000
R1	R2	RLOSS1	RLOSS2	RLOSS3	RETNT1	RETNT2	RNOUSE	RPNDPL	RTNDPL	RNEW	RRA
.004	.004	.012	.002	.010	.100	.300	0	.020	0	.750	1.000

EXAMPLE NUMBER NINE

MONTH	ST QUOTA	END TOUR	PERM CAS	ST CAS	REPL REQ	REPL SENT	NEW REPL	RET -25	2ND TOUR	3RD+ TOUR	AVG BS TR	ST ON HAND	NBASE -25	RETNT ADDNS	CAR TOT	INPT SCHD	ADDL INPT	ATTRT LOSS	ETS	SYST TOT
(COL)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
1	5700	119	21	21	433	433	325	0	108	0	25.0	5700	3200	34	5084	400	0	65	81	12704
2	5800	282	22	21	449	449	337	28	73	39	24.0	5800	3280	30	5051	400	0	65	72	12945
3	5900	395	23	21	563	563	422	124	121	20	23.1	5900	3255	34	5021	400	0	65	80	13177
4	6000	334	23	22	508	508	381	127	110	17	20.3	6000	3228	35	4994	400	0	66	83	13405
5	6500	352	48	22	944	944	708	234	163	73	18.7	6500	3131	40	4965	400	0	65	94	13598
6	6500	406	52	24	507	507	380	125	126	1	18.2	6500	3149	46	4942	400	0	65	108	13773
7	6500	398	52	24	497	497	373	123	14	110	19.2	6500	3156	39	4913	450	0	65	94	14012
8	7000	438	52	23	1041	1041	781	258	211	49	19.2	7000	2999	40	4886	475	0	63	95	14277
9	7000	290	56	26	397	397	298	98	8	91	20.3	7000	2993	32	4848	500	0	64	76	14501
10	7000	478	56	25	592	592	444	146	125	22	20.3	7000	2961	30	4811	525	0	65	73	14912
FY TOTALS		3497	485	229		5931	4449	1262	1059	422	19.8			360		4350	0	648	856	
11	7300	552	56	25	959	959	719	230	124	116	20.7	7300	2865	31	4774	550	0	64	73	15269
12	7300	745	58	25	915	915	677	334	175	163	19.8	7300	2658	29	4736	575	0	63	69	15654
13	7300	373	29	27	447	447	335	112	73	39	20.3	7300	2639	34	4711	600	0	63	80	16082
14	7800	381	29	27	956	956	717	234	136	103	19.0	7800	2488	30	4678	600	0	65	71	16517
15	7800	485	31	29	565	565	424	134	75	66	18.9	7800	2460	27	4648	600	0	64	66	16956
16	7800	438	31	29	518	518	389	129	75	54	19.1	7800	2436	25	4617	600	0	64	61	17400
17	8300	813	31	27	1300	1241	1043	199	117	80	18.6	8151	2421	16	4576	600	0	64	38	17867
18	8300	448	32	30	671	671	503	168	129	0	18.4	8300	2355	21	4538	600	0	66	52	18317
19	8300	433	33	31	517	517	388	129	106	23	19.4	8300	2345	40	4520	600	0	66	96	18722
20	8800	906	33	29	1687	1285	964	381	144	237	19.1	8598	2241	92	4555	600	0	65	216	19088
21	8800	350	34	32	640	640	480	160	140	20	18.9	8800	2226	85	4580	600	0	67	199	19308
22	8800	520	35	32	608	608	456	152	107	45	19.3	8800	2256	82	4604	600	0	65	192	19616
FY TOTALS		6486	432	343		9322	6995	2374	1401	946	19.3			512		7125	0	776	1213	
23	9300	847	35	31	1695	1149	858	291	149	142	19.1	9014	2249	115	4659	400	227	69	269	19870
24	9300	801	36	32	1177	826	594	230	151	79	19.0	8949	2382	110	4709	400	325	67	258	20234
25	9300	395	35	33	835	810	626	178	108	76	18.1	9275	2365	100	4749	400	88	67	234	20386
26	9300	848	37	33	965	910	724	186	123	63	18.0	9245	2411	60	4747	400	33	69	141	20572
27	9300	502	36	34	848	626	486	130	88	72	18.0	9278	2464	99	4787	400	501	68	234	21135
28	9300	460	37	35	576	576	432	143	117	27	18.1	9300	2508	112	4839	400	122	72	264	21284
29	9300	1109	37	32	1109	1109	809	298	137	163	18.2	9300	2449	111	4890	400	15	70	259	21333
30	9300	600	37	34	693	693	520	171	173	0	18.1	9300	2504	109	4936	400	520	72	256	21888
31	9300	455	37	35	558	558	413	134	43	94	19.0	9300	2459	13	4885	400	185	75	31	22330
32	9300	1133	37	32	1224	1189	918	190	45	146	18.6	9185	2569	13	4837	400	105	72	31	22695
33	9300	572	36	34	778	738	584	146	52	94	18.6	9252	2587	53	4831	400	457	75	125	23316
34	9300	533	37	34	672	644	504	138	53	87	18.7	9272	2594	54	4823	400	232	74	128	23709
FY TOTALS		8255	437	344		9822	7560	2230	1219	1043	18.5			949		4800	2810	850	2230	
35	9300	1022	37	32	1140	1122	865	264	106	161	18.9	9282	2650	108	4869	400	219	76	255	23960
36	9300	732	37	33	840	826	636	193	106	90	19.2	9286	2722	108	4916	400	289	77	252	24283
37	9300	719	37	34	824	807	618	187	104	85	19.2	9283	2757	106	4960	400	89	78	248	24409
38	9300	809	37	33	916	916	687	225	101	128	19.3	9300	2750	103	5001	400	53	78	242	24535

39	9300	554	37	34	650	650	488	158	105	57	20.1	9300	2784	107	5042	400	467	80	250	25005
40	9300	511	37	34	602	602	452	147	105	45	20.3	9300	2828	107	5089	400	134	79	250	25173
41	9300	1064	37	32	1154	1154	846	284	107	181	19.5	9300	2859	107	5132	400	39	82	251	25242
42	9300	617	37	34	709	709	532	174	104	73	20.6	9300	2902	107	5173	400	413	82	252	25604
43	9300	489	37	35	582	582	437	142	118	27	21.1	9300	2963	120	5228	400	160	84	283	25840
44	9300	991	37	33	1081	1081	811	265	126	144	20.7	9300	2950	128	5290	400	99	84	300	25918
45	9300	651	37	34	744	744	554	182	133	53	21.6	9300	2991	135	5359	400	417	85	318	26295
46	9300	571	37	34	664	664	498	161	141	25	21.9	9300	3051	143	5432	400	221	87	335	26457
FY TOTALS		8736	444	402		9857	7432	2382	1356	1069	20.1			1379		4800	2600	972	3236	
47	9300	995	37	32	1086	1086	815	284	196	125	21.6	9300	3109	149	5513	400	-999	87	350	-9999
48	9300	732	37	34	825	825	619	206	137	69	22.0	9300	3184	156	5601	400	-999	88	365	-9999

R1	R2	RLOSS1	RLOSS2	RLOSS3	RETNT1	RETNT2	RNOUSE	RPNDPL	RTNDPL	RNEW	RRA
.004	.004	.012	.002	.010	.100	.300	0	.020	0	.750	1.000

LS	LC	LAUS	LMA	NTIME	MINTUR	LEVTNG	MINBAS	IEOUT	IFY	JUMP1	JUMP2
12	25	24	36	48	6	2	18	0	10	0	1

JUMP3	JUMP4	JUMP5	JUMP6	JUMP7
0	1	1	0	0

CONTRL VECTOR

0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
R1	R2	RLOSS1	RLOSS2	RLOSS3	RETNT1	RETNT2	RNOUSE	RPNDPL	RTNDPL	RNEW	RRA
.004	.004	.012	.002	.010	.100	.300	0	.020	0	.750	1.000
R1	R2	RLOSS1	RLOSS2	RLOSS3	RETNT1	RETNT2	RNOUSE	RPNDPL	RTNDPL	RNEW	RRA
.004	.004	.012	.002	.010	.100	.300	0	.020	0	.750	1.000

