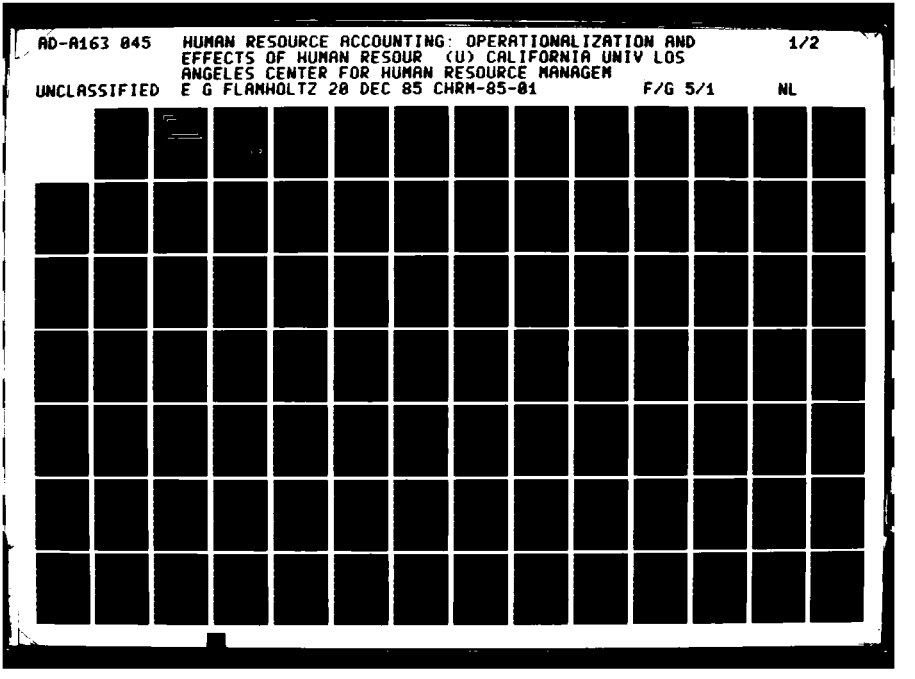
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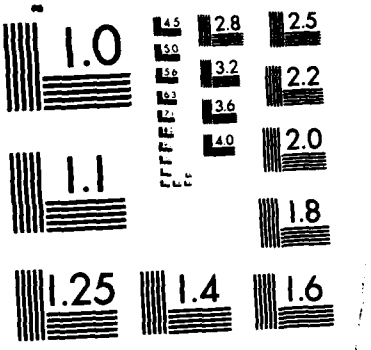

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HUMAN RESOURCE ACCOUNTING: OPERATIONALIZATION AND EFFECTS OF HUMAN RESOURCE REPLACEMENT COST SYSTEM IN NAVAL OPERATIONS

CENTER FOR HUMAN RESOURCE MANAGEMENT

Institute of Industrial Relations
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Los Angeles 90024

HUMAN RESOURCE ACCOUNTING: OPERATIONALIZATION AND EFFECTS OF HUMAN RESOURCE REPLACEMENT COST SYSTEM IN NAVAL OPERATIONS

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December 20, 1985

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This research project used the concepts, techniques and research findings from the field of Human Resource Accounting (HRA) to build a microcomputer based system for calculating replacement costs for key civilian personnel positions in the Navy. Data was collected and the model tested and refined.

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TABLE OF CONTENTS

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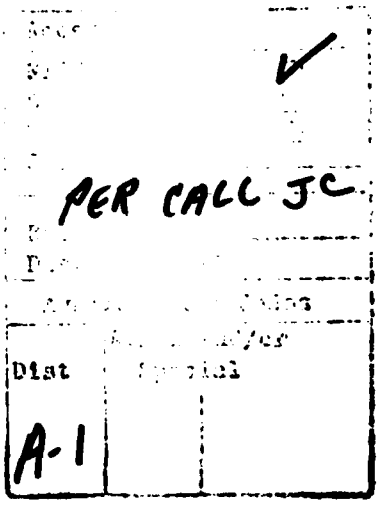

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LIST OF TABLES, FIGURES AND APPENDICES

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This research report represents an attempt to operationalize the concepts and methods from the field of "Human Resource Accounting" to naval personnel management issues. The principal investigator for the study was Dr. Eric G. Flamholtz. Significant contributions were made to the project by several people as noted below.