EXAMPLE NUMBER TEN

MONTH	ST ADJTA	END TOUR	PERM CAS	ST CAS	REPL REQ	REPL SENT	NEW REPL	NET -25	2ND TOUR	3RD+ TOUR	AVG BS TR	ST ON HAND	NBASE -25	NETNT ADDNS	CAR TOT	INPT SCHD	ADDL INPT	ATTRT LOSS	ETS	SYST TOT
(COL)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
1	5700	119	21	21	433	433	325	0	108	0	25.0	5700	3200	34	5084	400	0	65	81	12704
2	5800	282	22	21	449	449	337	28	45	39	18.2	5800	3308	30	5051	400	0	65	72	12945
3	5900	345	23	21	543	543	398	120	118	15	22.1	5900	3291	34	5021	400	0	64	81	13177
4	6000	338	23	22	506	506	380	126	77	18	21.0	6000	3294	35	4904	400	0	66	83	13405
5	6500	353	48	22	946	757	399	356	247	78	18.9	6311	3128	39	4965	400	0	65	93	13599
6	6500	405	50	23	692	692	508	293	131	107	18.1	6500	3037	47	4944	400	0	65	110	13774
7	6500	400	52	24	498	498	374	123	1	0	18.0	6500	3172	40	4917	450	0	63	94	14015
8	7000	437	52	23	1059	1059	808	655	394	251	18.6	7000	2665	39	4886	475	0	66	94	14278
9	7000	291	56	26	418	418	314	104	42	14	18.1	7000	2699	32	4845	500	0	63	75	14504
10	7000	477	56	25	614	614	461	153	52	38	18.6	7000	2718	30	4803	525	0	66	72	14915
FY TOTALS		3497	403	228		5989	3784	1958	1145	560	18.9			360		4350	0	648	855	
11	7300	553	56	25	996	844	648	344	145	151	18.6	7148	2557	29	4765	550	0	63	70	15276
12	7300	796	57	24	1008	671	522	149	63	50	18.8	6873	2564	28	4721	575	0	65	68	15661
13	7300	372	27	25	938	738	596	142	50	54	18.8	7100	2525	34	4694	600	0	65	80	16089
14	7800	368	28	26	1196	830	623	207	82	86	18.8	7434	2427	29	4661	600	0	65	78	16526
15	7800	466	29	27	951	820	667	173	58	48	18.8	7669	2419	27	4629	600	0	65	63	16969
16	7800	422	30	28	875	875	706	169	95	40	18.8	7800	2393	26	4597	600	0	66	63	17410
17	8300	606	31	28	1218	1089	793	296	101	66	18.8	8171	2458	15	4550	600	0	66	36	17877
18	8300	557	32	30	791	791	593	198	0	0	18.8	8300	2625	20	4512	600	0	65	49	18331
19	8300	362	33	31	468	468	351	117	95	0	18.9	8300	2547	41	4496	600	0	67	97	18734
20	8800	849	33	29	1469	1178	666	512	243	261	19.2	8509	2581	92	4531	600	0	67	216	19018
21	8800	343	34	32	762	762	572	190	123	61	18.1	8800	2497	84	4565	600	0	67	199	19318
22	8800	587	35	32	641	641	481	160	103	50	18.2	8800	2472	82	4580	600	0	65	192	19626
FY TOTALS		6201	425	337		9587	6868	2650	1098	867	18.4			507		7125	0	786	1203	
23	9300	697	35	31	1367	793	598	195	95	93	18.2	8726	2581	114	4635	400	531	70	266	20186
24	9300	583	34	32	1332	797	597	200	111	82	18.8	8765	2539	109	4648	400	301	68	255	20530
25	9300	635	35	32	1271	1144	953	191	105	79	18.8	9175	2518	108	4729	400	93	70	236	20682
26	9300	706	36	33	932	809	609	198	117	61	18.8	9257	2510	58	4726	400	124	68	138	20964
27	9300	692	37	34	831	773	623	150	68	71	18.8	9242	2545	108	4766	400	345	70	236	21366
28	9300	558	36	34	710	710	533	177	118	48	18.1	9300	2562	113	4821	400	126	70	267	21519
29	9300	894	37	33	998	998	749	249	131	102	18.2	9300	2580	109	4868	400	0	73	255	21554
30	9300	601	37	34	698	698	524	174	121	48	18.3	9300	2562	109	4914	400	437	73	257	22024
31	9300	414	37	35	508	508	381	127	89	22	18.9	9300	2530	13	4863	400	216	74	33	22496
32	9300	1023	37	32	1113	1053	835	218	5	200	19.0	9240	2729	13	4818	400	33	73	32	22787
33	9300	670	36	34	819	728	614	114	8	89	18.0	9209	2810	56	4814	400	266	75	133	23209
34	9300	572	36	34	762	658	564	94	6	68	18.0	9206	2894	56	4808	400	4	76	131	23370
FY TOTALS		8045	433	398		9743	7444	2079	974	955	18.2			950		4800	2476	860	2239	
35	9300	701	36	33	886	886	665	221	90	114	19.5	9300	2926	110	4857	400	121	74	257	23524
36	9300	703	37	34	799	799	599	200	97	85	20.1	9300	2975	108	4905	400	266	78	255	23820
37	9300	1022	37	32	1114	1114	836	278	106	152	20.0	9300	2935	105	4953	400	163	76	247	24023
38	9300	792	37	33	886	886	665	221	132	71	19.8	9300	2951	105	4995	400	12	80	248	24070

39	9300	684	37	34	778	778	584	194	100	74	20.4	9300	2963	105	5038	400	327	77	248	24435
40	9300	625	37	34	723	723	542	181	100	62	20.9	9300	3006	106	5083	400	137	79	249	24607
41	9300	871	37	33	967	967	725	242	94	131	21.2	9300	3042	105	5122	400	10	82	248	24650
42	9300	619	37	34	713	713	535	178	113	46	21.5	9300	3093	107	5163	400	374	81	250	25056
43	9300	449	37	35	545	545	409	136	84	32	21.4	9300	3159	122	5220	400	165	82	285	25217
44	9300	934	37	33	1029	1029	772	257	137	98	21.5	9300	3186	128	5283	400	115	83	299	25313
45	9300	651	37	34	760	750	563	187	128	37	21.5	9300	3204	136	5355	400	263	84	318	25537
46	9300	585	37	34	684	684	513	171	38	111	22.1	9300	3222	142	5428	400	201	86	333	25682
FY TOTALS		6636	443	403		9874	7408	2466	1219	1013	20.8			1379		4800	2154	962	3237	
47	9300	783	37	33	882	882	662	220	121	78	22.4	9300	3311	149	5509	400	-999	86	349	-9999
48	9300	698	37	34	798	798	599	199	140	38	22.5	9300	3394	156	5598	400	-999	88	364	-9999

R1	R2	RLOSS1	RLOSS2	RLOSS3	RETNT1	RETNT2	RNOUSE	RPNDPL	RTNDPL	RNEW	RRA
.004	.004	.012	.002	.010	.100	.300	0	.020	0	.750	1.000

LS	LC	LAUS	LRA	NTIME	MINTUR	LEVTNG	MINBAS	IEOUT	IFY	JUMP1	JUMP2
12	25	24	36	48	6	2	18	0	10	0	1

JUMP3	JUMP4	JUMP5	JUMP6	JUMP7
0	2	1	0	0

KONTRL VECTOR

0	0	0	0	4	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
R1	R2	RLOSS1	RLOSS2	RLOSS3	RETNT1	RETNT2	RNOUSE	RPNDPL	RTNDPL	RNEW	RRA
.008	.004	.012	.002	.010	.100	.300	0	.020	0	.750	1.000
R1	R2	RLOSS1	RLOSS2	RLOSS3	RETNT1	RETNT2	RNOUSE	RPNDPL	RTNDPL	RNEW	RRA
.004	.004	.012	.002	.010	.100	.300	0	.020	0	.750	1.000

EXAMPLE NUMBER ELEVEN

MONTH	ST QUOTA	END TOUR	PERM CAS	ST CAS	REPL REQ	REPL SENT	NEW REPL	RET -25	2ND TOUR	3RD+ TOUR	AVG BS TR	ST ON HAND	NBASE -25	RETNT ADDNS	CAR TOT	INPT SCHD	ADDL INPT	ATTRT LOSS	ETS	SYST TOT
(COL)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
1	5700	119	21	21	433	433	325	0	108	0	25.0	5700	3200	34	5084	400	0	65	81	12704
2	5800	282	22	21	449	449	337	28	45	39	18.2	5800	3308	30	5051	400	0	65	72	12945
3	5900	395	23	21	563	563	422	96	99	10	21.9	5900	3315	34	5021	400	0	64	81	13177
4	6000	339	23	22	507	507	380	127	85	11	21.6	6000	3318	35	4994	400	0	66	83	13405
5	6500	352	48	22	943	780	669	110	42	16	19.9	6337	3397	39	4966	400	0	65	94	13598
6	6500	405	50	23	664	664	498	165	98	11	19.8	6500	3430	46	4944	400	0	65	109	13774
7	6500	400	52	24	494	494	371	122	1	0	18.0	6500	3558	40	4919	450	0	63	94	14015
8	7000	436	52	23	1053	890	752	132	56	17	19.8	6837	3566	39	4890	475	0	65	94	14279
9	7000	289	54	25	571	571	428	143	53	43	20.7	7000	3547	32	4861	500	0	63	77	14585
10	7000	479	56	25	606	606	455	151	88	0	20.3	7000	3556	30	4826	525	0	65	72	14917
FY TOTALS		3496	401	227		5957	4637	1074	675	147	20.1			359		4350	0	646	857	
11	7300	554	56	25	987	889	588	301	130	121	21.8	7202	3429	29	4793	550	0	64	70	15277
12	7300	793	57	25	1033	1001	523	478	219	223	22.2	7268	3092	28	4757	575	0	64	67	15664
13	7300	372	29	27	543	543	407	136	88	9	20.9	7300	3056	33	4734	600	0	64	80	16091
14	7800	368	29	27	992	829	706	123	2	61	20.6	7637	3036	29	4704	600	0	66	69	16527
15	7800	468	30	28	744	744	558	186	76	40	21.2	7800	2994	26	4670	600	0	65	61	16971
16	7800	422	31	29	539	539	404	135	30	32	20.5	7800	2996	26	4635	600	0	65	63	17412
17	8300	656	31	28	1264	1101	839	262	89	46	20.9	8137	2891	15	4590	600	0	67	37	17877
18	8300	542	32	30	805	805	598	207	0	32	18.9	8300	2937	21	4550	600	0	66	49	18330
19	8300	364	33	31	469	469	352	105	47	62	23.5	8300	2856	40	4530	600	0	65	95	18737
20	8800	753	33	29	1372	1209	844	364	193	163	22.9	8637	2621	93	4569	600	0	65	217	19022
21	8800	472	34	32	765	765	574	191	79	61	21.6	8800	2559	84	4597	600	0	65	199	19324
22	8800	501	35	32	635	635	476	159	151	0	21.8	8800	2535	82	4619	600	0	68	193	19628
FY TOTALS		6265	430	343		9529	6869	2647	1104	850	21.5			506		7125	0	784	1200	
23	9300	750	35	31	1419	1256	742	514	258	250	21.7	9137	2293	113	4674	400	68	67	266	19728
24	9300	846	36	32	1190	1137	598	539	331	201	19.4	9247	2180	108	4723	400	215	69	255	19983
25	9300	461	36	34	621	621	466	155	66	80	18.6	9300	2202	101	4763	400	143	67	237	20186
26	9300	708	37	34	817	817	613	204	115	77	18.6	9300	2109	58	4759	400	4	69	137	20347
27	9300	622	37	34	721	721	541	180	109	59	18.6	9300	2134	101	4799	400	357	69	236	20762
28	9300	439	37	35	539	539	404	135	56	66	18.6	9300	2176	114	4853	400	138	69	266	20928
29	9300	909	37	33	1006	1006	755	251	152	84	18.6	9300	2168	108	4900	400	0	71	253	20967
30	9300	615	37	34	715	715	536	179	61	101	18.8	9300	2163	108	4945	400	455	72	253	21460
31	9300	409	37	35	507	507	380	127	112	0	18.9	9300	2136	13	4893	400	183	72	31	21903
32	9300	1067	37	32	1164	1164	873	291	127	148	19.5	9300	2156	13	4842	400	93	71	32	22256
33	9300	676	37	34	776	776	582	194	63	114	18.9	9300	2166	55	4833	400	494	75	129	22909
34	9300	556	37	34	655	655	491	164	56	91	18.8	9300	2169	52	4823	400	491	73	124	23566
FY TOTALS		8058	440	402		9914	6981	2933	1506	1271	19.4			944		4800	2641	844	2219	
35	9300	1090	37	32	1189	1070	892	178	112	49	19.3	9181	2505	109	4868	400	162	75	255	23761
36	9300	982	36	32	1198	1097	889	208	115	70	19.1	9199	2829	108	4914	400	237	77	255	24030
37	9300	551	36	34	747	712	560	152	127	6	19.4	9265	2892	104	4955	400	167	78	246	24237
38	9300	715	37	33	846	821	635	186	113	51	19.5	9275	2955	105	4908	400	30	79	246	24305

39	9300	635	37	34	755	755	566	189	111	59	19.6	9300	2994	108	5045	400	339	78	252	24677
40	9300	474	37	35	571	571	428	143	113	7	20.2	9300	3043	105	5090	400	150	81	248	24861
41	9300	885	37	33	982	982	737	245	108	115	19.5	9300	3080	106	5133	400	6	82	249	24899
42	9300	635	37	34	731	731	548	183	102	61	20.5	9300	3127	108	5178	400	442	82	254	25368
43	9300	447	37	35	540	540	405	135	114	0	21.3	9300	3196	122	5237	400	189	81	285	25554
44	9300	1026	37	32	1121	1121	841	280	131	126	20.8	9300	3256	128	5301	400	103	85	299	25636
45	9300	683	37	34	782	782	587	195	128	43	21.3	9300	3329	136	5372	400	392	85	318	25988
46	9300	574	37	34	669	669	502	167	134	12	21.5	9300	3406	142	5448	400	404	85	333	26337
FY TOTALS		8697	442	402		9851	7590	2261	1408	599	20.1			1381		4800	2621	968	3240	
47	9300	953	37	33	1054	1054	791	263	92	150	22.3	9300	3410	149	5529	400	-999	86	348	-9999
48	9300	972	37	33	1071	1071	803	268	177	68	22.0	9300	3438	157	5618	400	-999	88	367	-9999

R1	R2	RLOSS1	RLOSS2	RLOSS3	RETNT1	RETNT2	RNOUSE	RPNDPL	RTNDPL	RNEW	RRA
.004	.004	.012	.002	.010	.100	.300	0	.020	0	.750	1.000

LS	LC	LAUS	LHA	NTIME	MINTUR	LEVTNG	MINBAS	IEOUT	IFY	JUMP1	JUMP2
12	25	24	36	48	6	2	18	0	10	1	1

JUMP3	JUMP4	JUMP5	JUMP6	JUMP7
0	0	1	0	0

CONTHL VECTOR

0	0	0	0	4	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
R1	R2	RLOSS1	RLOSS2	RLOSS3	RETNT1	RETNT2	RNOUSE	RPNDPL	RTNDPL	RNEW	RRA
.000	.004	.012	.002	.010	.100	.300	0	.020	0	.750	1.000
R1	R2	RLOSS1	RLOSS2	RLOSS3	RETNT1	RETNT2	RNOUSE	RPNDPL	RTNDPL	RNEW	RRA
.004	.004	.012	.002	.010	.100	.300	0	.020	0	.750	1.000

EXAMPLE NUMBER TWELVE

MONTH	ST DUTA	END TOUR	PERM CAS	ST CAS	REPL REQ	REPL SENT	NEW REPL	NET -25	2ND TOUR	3RD+ TOUR	AVG BS TR	ST ON HAND	NBASE -25	RETNT ADDNS	CAR TOT	INPT SCHD	ADDL INPT	ATTRT LOSS	ETS	SYST TOT
(COL)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
1	5700	119	21	21	433	433	325	0	108	0	25.0	5700	3200	34	5084	400	0	65	81	12704
2	5800	282	22	21	449	449	337	28	45	39	18.2	5800	3308	30	5051	400	0	65	72	12945
3	5900	395	23	21	543	543	422	94	99	10	21.9	5900	3315	34	5021	400	0	64	81	13177
4	6000	339	23	22	507	507	380	127	85	11	21.6	6000	3318	35	4904	400	0	66	83	13405
5	6500	352	68	22	963	963	707	238	141	42	19.7	6500	3272	39	4966	400	0	65	94	13598
6	6500	405	52	24	585	585	379	125	87	2	18.7	6500	3346	46	4943	400	0	64	109	13773
7	6500	408	52	24	606	606	372	123	1	0	18.0	6500	3477	39	4916	450	0	64	94	14013
8	7000	435	52	23	1053	1053	790	257	136	44	19.9	7000	3361	39	4886	475	0	65	94	14277
9	7000	240	56	26	613	613	310	103	9	46	19.6	7000	3386	33	4852	500	0	63	77	14581
10	7000	478	56	25	608	608	454	152	13	77	20.3	7000	3396	30	4816	525	0	65	72	14913
FY TOTALS		3495	485	229		5970	4478	1246	724	271	19.9			359		4350	0	646	857	
11	7300	552	56	25	998	998	741	247	188	16	21.2	7300	3324	38	4782	550	0	65	71	15271
12	7300	795	58	25	939	939	524	415	158	219	21.9	7300	3057	28	4742	575	0	64	68	15656
13	7300	372	29	27	513	513	385	128	62	27	20.8	7300	3027	33	4716	600	0	64	80	16083
14	7800	378	29	27	993	993	736	257	98	107	21.2	7800	2877	28	4683	600	0	66	68	16520
15	7800	484	31	28	583	583	437	146	48	27	20.1	7800	2872	27	4650	600	0	64	64	16961
16	7800	426	31	29	562	562	407	135	91	20	20.8	7800	2874	25	4616	600	0	66	61	17403
17	8300	783	31	27	1391	1391	947	444	138	188	20.7	8300	2685	16	4574	600	0	65	38	17869
18	8300	484	33	31	511	511	383	128	0	0	18.0	8300	2735	21	4535	600	0	66	52	18318
19	8300	365	33	31	471	471	353	118	44	26	20.7	8300	2700	39	4516	600	0	67	94	18724
20	8800	887	33	29	1506	1506	1054	452	288	119	20.9	8800	2483	93	4551	600	0	67	217	19007
21	8800	329	35	33	685	685	369	116	88	23	20.9	8800	2462	84	4576	600	0	66	199	19307
22	8800	503	35	32	639	639	479	160	93	189	21.5	8800	2439	83	4600	600	0	68	195	19609
FY TOTALS		6268	436	344		9543	6787	2744	1188	873	20.9			507		7125	0	788	1207	
23	9300	864	35	31	1514	1514	964	550	382	241	20.1	9300	2119	113	4654	600	0	68	264	19842
24	9300	749	37	33	979	950	607	362	191	162	18.5	9280	2137	110	4701	600	0	69	257	20079
25	9300	630	37	35	559	559	419	140	105	27	18.8	9300	2160	99	4740	600	0	68	233	20341
26	9300	845	37	33	952	952	714	238	116	118	18.2	9300	2144	59	4739	600	0	69	140	20695
27	9300	681	37	35	581	581	436	145	87	64	18.8	9300	2178	101	4779	600	0	71	237	20950
28	9300	638	37	35	538	538	404	134	113	8	18.1	9300	2215	111	4838	600	0	71	261	21181
29	9300	1155	37	32	1251	1251	938	313	138	162	18.3	9300	2293	110	4879	600	0	72	257	21415
30	9300	381	37	35	682	682	342	128	81	24	18.2	9300	2307	109	4926	600	0	72	255	21651
31	9300	392	37	35	489	489	367	122	105	0	18.9	9300	2262	13	4874	600	0	75	31	22108
32	9300	1319	37	31	1414	1384	1041	307	72	221	19.1	9254	2321	12	4820	534	0	74	31	22500
33	9300	411	37	35	555	555	416	139	59	63	18.6	9300	2326	54	4815	238	0	74	127	22500
34	9300	561	37	34	858	845	634	151	59	73	18.7	9287	2359	54	4808	240	0	74	129	22500
FY TOTALS		8056	442	404		9893	7172	2721	1408	1155	18.8			965		6412	0	857	2222	
35	9300	1321	37	31	1432	781	533	248	116	115	18.9	8649	2648	107	4842	363	0	74	252	22500
36	9300	838	36	31	1581	630	268	198	116	53	19.2	8149	2835	108	4899	365	0	76	255	22500
37	9300	642	32	30	1729	512	361	151	125	0	19.4	8083	2887	105	4942	357	0	77	248	22500
38	9300	841	32	28	2163	833	566	268	116	135	19.1	7790	2988	106	4985	358	0	77	249	22500