Dr. Glenn Bryan, Associate Director, Life Sciences Program, Office of Naval Research and Dr. Wallace Sinaiko, Program Director, Manpower Research and Advisory Service, Smithsonian Institution, were among the first to see the potential long term contribution of Human Resource Accounting to naval personnel issues. Their questions during a seminar for the Office of Naval Research Manpower R&D Committee were instrumental in shaping the basic research thrust in this study as well as in a prior study conducted for the Office of Naval Research.

Dr. Neal D. Glassman, Scientific Officer, Operations Research Group, Department of the Navy, was helpful in coordinating our efforts throughout the study.

A significant contribution was also made by Mr. Don Owens of the Seal Beach Naval Weapons Station, Seal Beach, California, and Mr. Monte Goddard, formerly of the Seal Beach Naval Weapons Station. They assisted in providing data necessary to conduct the project, and also in providing insights about naval

operations which are relevant to the personnel implications of the study.

The principal investigator is also indebted to Dr. George Geis of the Center for Human Resource Management, Institute of Industrial Relations, UCLA, for his collaboration throughout the study. Dr. Geis participated in the data collection, analysis, programming and report preparation. Ms. Yvonne Randle, Ms. Leslie Ray, and Mr. Joseph Van Winkle served as project research assistants. Ms. Anne Sprowls, formerly of the Center for Human Resource Management, Institute of Industrial Relations, UCLA, made significant contributions during the early stages of the project to its overall coordination as well as in the research per se.

Finally, the principal investigator wishes to acknowledge comments by members of the ONR Manpower R&D Committee at a presentation of the project's preliminary findings.

Section 1

INTRODUCTION

The purpose of this research project was to use the concepts, techniques and research findings from the field of Human Resource Accounting (HRA) to build a microcomputer based system for calculating replacement costs for key civilian positions in the Navy.

HRA can be defined as the measurement and reporting of the economic cost and value of people as organizational resources. It involves accounting for investments in people, their replacement cost and for their economic value to organizations. This study focused on the aspect of HRA dealing with replacement cost and involved developing a computer based method to calculate the recruitment, selection, development (training) and separation costs associated with positional replacement cost. Replacement cost is defined as the sacrifice that would have to be incurred at the present time to replace human resources currently employed.

This study had the following specific objectives:

1. To develop a manual for collecting replacement cost information for a "generic" civilian Navy position.

2. To develop a microcomputer based system for calculating human resource replacement cost.

3. To test the microcomputer system by entering data and calculating the replacement cost for a specific position.

4. To discuss possible uses of the replacement cost measurement system in civilian Navy personnel planning and human resource policy development.

The research site for this study was the Naval Weapons Station at Seal Beach, California. The position chosen to test the replacement cost software was a GS-11 Industrial Engineer, of the Industrial Engineering Division at Seal Beach.

Section 2

Conceptual Framework and Research Methodology

Recently, there has been a growing appreciation of the critical role of "human capital," the skills, experience and knowledge possessed by people, in economic activity and organizational performance. Economists attempting to explain differential rates of economic growth and productivity have recognized that the failure to explicitly take human capital into account can be misleading. Similarly organizational theorists have increasingly perceived the need to explicitly recognize human resources as something different than "mere labor."

The role of human capital or human resources is increasingly important today as we enter the post-industrial age. The western world in general and the U.S. in particular have previously made a transition from an agricultural to an industrial economy, and are now evolving to a human capital economy in which human services, information and highly developed skills are the characteristic ingredients of organizational activity.