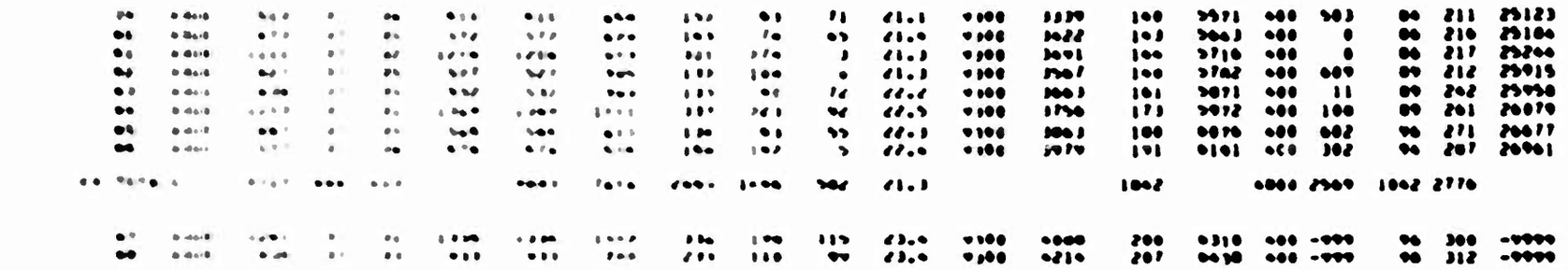
39	0300	5004	31	29	2163	514	354	193	107	37	19.7	7716	2937	104	5076	355	0	88	244	22500
40	0300	4979	30	29	2148	527	354	201	116	65	19.6	7719	2928	107	5067	361	0	79	252	22500
41	0300	5116	30	29	2178	514	353	204	116	130	19.2	7745	3004	108	5109	363	0	81	252	22500
42	0300	4925	29	29	2064	743	354	384	109	250	19.0	7381	2805	107	5151	361	0	83	250	22500
43	0300	4911	29	27	2015	305	341	206	119	66	20.0	7438	2798	121	5205	393	0	81	283	22500
44	0300	5210	29	29	3143	651	340	299	136	137	19.5	6790	2863	129	5268	415	0	82	304	22500
45	0300	4990	27	29	3082	604	302	217	102	55	20.3	6827	2867	135	5335	427	0	84	316	22500
46	0300	5172	27	29	3127	632	611	219	134	63	20.5	6805	2893	143	5418	445	0	84	334	22500
** TOTALS		49704	306	327		47251	44644	2835	1409	1092	19.5			1380		4563	0	958	3239	
47	0300	4974	27	29	3048	632	625	407	198	220	19.3	6872	2811	149	5488	462	-999	85	350	-9999
48	0300	5067	27	29	2988	603	666	199	172	5	21.8	7003	2903	156	5573	480	-999	87	366	-9999

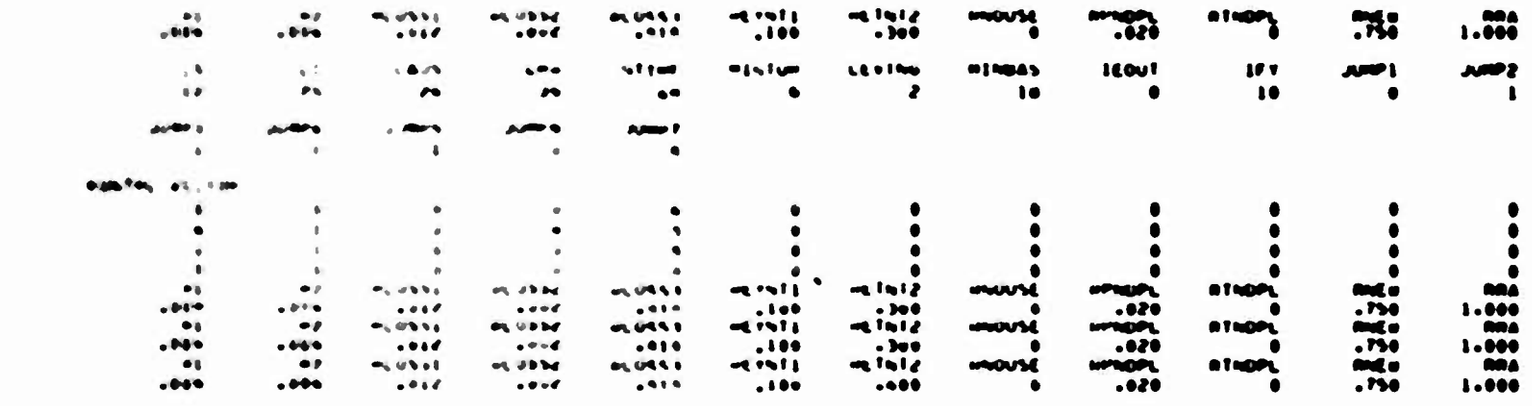
AA	AB	PLUS31	PLUS32	PLUS33	RETAIL	RETAIL2	HHUUSE	HHNUPL	RTNDPL	RNEW	RRA
.000	.000	.012	.002	.010	.100	.300	0	.020	0	.750	1.000
A3	A2	A1	A0	MINUS	MINFUN	LEVING	MINBAS	IEOUT	IFY	JUMP1	JUMP2
10	29	29	30	04	6	2	10	0	10	0	1
JUMP4	JUMP5	JUMP6	JUMP8	JUMP7							
0	0	1	0	0							
CONTROL VECTOR											
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
AA	AB	PLUS31	PLUS32	PLUS33	RETAIL	RETAIL2	HHUUSE	HHNUPL	RTNDPL	RNEW	RRA
.000	.000	.012	.002	.010	.100	.300	0	.020	0	.750	1.000
AA	AB	PLUS31	PLUS32	PLUS33	RETAIL	RETAIL2	HHUUSE	HHNUPL	RTNDPL	RNEW	RRA
.000	.000	.012	.002	.010	.100	.300	0	.020	0	.750	1.000

EXAMPLE NUMBER THIRTEEN

MONTH	SY SALES	END YEAR	PERM CAS	SI CAS	MATL REQ	MATL RENT	MFG EXPL	MKT -ING	PMD TOUR	SRD-PTY TOUR	AVG US TR	ST GN HAND	MBASE -25	RETNT ADDNS	CAP TOT	INPT SCHD	ADDL INPT	ATTRT LOSS	ETS	SYST TOT
(COL)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
1	5700	110	21	21	633	633	595	0	100	0	25.0	5700	3200	34	5004	400	0	65	81	12704
2	5000	282	22	21	669	669	117	28	45	39	10.2	5600	3300	30	5051	400	0	65	72	12945
3	5000	295	23	21	563	563	472	94	99	10	21.9	5000	3315	34	5021	400	0	64	81	13177
4	6000	330	23	22	567	567	900	127	85	11	21.6	6000	3310	35	4994	400	0	64	83	13405
5	6000	352	48	22	963	963	747	235	141	42	19.7	6500	3272	39	4964	400	0	65	94	13598
6	6000	405	52	24	565	565	179	145	97	2	18.7	6500	3346	46	4943	400	0	64	109	13773
7	6000	400	52	24	666	666	172	145	1	0	18.0	6500	3477	39	4916	450	0	64	94	14013
8	7000	435	52	23	1053	1051	700	257	136	44	19.9	7000	3361	39	4896	475	0	65	94	14277
9	7000	290	50	25	613	613	110	101	9	44	19.6	7000	3300	33	4852	500	0	63	77	14581
10	7000	470	50	25	600	600	644	152	13	77	20.3	7000	3390	30	4816	525	0	65	72	14913
** TOTALS		3695	495	229		5978	4478	1264	764	271	19.9			359		4350	0	646	857	
11	7000	552	50	25	900	900	761	207	100	10	21.2	7300	3324	30	4782	550	0	65	71	15271
12	7300	795	50	25	930	930	524	615	150	219	21.9	7300	3057	28	4742	575	0	64	68	15656
13	7300	372	29	27	913	913	385	124	62	27	20.8	7300	3027	33	4716	600	0	64	88	16003
14	7000	370	29	27	903	903	796	257	90	107	21.2	7000	2877	28	4683	600	0	64	68	16320
15	7000	404	31	28	903	903	637	104	90	27	20.1	7000	2872	27	4650	600	0	64	64	16961
16	7000	450	31	29	900	900	611	137	93	20	20.0	7000	2869	17	4608	600	0	64	69	17305
17	8300	782	31	27	1300	1300	903	459	147	100	20.6	8300	2670	10	4568	600	0	65	44	17855
18	8300	400	33	31	919	919	900	129	0	0	18.0	8300	2710	14	4514	600	0	65	60	18297
19	8300	395	33	31	676	676	904	116	34	30	20.7	8300	2673	20	4482	600	0	64	108	18696
20	8000	600	33	29	1512	1512	1050	442	107	110	20.8	8000	2420	61	4406	600	0	64	248	18943
21	8000	331	35	31	673	673	905	110	61	52	20.9	8000	2370	50	4443	600	0	64	227	19215
22	8000	407	35	32	660	660	600	100	41	111	21.0	8000	2320	55	4401	600	0	64	221	19493
** TOTALS		6262	430	306		9576	8004	2770	1171	905	20.0			395		7125	0	783	1328	
23	8300	830	35	31	1520	1520	967	301	311	209	19.7	9300	1963	75	4407	600	128	68	304	19814
24	8300	795	37	33	987	821	90[illegible]	226	88	127	18.3	9134	2093	73	4311	600	316	65	294	19934
25	8300	450	36	36	783	600	597	171	83	80	18.0	9295	2060	66	4318	600	85	66	267	20056
26	8300	840	37	33	952	872	716	150	86	62	18.0	9220	2009	60	4300	600	36	66	100	20217
27	8300	670	36	36	844	615	681	139	90	60	18.0	9271	2091	67	4308	600	531	66	269	20777
28	8300	445	37	35	572	572	629	149	88	42	18.0	9300	2000	75	4375	600	0	66	308	20776
29	8300	1100	37	32	1861	1100	931	257	99	147	18.2	9207	2105	73	4340	600	0	67	295	20775
30	8300	370	36	35	520	520	905	131	119	0	18.0	9300	2143	73	4355	600	631	68	292	21418
31	8300	395	37	35	600	600	668	169	33	73	18.9	9300	2095	0	4366	600	187	68	35	21777
32	8300	1327	37	31	1819	1597	1066	199	85	164	18.7	9138	2277	0	4455	600	126	68	36	22162
33	8300	810	36	36	870	870	906	120	64	60	18.5	9201	2273	36	4435	600	704	70	145	23015
34	8300	905	37	34	900	900	624	126	61	69	18.5	9252	2309	36	4410	600	321	70	144	23405
** TOTALS		8797	630	406		9004	7695	2300	1008	1121	18.6			630		6000	2979	808	2541	
35	8300	1325	37	31	1669	1320	1102	222	90	125	18.7	9195	2500	71	4427	600	294	72	288	23692
36	8300	771	36	33	900	800	710	161	70	90	19.0	9200	2603	72	4404	600	315	72	290	24089
37	8300	610	36	36	803	710	665	117	72	5	19.2	9210	2701	70	4417	600	80	74	283	24096
38	8300	775	36	33	950	904	711	230	78	130	18.8	9295	2710	70	4472	600	66	74	284	24168

[illegible]





(COL)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
1	5700	119	21	21	613	631	1354	4	100	0	25.0	5700	3200	34	5000	400	0	65	81	12704
2	5900	202	22	21	644	644	1317	67	78	0	20.3	5900	3283	30	5051	400	0	65	72	12945
3	5900	395	23	21	643	643	1372	124	116	0	22.1	5900	3282	34	5021	400	0	64	81	13177
4	6000	339	23	22	687	687	1448	127	94	0	20.0	6000	3278	35	4993	400	0	67	83	13404
5	6100	352	67	22	642	642	687	134	82	0	19.2	6100	3329	40	4968	400	0	63	94	13600
6	6200	406	68	22	599	599	649	108	93	0	18.8	6200	3373	46	4946	400	0	64	109	13779
7	6300	399	69	22	598	598	661	104	63	0	18.5	6306	3478	40	4972	450	0	65	95	14020
8	6400	440	58	23	659	659	696	104	102	0	19.2	6400	3451	39	4982	475	0	66	92	14287
9	6500	486	51	24	699	699	726	124	77	0	19.6	6500	3446	33	4961	500	0	63	77	14596
10	6600	479	52	23	701	701	734	114	116	0	20.0	6600	3421	30	4927	525	0	65	71	14933
FY	TOTALS		3497	300	221		9362	6147	1211	879	0	19.6			301		4350	0	647	855	
11	6700	553	52	23	706	706	900	194	194	0	20.0	6700	3387	30	4704	550	0	64	72	15295
12	6800	707	53	23	1032	1032	776	256	243	0	20.0	6800	3230	29	4759	575	0	65	68	15684
13	6900	371	27	25	685	685	656	121	112	0	18.7	6900	3056	34	4735	600	0	64	82	16111
14	7000	384	27	25	585	585	670	102	84	4	18.2	7000	2866	29	4706	600	0	65	68	16551
15	7100	471	27	25	642	642	617	124	95	44	18.0	7100	2802	27	4676	600	0	64	66	16992
16	7200	417	28	26	626	626	648	132	98	24	18.0	7200	2732	25	4642	600	0	64	60	17430
17	7300	434	28	26	619	619	674	104	38	0	18.0	7300	2644	15	4569	600	0	60	37	17905
18	7400	489	29	26	679	679	644	174	0	0	18.0	7400	2726	21	4564	600	0	67	49	18360
19	7500	443	29	27	637	637	678	150	104	0	19.0	7500	2580	42	4547	600	0	67	99	18765
20	7600	539	30	27	765	765	954	184	178	0	19.9	7600	2690	90	4580	600	0	67	211	19057
21	7700	418	30	28	629	629	672	157	131	0	19.2	7700	2373	86	4607	600	0	69	202	19356
22	7800	587	30	28	805	805	646	149	141	2	18.6	7800	2283	82	4632	600	0	69	192	19665
FY	TOTALS		5004	330	304		8648	6114	2034	1332	74	19.0			510		7125	0	797	1206	
23	7900	665	31	28	926	926	891	189	99	120	18.3	7900	2332	114	4648	600	0	69	266	19999
24	8000	896	31	27	1148	1148	878	117	149	173	18.8	8000	2398	109	4739	600	0	70	257	19741
25	8100	511	32	29	782	861	927	114	146	59	18.1	8100	2335	101	4777	600	0	72	237	19800
26	8200	498	32	30	883	881	917	140	141	42	18.0	8200	2291	97	4776	600	0	71	136	19961
27	8300	572	32	30	785	842	944	74	83	113	18.1	8300	2332	101	4818	600	0	72	230	20019
28	8400	513	33	30	908	854	926	132	143	42	18.1	8400	2324	112	4868	600	19	72	264	20060
29	8500	495	33	31	842	857	917	104	133	25	18.1	8500	2279	109	4917	600	81	71	257	20189
30	8600	510	34	31	869	894	926	174	101	0	18.0	8600	2172	109	4960	600	160	73	257	20305
31	8600	553	34	31	838	878	879	99	84	60	18.5	8600	2125	16	4912	600	87	73	33	20732
32	8600	659	34	31	766	596	948	34	18	152	18.3	8600	2177	12	4864	600	201	72	30	21197
33	8600	559	34	31	848	559	685	74	57	87	19.1	8600	2222	54	4855	600	278	75	128	21638
34	8600	710	34	31	789	873	899	74	58	126	19.4	8600	2295	54	4858	600	438	73	129	22240
FY	TOTALS		7133	344	340		8626	8851	1274	1132	1085	18.3			966		4800	1204	863	2232	
35	8600	812	34	30	982	884	877	131	114	94	19.7	8600	2373	107	4868	600	133	73	252	22616
36	8600	1024	34	30	1115	989	836	133	116	140	19.7	8600	2467	106	4961	600	123	77	250	22976
37	8600	617	34	31	784	875	912	141	126	36	19.5	8600	2476	107	4985	600	170	75	251	22786
38	8600	805	34	31	845	851	921	130	113	44	19.7	8600	2589	105	5026	600	130	78	247	22957

39	8500	606	36	31	757	849	584	126	104	61	19.8	8400	2575	105	3065	400	114	79	247	23116
40	8500	613	36	31	705	865	529	134	114	60	19.8	8400	2598	108	3107	400	130	79	253	23280
41	8500	602	36	31	691	850	514	132	115	61	20.1	8400	2630	108	3150	400	93	79	253	23407
42	8500	613	36	31	706	858	528	124	108	60	20.0	8400	2682	106	3189	400	102	81	249	23605
43	8500	561	36	31	656	838	491	104	123	18	20.2	8400	2706	120	3264	400	96	82	282	23703
44	8500	657	36	31	748	714	581	134	138	29	20.6	8400	2746	129	3308	400	148	81	303	23883
45	8500	567	36	31	654	855	496	101	101	0	20.5	8400	2806	136	3377	400	284	84	319	24118
46	8500	703	36	31	765	706	598	104	132	31	20.9	8400	2873	103	3442	400	409	83	334	24468
FY TOTALS		8038	408	170		8566	8451	1643	1678	590	20.0			1380		4800	2827	951	3240	
47	8500	743	36	30	883	851	666	183	170	32	20.6	8400	2919	150	3534	400	-999	85	352	-9999
48	8500	963	36	30	1078	1018	887	203	184	66	20.6	8400	2983	150	3623	400	-999	86	369	-9999

#1	#2	#LOSS1	#LOSS2	#LOSS3	#ETNT1	#ETNT2	#NOUSE	#-NDPL	#TNDPL	RNEW	RRA
.009	.006	.012	.002	.010	.100	.300	0	.020	0	.750	1.000
-5	LC	LAUS	LMA	NTIME	MINIUM	LEVING	MINBAS	IEOUT	IFY	JUMP1	JUMP2
12	25	26	36	68	0	2	18	0	18	0	1
JUMP3	JUMP4	JUMP5	JUMP6	JUMP7							
0	0	1	0	1							
MONTHL VECTOR											
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
#1	#2	#LOSS1	#LOSS2	#LOSS3	#ETNT1	#ETNT2	#NOUSE	#-NDPL	#TNDPL	RNEW	RRA
.009	.006	.012	.002	.010	.100	.300	0	.020	0	.750	1.000
#1	#2	#LOSS1	#LOSS2	#LOSS3	#ETNT1	#ETNT2	#NOUSE	#-NDPL	#TNDPL	RNEW	RRA
.009	.006	.012	.002	.010	.100	.300	0	.020	0	.750	1.000