The skills, experience and knowledge required by people to manage and operate today's organizations, in either the public or private sectors, in civilian or military organizations, are increasingly costly to acquire, develop and maintain. Thus organizations:

1. Must make substantial investments in acquiring and developing human capital;

2. must learn more productive ways to utilize this expensive human capital;

3. must learn how to motivate people to remain in their organizations in order to avoid incurring costly human replacement costs resulting from undesired turnover.

NEED FOR HUMAN RESOURCE ACCOUNTING

Despite the growing recognition of the importance of human capital and its cost, most organizations do not have very much information about the cost or value of human resources. This informational gap is a result of a lag in making the transition to the human capital age. For in a society in which labor is relatively expensive to recruit, hire, and train, and is easily replaceable from a readily available pool of workers, there is little need for information about human resource costs or value.

Today the demands of increasingly complex technologies require, in turn, individuals with greater skills which are not always readily available or easily replaceable. They also require "teams" of people to manage complex technological systems, such as weapons systems in the Navy or industrial plants in the private sector.

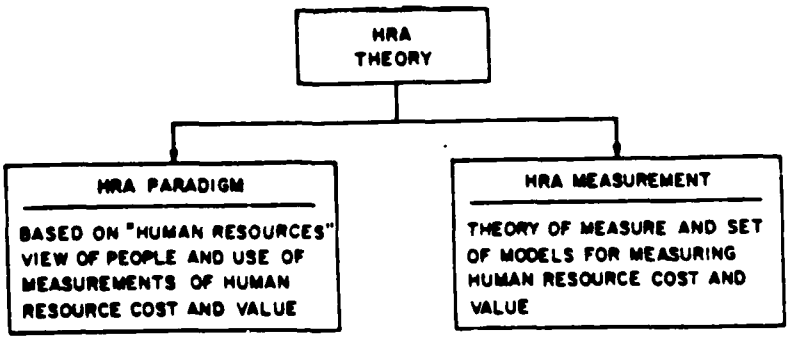
Given the increasing importance of human capital, information about the cost and value of people is needed to facilitate informed, rational decisions in all aspects of human resource management, including acquisition, development, allocation, utilization, compensation and conservation of people as organizational resources. A growing awareness of these informational needs has led to the development of a field that has come to be termed "Human Resource Accounting," or HRA.

NATURE AND DEFINITION OF HRA

Human Resource Accounting may be defined as the measurement and reporting of the economic cost and value of people as organizational resources. It involves accounting for investments in people, their replacement cost and economic value.

The theory of HRA consists of two related parts: 1) a paradigm or conceptual framework for thinking about the management of people based upon a "human resources" or "human capital" view of people and the use of measurements of human resource costs and value, and 2) a theory of measurement as well as a related set of measurement concepts and models for measuring human resource cost and value. The two aspects of HRA theory are shown in Figure 1.

FIGURE 1. The Two Parts of HRA Theory



The HRA Paradigm

The HRA paradigm is a conceptual framework or way of thinking about management on the notion that people should be viewed as "resources" rather than "expenses." This is clearly related to economists' notion of human capital. The central idea is that when people are managed as resources rather than as expenses, their value to an organization will be enhanced. This, in turn is hypothesized to lead to increased productivity of organizations.

PEOPLE AS RESOURCES OR ASSETS

The view of people as organizational resources implies that they are capable of providing current and future services which have economic value to an organization. This view of people is in contrast to viewing them as "expenses." An expense, by definition is something whose value has been used up or depleted in the current period. The view that people are resources or assets is intended to have positive connotations. Although some have suggested it is exploitive to view people as assets, others taking the positive view argue that it is exploitive <u>not</u> to view people as resources. People have economic value to organizations which can extend beyond one accounting period, and by taking this perspective, organizational leaders are able to have an enlightened philosophy of human resource management.

Viewing employees in terms of resources with future economic benefits is hypothesized to make a difference in managerial style. The argument is that the view of people as resources

rather than as expenses will lead ultimately to a different way of thinking about the management of people.