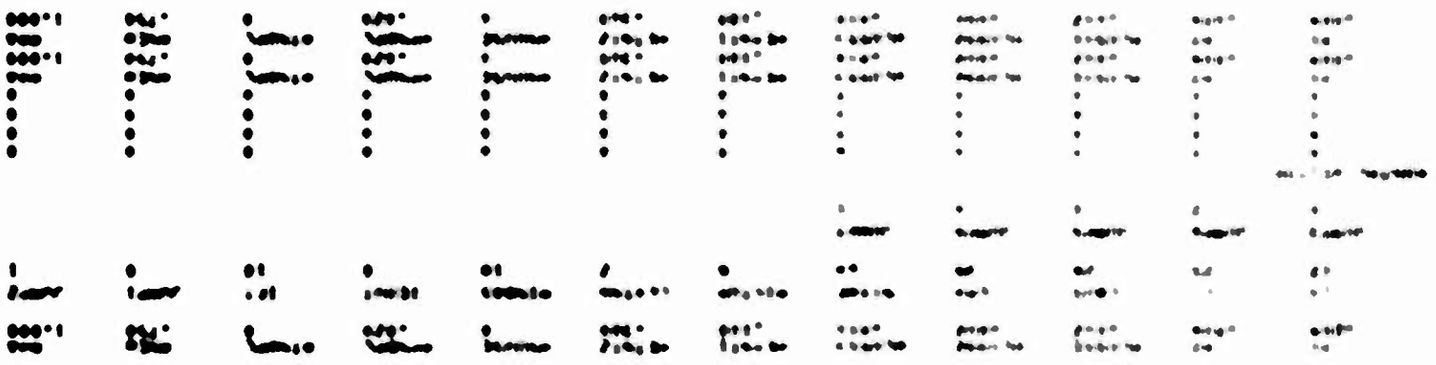
EXAMPLE NUMBER SIXTEEN

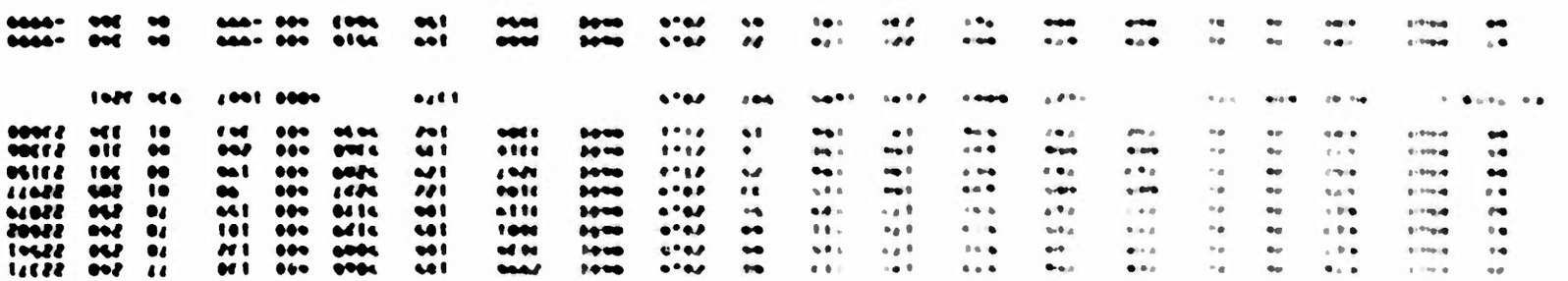
MONTH	ST QUOTA	END TOUR	PERM CAS	ST CAS	REPL REQ	REPL SENT	REQ REPL	RET -25	2ND TOUR	3RD+ TOUR	AVG AS TR	ST ON HAND	RBASE -25	RETNT ADDNS	CAR TOT	INPT SCHD	ADDL INPT	ATTRT LOSS	ETS	SYST TOT
(COL)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
1	5700	119	21	21	633	633	395	0	108	0	25.0	5700	3200	34	9004	400	0	65	81	12704
2	5800	282	22	21	649	649	337	67	112	0	23.6	5800	3241	38	9051	400	0	65	72	12965
3	5900	396	23	21	564	564	423	141	141	0	21.5	5900	3214	34	9021	400	0	65	80	13177
4	6000	338	23	22	587	587	388	118	118	17	18.9	6000	3196	35	9093	400	0	67	82	13405
5	6100	353	48	22	565	565	609	105	106	30	18.5	6100	3225	40	9066	400	0	63	94	13600
6	6200	406	48	22	608	608	458	105	133	17	18.6	6200	3210	47	9063	400	0	65	110	13777
7	6300	399	49	22	582	582	466	104	108	0	18.2	6300	3202	40	9015	450	0	64	94	14020
8	6400	436	50	23	635	635	474	154	138	0	18.7	6400	3137	40	9088	475	0	64	94	14287
9	6500	488	51	24	688	688	364	121	122	0	18.7	6500	3102	32	9053	500	0	64	76	14596
10	6600	479	52	23	686	686	515	154	115	56	20.0	6600	3049	31	9018	525	0	65	73	14931
FY TOTALS		3496	397	221		5699	4124	1151	1253	120	19.6			363		4350	0	647	856	
11	6700	555	52	23	756	756	547	107	88	109	21.6	6700	3006	31	9782	550	0	65	73	15291
12	6900	797	53	23	1008	1008	754	251	77	175	21.8	6800	2800	28	9764	575	0	66	68	15679
13	6900	371	27	25	539	539	604	135	82	53	21.3	6900	2831	35	9721	600	0	65	82	16105
14	7000	388	27	25	557	557	618	134	88	51	20.9	7000	2776	29	9662	600	0	67	70	16541
15	7100	487	28	25	657	657	603	159	73	91	21.6	7100	2720	27	9662	600	0	66	65	16982
16	7200	435	28	25	606	606	655	151	76	75	21.0	7200	2668	25	9678	600	0	65	60	17429
17	7300	465	28	26	636	636	677	159	117	41	19.7	7300	2599	16	9586	600	0	67	38	17896
18	7400	521	29	26	694	694	521	173	132	0	18.6	7400	2545	21	9566	600	0	68	51	18348
19	7500	516	29	27	689	689	517	173	107	25	19.8	7500	2502	41	9532	600	0	67	98	18754
20	7600	554	30	27	729	729	567	182	101	81	21.2	7600	2510	91	9564	600	0	68	214	19042
21	7700	425	30	28	602	602	642	150	108	10	19.6	7700	2510	85	9589	600	0	69	200	19343
22	7900	610	30	28	786	784	500	176	126	72	20.5	7800	2517	83	9614	600	0	69	194	19650
FY TOTALS		6124	341	309		8259	6107	2022	1237	783	20.0			512		7125	0	802	1213	
23	7900	667	31	28	845	845	636	211	131	88	21.3	7900	2544	116	9669	600	0	69	266	19984
24	8000	899	31	27	1046	1046	800	204	151	115	21.6	8000	2561	110	9721	600	0	70	250	19725
25	8100	679	31	29	858	858	606	154	109	55	19.8	8100	2575	101	9763	600	0	70	236	19708
26	8200	696	32	30	875	875	584	104	126	65	19.6	8200	2547	58	9742	600	0	71	138	19947
27	8300	587	32	30	749	749	577	149	88	126	21.6	8300	2566	101	9803	600	0	71	236	20008
28	8400	561	33	30	724	724	563	173	122	59	19.7	8400	2605	116	9845	600	0	72	267	20036
29	8500	559	33	31	743	743	587	184	134	54	19.5	8500	2625	109	9901	600	0	73	255	20075
30	8600	617	34	31	802	802	602	194	208	0	18.8	8600	2649	108	9969	600	112	78	254	20229
31	8500	607	34	31	843	843	520	152	38	123	21.9	8600	2601	14	9902	600	68	73	34	20556
32	8500	646	34	31	732	732	562	181	17	171	22.5	8600	2552	12	9849	600	189	72	31	21008
33	8600	538	34	32	626	626	668	154	53	103	21.2	8600	2551	54	9841	600	229	71	128	21404
34	8600	696	34	31	782	782	587	141	52	143	21.2	8600	2543	53	9832	600	375	75	127	21943
FY TOTALS		7320	343	341		9113	6937	2231	1296	1078	20.6			948		6000	973	857	2230	
35	8600	751	34	31	836	836	627	204	184	103	20.5	8600	2589	108	9881	600	181	73	254	22003
36	8500	904	34	30	1031	1031	771	256	184	152	20.4	8600	2628	108	9925	600	113	75	252	22235
37	8500	581	34	31	647	647	588	184	101	66	20.1	8600	2669	105	9966	600	179	76	247	22457
38	8500	597	34	31	662	662	513	187	104	66	20.1	8600	2716	106	9010	600	168	76	248	22647

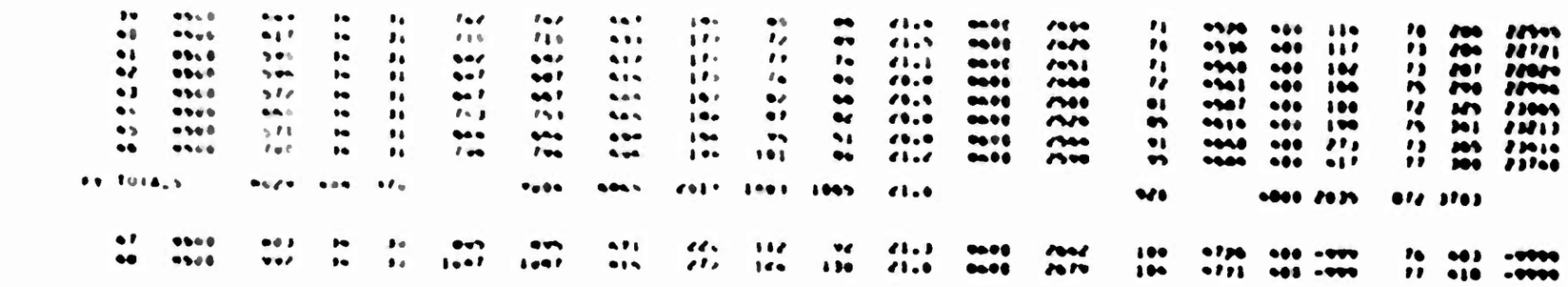
59	8500	883	30	31	749	749	577	146	104	88	20.3	8400	2750	106	5051	400	150	79	250	22844
60	8500	886	30	31	729	729	567	174	105	77	20.4	8400	2798	107	5094	400	201	78	251	23082
61	8500	859	30	31	705	705	554	151	105	91	20.6	8600	2837	106	5135	400	128	79	250	23247
62	8500	712	30	31	708	708	593	194	106	93	20.5	8600	2866	108	5179	400	152	81	254	23438
63	8500	818	30	31	701	701	529	172	118	57	20.7	8600	2907	121	5238	400	84	81	284	23515
64	8500	867	30	31	733	733	569	177	127	50	20.8	8600	2967	129	5297	400	187	83	302	23683
65	8500	559	30	31	842	842	.42	157	132	28	21.0	8600	3036	135	5364	400	223	83	318	23871
66	8500	845	30	31	741	781	584	183	134	50	21.3	8600	3107	142	5439	400	350	82	332	24173
67	TOTALS	50MM	60M	971		9116	6838	2233	1355	921	20.6			1381		4800	2026	946	3242	
67	8500	762	30	31	829	829	621	203	148	59	21.1	8600	3151	150	5520	400	-999	84	353	-9999
68	8500	913	30	30	997	997	748	246	183	66	20.5	8600	3168	157	5608	400	-999	84	369	-9999

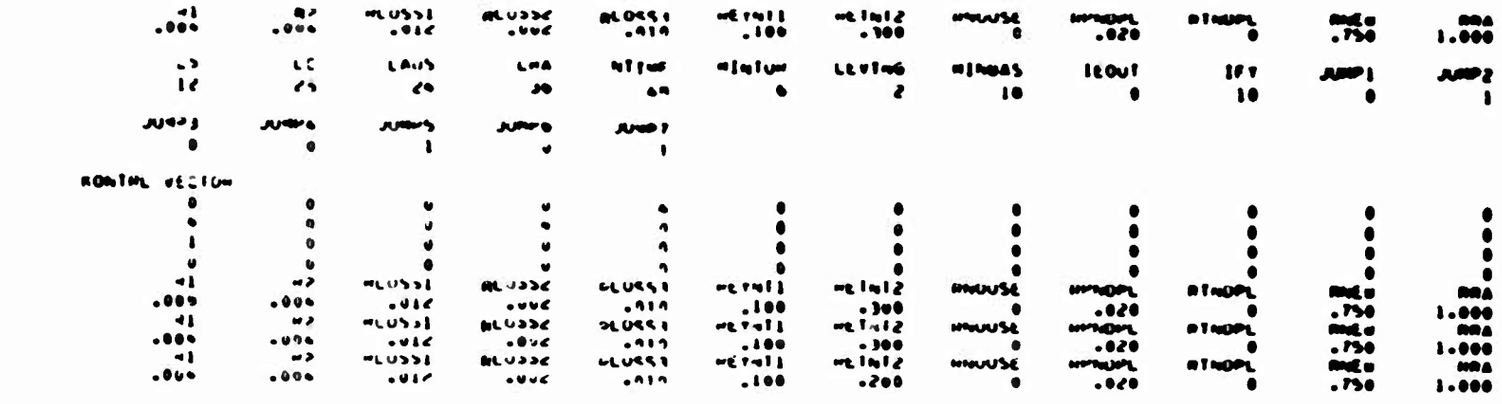
.41	.42	RLOSS1	RLOSS2	RLOSS3	RETAIL	RETAIL2	RNOUSE	RPNOPL	RTNOPL	RNEW	RRA
.006	.006	.012	.002	.010	.100	.300	0	.020	0	.750	1.000
L3	LC	LAUS	LMA	NTIME	MINTUR	LEVTNG	MINBAS	IEOUT	IFY	JUMP1	JUMP2
12	25	24	30	48	6	2	18	0	10	0	1
JUMP5	JUMP6	JUMP5	JUMP8	JUMP7							
0	1	1	0	1							
NORMAL SECTION											
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
.41	.42	RLOSS1	RLOSS2	RLOSS3	RETAIL	RETAIL2	RNOUSE	RPNOPL	RTNOPL	RNEW	RRA
.006	.006	.012	.002	.010	.100	.300	0	.020	0	.750	1.000
.41	.42	RLOSS1	RLOSS2	RLOSS3	RETAIL	RETAIL2	RNOUSE	RPNOPL	RTNOPL	RNEW	RRA
.006	.006	.012	.002	.010	.100	.300	0	.020	0	.750	1.000

(COL)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
1	5700	119	21	21	693	693	135	0	198	0	25.8	5700	3200	34	5884	400	0	65	81	12704
2	5900	204	22	21	669	669	117	67	78	0	20.3	5800	3283	30	5851	400	0	65	72	12945
3	5900	195	23	21	703	703	108	108	138	0	21.9	5900	3258	34	5921	400	0	64	81	13177
4	6000	139	23	22	707	707	108	127	96	0	19.5	6000	3255	35	6961	400	0	66	83	13405
5	6100	251	24	22	743	743	108	146	91	0	18.9	6100	3296	39	6967	400	0	64	94	13599
6	6200	184	24	22	840	840	108	201	146	0	18.5	6200	3287	46	6964	400	0	65	110	13776
7	6300	188	24	22	742	742	108	191	71	0	18.5	6300	3346	40	6917	450	0	65	95	14017
8	6400	136	24	23	847	847	108	256	196	0	18.7	6400	3225	39	6888	475	0	66	93	14283
9	6500	208	24	24	745	745	174	124	78	0	18.6	6500	3225	32	6853	500	0	64	76	14592
10	6600	178	24	23	761	761	174	234	107	0	18.9	6600	3148	30	6819	525	0	65	71	14929
** TOTAL		1696	227	221		7552	3484	1494	1139	0	19.1			359		4350	0	649	856	
11	6700	593	24	23	768	768	604	284	126	115	19.2	6700	3108	38	6784	550	0	62	73	15292
12	6800	797	25	23	1017	1017	621	582	84	410	21.8	6800	2739	28	6744	575	0	66	68	15680
13	6900	871	27	23	811	811	658	155	51	84	19.3	6900	2681	34	6717	600	0	66	82	16105
14	7000	385	27	23	789	789	667	167	81	28	18.5	7000	2629	29	6686	600	0	66	69	16543
15	7100	678	27	23	881	881	917	171	39	63	18.9	7100	2624	27	6654	600	0	66	64	16986
16	7200	417	28	24	832	832	676	154	57	27	18.6	7200	2607	26	6619	600	0	66	62	17438
17	7300	637	28	24	800	800	681	101	32	0	18.8	7300	2630	15	6578	600	0	67	38	17897
18	7400	681	29	27	877	877	684	184	0	0	18.8	7400	2737	28	6541	600	0	68	69	18351
19	7500	665	29	27	842	842	684	184	111	0	19.4	7500	2677	41	6522	600	0	68	96	18758
20	7600	529	30	27	761	761	664	184	178	0	19.9	7600	2680	91	6557	600	0	66	214	19048
21	7700	617	30	28	838	838	670	154	152	0	19.8	7700	2558	85	6583	600	0	69	201	19348
22	7800	577	30	28	800	800	664	144	103	10	18.6	7800	2515	81	6605	600	0	69	191	19650
** TOTAL		7004	298	276		8442	6419	2381	1076	781	19.5			507		7125	0	799	1207	
23	7900	667	31	28	919	919	908	181	96	218	19.9	7900	2681	115	6662	600	139	69	269	19928
24	8000	877	31	27	1107	1107	904	545	112	419	21.8	8000	2585	109	6711	600	111	70	255	19983
25	8100	520	32	28	716	716	917	170	108	60	18.6	8100	2583	108	6748	600	106	72	236	20150
26	8200	606	32	28	879	879	909	170	116	67	18.8	8200	2648	58	6768	600	130	72	138	20438
27	8300	577	32	28	762	762	917	144	86	111	19.1	8300	2655	101	6748	600	122	72	237	20619
28	8400	517	33	28	785	785	920	174	143	61	18.5	8400	2662	112	6838	600	125	72	264	20775
29	8500	586	33	28	901	901	920	171	136	29	18.6	8500	2651	109	6887	600	0	72	256	20814
30	8600	587	34	28	899	899	924	171	150	0	18.1	8600	2621	109	6931	600	0	73	257	20850
31	8700	588	34	28	898	898	901	101	58	98	20.3	8600	2392	16	6883	600	0	74	35	21107
32	8800	698	34	28	737	737	943	184	7	101	20.4	8600	2356	14	6836	600	34	74	33	21400
33	8900	588	34	28	867	867	901	184	0	137	19.8	8600	2375	55	6827	600	0	74	131	21561
34	9000	707	34	28	768	768	944	184	9	174	18.7	8600	2382	54	6819	600	132	74	129	21856
** TOTAL		7136	396	364		9154	8439	2648	982	1099	19.5			950		6800	899	867	2240	
35	9100	681	34	28	881	881	870	174	92	116	19.9	8600	2559	109	6868	600	0	74	236	21892
36	9200	681	34	28	1017	1017	886	211	98	98	19.8	8585	2575	109	6915	600	13	75	257	21930
37	9300	635	34	28	761	778	886	169	122	58	20.1	8597	2588	106	6969	600	57	77	248	22037
38	9400	588	34	28	881	881	910	171	112	68	20.2	8600	2588	105	7004	600	118	75	246	22200









EXAMPLE NUMBER IDENTIFICATION

MONTH	SI QUOTA	ENG PERSON TOON	CAS	SI CAS	REPL REQ	REPL SENT	REQ REPL	NET -25	ENG TOON	SHIP TOON	AVG MS TR	SI ON HAND	RELEASE -25	RETNT ADDNS	CAR TOT	INPT SCHD	ADDL INPT	AIRAT LOSS	ETS	SYST TOT
(COL)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
1	5700	119	21	21	433	433	325	0	108	0	25.0	5700	3200	34	3004	400	0	65	81	12704
2	5800	282	22	21	449	449	337	87	78	0	20.3	5800	3203	38	3051	400	0	65	72	12945
3	5900	395	23	21	543	543	422	124	114	0	22.1	5900	3202	34	3021	400	0	64	81	13177
4	6000	339	23	22	507	507	380	127	96	0	20.0	6000	3278	35	4003	400	0	67	83	13404
5	6100	352	17	22	542	542	407	134	82	0	19.2	6100	3329	40	4068	400	0	63	94	13600
6	6200	406	18	22	509	509	449	140	93	0	18.8	6200	3373	46	4046	400	0	64	109	13779
7	6300	349	19	22	508	508	443	104	63	0	18.5	6300	3478	40	4022	450	0	65	95	14020
8	6400	400	20	23	859	859	684	184	182	0	19.2	6400	3451	39	4002	475	0	66	92	14287
9	6500	284	21	24	499	499	374	125	77	0	19.4	6500	3446	33	4041	500	0	63	77	14596
10	6600	479	52	23	781	781	524	174	114	0	20.0	6600	3421	30	4027	525	0	65	71	14933
FY TOTALS		3497	386	221		5542	4157	1211	879	0	19.6			361		4350	0	647	855	
11	6700	553	52	23	786	784	589	194	196	0	20.4	6700	3387	30	4706	550	0	64	72	15295
12	6800	747	53	23	1032	1032	774	258	243	0	20.0	6800	3230	29	4759	575	0	65	68	15684
13	6900	371	27	25	605	605	454	151	112	0	18.7	6900	3054	34	4735	600	0	64	82	16111
14	7000	368	27	25	585	585	439	142	84	4	18.2	7000	2866	29	4706	600	0	65	68	16551
15	7100	471	27	25	682	682	512	124	55	44	18.0	7100	2802	27	4676	600	0	66	66	16992
16	7200	417	28	26	618	618	464	132	58	22	18.0	7200	2736	34	4651	600	0	66	51	17447
17	7300	448	28	26	636	636	477	159	29	0	18.0	7300	2701	28	4613	600	0	68	32	17919
18	7400	488	29	27	675	675	506	169	0	0	18.0	7400	2733	28	4585	600	0	67	42	18381
19	7500	445	29	27	635	635	476	159	105	0	19.4	7500	2800	56	4582	600	0	68	85	18799
20	7600	536	30	27	738	738	554	184	176	0	19.9	7600	2538	120	4643	600	0	69	101	19119
21	7700	412	30	28	623	623	467	156	150	0	19.5	7700	2439	115	4708	600	0	68	173	19448
22	7800	592	30	28	806	806	605	201	193	0	18.8	7800	2373	109	4751	600	0	71	165	19782
FY TOTALS		5890	398	310		8421	6318	2039	1351	70	19.0			631		7125	0	801	1005	
23	7900	666	31	28	914	914	686	180	182	39	18.6	7900	2363	152	4864	600	0	70	220	19953
24	8000	697	31	27	1169	1169	862	130	131	148	18.1	8000	2430	146	4929	600	0	73	221	19928
25	8100	521	31	29	788	668	531	137	147	48	18.1	8100	2391	134	5003	600	0	71	202	20026
26	8200	493	32	30	683	671	512	150	151	12	18.0	8200	2332	77	5018	600	0	74	116	20202
27	8300	573	32	30	756	661	547	94	81	95	18.1	8300	2309	136	5001	600	0	76	205	20200
28	8400	514	33	30	808	806	594	169	153	12	18.1	8400	2394	150	5177	600	0	73	226	20357
29	8500	583	33	31	809	809	617	173	150	0	18.1	8500	2371	145	5257	600	86	77	219	20514
30	8600	519	34	31	707	707	538	177	162	0	18.1	8600	2318	145	5333	600	153	76	218	20739
31	8600	582	34	31	847	847	605	162	196	0	18.8	8600	2215	19	5206	600	84	77	29	21003
32	8600	649	34	31	735	612	551	61	95	123	18.6	8600	2234	17	5235	600	200	77	26	21546
33	8600	556	34	31	662	576	482	94	76	66	19.2	8600	2278	74	5263	600	273	77	111	21997
34	8600	713	34	31	880	880	660	88	73	112	19.5	8600	2351	71	5248	600	430	77	107	22609
FY TOTALS		7106	393	360		8868	6867	1634	1686	647	18.6			1266		6800	1226	898	1908	
35	8600	606	34	30	805	837	671	164	149	58	19.8	8600	2627	145	5328	600	137	79	219	22816
36	8600	1015	34	30	1186	994	828	166	151	188	19.8	8600	2528	144	5405	600	122	80	216	23006
37	8600	624	34	31	715	713	534	177	158	2	19.6	8600	2526	140	5476	600	170	82	212	23248
38	8600	606	34	31	806	687	522	165	149	9	19.8	8600	2562	141	5569	600	131	82	213	23490