ROLE OF HRA MEASUREMENT

The second aspect of HRA theory is a theory of measurement dealing with the role of the measurement process in human resource management as well as a set of models for measuring human resource cost and value. HRA is intended to facilitate two different measurement functions. First, it is intended to provide measurements of human resource cost and value for use in decisions. This is termed the "information function" of measurement. Second, the act of measurement itself is intended to influence various aspects of the human resource management process. This is termed the "process function" of measurement. In brief, HRA functions as an information system for personnel management, as summarized in Table 1.

HRA AS AN INFORMATION SYSTEM

As shown in Table 1, human resource accounting serves as a system for providing measurements (information) about the cost and value of people to an organization. From a managerial perspective, human resource accounting is thus intended to help decision makers base decisions on a cost-value calculus, that is, on an assessment of the costs and values involved in a decision.

Measurements of the cost and value of human resources are needed: 1) to facilitate personnel planning and decision making,

TABLE I

Role of Human Resource Accounting in Personnel Management

Personnel Management Functions	Role of HRA Measures	
	Cost Measures	Value Measures
Acquisition	1. Provides cost information to budget acquisition: historical and standard costs.	1. Provides criterion (value) for selection decisions. 2. Provides measurements of value for decisions.
Development	1. Provides information about cost of development programs for budgetary planning and facilitates acquisition-development trade-off decisions.	1. Provides method of calculating return on investments in human capital.
Allocation	1. Provides information about human resource costs for investment and allocation decisions.	1. Permits human resource variables to be expressed in monetary terms and facilitates quantitative analysis.
Conservation	1. Provides cost of turnover for use in turnover control programs.	1. Provides measures of imputed value lost attributable to expected turnover for use in conservation programs.
Evaluation & Reward	1. Provides measures to permit analysis of compensation in relation to replacement cost.	1. Provides monetary and nonmonetary measures of value as basis for value-based compensation.

and 2) to enable top management to evaluate the effectiveness with which human resources have been developed, conserved and utilized by lower levels of management (especially in large decentralized companies). More specifically, management needs measurements of the cost and value of human resources in all phases of the human resource management process: acquisition, development, allocation, conservation, evaluation and reward of human resources. The role of HRA measurements in each of these aspects of human resource management is described below:

Acquisition of Human Resources

The acquisition of human resources involves recruiting, selecting and hiring people to meet the organization's present and expected future personnel needs. The first step in human resource acquisition is to forecast personnel requirements. After these requirements have been forecast, management must translate its personnel needs into a "personnel acquisition budget." This is essentially a process of cost estimation.

Human resource accounting can be useful in budgeting personnel acquisition. It can provide measurements of the standard costs of recruiting, selecting and hiring people, which can be used to prepare proposed personnel acquisition budgets.

Personnel selection is another process in which human resource accounting can play a role. In making selection decisions, managers need measurements of the economic value of

alternative job candidates. A personnel manager, for example, faced with a choice among several attractive candidates for a job, would ideally, choose the person possessing the greatest future value to the organization. However, measurements of the expected value of people are not presently available, except in terms of non-monetary surrogates such as scores on tests of "managerial potential." If monetary measures of the expected value of people were available, managers could use decision rules for employee selection designed to optimize the expected value of an organization's human resources. Thus, HRA may serve both as a criterion for selection decisions and as a method of providing measurements of the criterion.

Acquisition and Development Policy

Human resource accounting can help management assess the trade-offs between the cost of recruitment from outside as opposed to development from within by providing current costs to acquire and develop people for various positions. Thus, it provides the economic information management needs to assist in formulating personnel acquisition and development policy. HRA can also be used to calculate the anticipated return on investments in training and development.

Allocation and Utilization of Human Resources

The allocation and utilization of human resources is the process of assigning various organizational roles and tasks. There are several, sometimes conflicting, objectives involved in allocation decisions. First, the task to be performed should be

completed in the most efficient way. This may mean that management will allocate the "most qualified" person to a particular job. In addition, however, an organization's human resources must be developed, and management may wish to provide people with the opportunity to develop their skills through on-the-job training. This suggests that the "most qualified" (experienced) persons may not be assigned to a task. Third management wants to allocate people to jobs which satisfy their needs. Ideally management allocates people to jobs in a way that will optimize these three variables: job productivity, human resource development and individual satisfaction.