39	9500	6AA	36	31	757	735	5AA	187	169	22	19.8	8600	2623	162	5620	400	124	84	213	23643
40	9500	615	36	31	745	700	529	171	153	5	19.9	8600	2642	162	5661	400	136	87	214	23844
41	9500	607	36	31	6AA	687	522	165	148	9	20.2	8600	2682	162	5760	400	100	87	215	24000
42	9500	621	36	31	712	701	534	187	167	11	20.1	8600	2729	164	5831	400	153	88	217	24222
43	9500	5F1	36	31	6A6	664	6AA	186	167	0	20.5	8600	2772	162	5970	400	91	88	243	24348
44	9500	607	36	31	736	736	562	184	165	0	20.7	8600	2869	172	6016	400	199	90	258	24565
45	9500	5A6	36	31	655	655	601	184	167	0	20.8	8600	2920	181	6124	400	262	91	273	24829
46	9500	7A6	36	31	7A6	7A6	537	190	181	0	21.6	8600	3013	192	6238	400	401	93	289	25214
FY TOTALS		9684	688	973		6987	6868	2852	1843	226	20.2			1847		4800	2026	1031	2782	
47	9500	7A9	36	31	8A8	8A8	6AA	222	202	0	21.3	8600	3074	200	6361	400	-999	96	300	-9999
48	9500	972	36	30	1065	1065	7A6	264	248	0	21.1	8600	3118	218	6461	400	-999	97	317	-9999

M1	M2	PLUSS1	PLUSS2	PLOSS1	METAL1	METAL2	MANUSE	MPMDPL	ATMDPL	RMEM	RRA
.0069	.0086	.012	.006	.010	.100	.300	0	.020	0	.750	1.000
LS	LC	LAMS	LMA	NTIME	MINTUN	LEVING	MINBAS	IEOUT	IFY	JUMP1	JUMP2
12	24	24	36	64	6	2	10	0	10	0	1
JUMP4	JUMP5	JUMP6	JUMP7	JUMP8							
0	0	1	0	1							
NORMAL SELECTION											
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0
M1	M2	PLUSS1	PLUSS2	PLOSS1	METAL1	METAL2	MANUSE	MPMDPL	ATMDPL	RMEM	RRA
.0069	.0086	.012	.006	.010	.100	.300	0	.020	0	.750	1.000
M1	M2	PLUSS1	PLUSS2	PLOSS1	METAL1	METAL2	MANUSE	MPMDPL	ATMDPL	RMEM	RRA
.0069	.0086	.012	.006	.010	.100	.300	0	.020	0	.750	1.000
M1	M2	PLUSS1	PLUSS2	PLOSS1	METAL1	METAL2	MANUSE	MPMDPL	ATMDPL	RMEM	RRA
.0069	.0086	.012	.006	.010	.100	.400	0	.020	0	.750	1.000

APPENDIX G

ALGORITHM FOR COMPUTATION OF MINIMUM ROTATION SYSTEM BIAS

Let ℓ_1 = noncareer attrition rate

ℓ_2 = career attrition rate

p = proportion noncareer used in ST flow

RETNT = retention rate

R_i = number returning to base from ST in months

NEW_j = new trainees retained in base for leave or lag-time

NST_t = number in short tour at time t

LC = duration of base tour

LS = duration of short tour

D = duration of noncareer commitment

LEV = duration of post training or lag time

n_i = number of new people retained through the base tour in monthly block 1

c_i = number of career people retained in base tour in monthly block i

At any time t in the life of a career-noncareer rotational system, the minimum number of people required, N, can be expressed as

$$N = NST_t + \sum_{j=t-LEV+1}^{t} NEW_j + \sum_{i=t-LC+1}^{t} (n_i + c_i)$$

where $n_i = R_i p(1-\ell_1)^{t-i}$ for $(t-i) \leq (D-LS-LEV)$, or $n_i = R_i p(1-\ell_1)^{t-i} \cdot RETNT$ for $(t-i)$ $(D-LS-LEV)$, and $c_i = R_i (1-p)(1-\ell_2)^{t-i}$.

The minimum number of people required by the system for a desired base tour, LC, for a given time period is the maximum observed sum obtained from the above as t varies from LC to t_{max}. With the schedule of returns as computed by the career-noncareer model, the minimum system for a given simulation period has been calculated and added to the output of the program.

$$\text{Min syst} = \text{Max} \left[NST_t + \sum_{j=t-LEV+1}^{t} NEW_j + \sum_{i=t-LC+1}^{t} (n_i + c_i) \right]$$

as t varies from LC to t_{max}.

APPENDIX H

PARAMETER REFERENCE TABLE

LS	Duration of the short tour
LL	Duration of the base tour
LAUS	Duration of the noncareer (A) commitment
LRA	Duration of the noncareer (B) commitment
NTIME	Number of months simulated (maximum of 120)
MINTUR	Delay after entering system before assignment
LEVTNG	Delay after entering system before assignment
MINBAS	Minimum base tour for career men
MINBSN	Minimum acceptable base tour for new people
IBOUT	Allowable term for early release for noncareer men completing short tour
IFY	Number of months before end of first year
JUMP1	Limits on short tour replacements
JUMP2	Training and input to system
JUMP3	Print control
JUMP4	Noncareer short tours
JUMP5	Personnel included in summary calculation
JUMP6	Minimum system
JUMP7	Maximize base tour length vs. minimize 3rd short tours
R1	Combat tour permanent loss rate (KIA)
R2	Combat tour temporary loss rate (early returnees)
RLOSS1	Career system loss rate for base tours
RLOSS2	Noncareer system loss rate
RLOSS3	Career system loss rate for short tours
RETNT1	Retention rate after noncareer (A) commitment
RETNT2	Retention rate after noncareer (B) commitment
RNOUSE	Rate of assignment of new trainees to areas other than short tour; a tour of MINBSN is simulated for these people
RPNDPL	Rate of permanent nondeployability
RTNDPL	Rate of temporary nondeployability
RNEW	Maximum allowable proportion of new men sent to short tour
RRA	Rate of assignment of new people to noncareer (B) tours, the balance is assigned to noncareer (A)

Unclassified

Security Classification

DOCUMENT CONTROL DATA - R&D

(Security classification of title, body of abstract and indexing annotation must be entered when the overall report is classified)

Behavior and Systems Research Laboratory,
Arlington, Virginia

Unclassified

SIMPO-I CAREER-NONCAREER MODEL

Robert L. McMullen

June 1970

144

Technical Research Report 1142

a contract
DA HSD Proj. No. [illegible]
b SIMPO
c d-11

This document has been approved for public release and sale; its distribution is unlimited.

Office, Chief of Research and Development,
DA, Wash., D. C.
DCSPER, OSD

In response to an operations research requirement established under the sponsorship of the SIMPO-I Monitor Committee, the Statistical Research and Analysis Division, BESRL engaged in study and evaluation of the Army's personnel subsystem with respect to effectiveness of the policies to assignment, training, utilization, and contingency readiness of specialized personnel. The SIMPO-I effort was directed toward development of a model simulation package for assessing quantitatively the cumulative impact of personnel policy changes on the allocation, distribution, and utilization of Army personnel with special attention to effects of policies on deployability.

An earlier publication (Technical Research Report 1137) reported on the progress in production and planning of computerized models for use in dealing with the manpower system problems noted above and for evaluating alternative personnel policies. The present technical research report deals with the development and user application phases of a model of the career and noncareer segments of the Army personnel system. The Career-Noncareer Model (a specialized macro-flow model) was developed as a versatile model of the short term and continuing base areas that can be used to evaluate policies on training input, reassignment, manning levels, or utilization of manpower. Many user options are available, little computer running time is required, and, given the data base, adaptation to many subsystems is easily accomplished. The main body of the report contains a discussion of the model development, system analysis, and applications to several representative management problems. A model flow chart and description of the computer program together with computer printouts and examples of computer runs made using different options are provided in the Appendixes.

DD FORM 1473

Unclassified

Security Classification

[illegible]	[illegible]		[illegible]		[illegible]	
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]						
[illegible]						
[illegible]						
[illegible]						
[illegible]						
[illegible]						
[illegible]						
[illegible]						
[illegible]						
[illegible]						
[illegible]						
[illegible]						
[illegible]						
[illegible]						
[illegible]						
[illegible]						
[illegible]						
[illegible]						
[illegible]						
[illegible]						