Human resource accounting can quantify the variable involved in the allocation decision and express them in the common denominator of monetary units. This will help management understand the trade-offs involved in allocation decisions, and permit selection of the optimal course of action. Linear programming could be used to determine optimal solutions for such personnel allocation problems.

Human/physical capital substitution decisions can also be analyzed. HRA makes it possible to measure the expected dollar outflows and inflows necessary to make such decisions.

Conservation of Human Resources

Conservation of human resources is the process of maintaining the capabilities of people as individuals and the

effectiveness of the human system developed by an organization. Failure to measure the extent to which human resources are being conserved in a plant, division or department can be costly to an organization. In the short run, for example, a divisional manager may put pressure on people to temporarily increase their productivity or reduce costs, with the effects upon employee motivation and attitudes going unmeasured. As a result, highly trained and skilled employees can become dissatisfied and leave an organization. The cost of replacing them is often substantial.

An organization must account for its human assets in order to prevent their depletion. Managers should be held accountable for conservation of the human resources allocated to them. Currently, conservation of human resources is measured in terms of turnover rates. Measures of turnover, however, are inadequate indicators of human resource conservation for two reasons. First, they are historical, and therefore, unavailable to management until after turnover has occurred. Thus they cannot be used as an early-warning signal to suggest the needs for special efforts at conservation. Second, turnover rates do not fully represent the economic impact of turnover, which monetary measures more realistically demonstrate.

Evaluation and Reward of Human Resources

Human resource evaluation is the process of assessing the value of people to an organization. It involves measuring the productivity (performance) and promotability of people.

At present, human resources are typically evaluated by non-monetary methods. These methods, however, cannot be used in most of the human resource acquisition, development, allocation and conservation problems and decisions cited above; monetary methods of human resource evaluation are needed instead.

Human resource accounting can be useful in the human resource evaluation process by developing valid and reliable methods of measuring the value of people to an organization. These methods would allow managers to make human resource decisions on a cost-value basis.

Human resource valuation also will have an impact on the administration of human resource reward systems. These systems are intended to motivate and reinforce the optimal performance of people in achieving organizational objectives. "Rewards" include compensation and promotion as well as symbolic rewards. Human resource valuation permits organizational rewards to be administered in relationship to a person's value to an organization. The replacement cost or the value of people to the firm can be used as factors in organizational compensation analysis policy.

RESEARCH METHODOLOGY

This study involved the development of a computer based

software package designed to gather positional replacement cost information and to calculate replacement cost. The following steps were involved in the project.

1. Meetings were held at the Seal Beach Naval Weapons Station with the Industrial Engineering Division and with representatives of the Civilian Personnel area in order to determine the scope of the project and to establish contacts for the development of replacement cost methods and in the gathering of replacement cost data for the target position, the GS-11 Industrial Engineer.

2. An instructions manual (Appendix A) for gathering replacement cost data was developed. This package of forms and graphs is to be used in collecting information on the costs related to the recruitment, selection, development (training) and separation (termination) of an employee. Information gathered using this package is input into the computer.

3. The manual for gathering replacement cost data was used to collect replacement cost information on the GS-11 Industrial Engineer. A summary of the replacement cost data for the GS-11 Industrial Engineer at the Seal Beach Naval Weapons Station is provided in Appendix B.

4. Software was written (in dBASE III) so that the replacement cost data could be input into an IBM PC or PC compatible computer and replacement cost could be calculated.

This software package is described in detail in Section 3 (OUTPUTS AND FINDINGS). The following is a skeletal outline of functions performed by the software:

A. Relevant position descriptions are defined.

B. Career ladders to target position(s) are established

C. Explicit separation, recruitment, selection and development cost data is entered.

D. Opportunity costs relating to separation and development are entered.

E. The option to change or delete data is provided.

F. The components of replacement cost and a replacement cost summary is printed.

5. The software was tested on the target position (GS-11 Industrial Engineer) and was a second version of the program developed.

6. A user's manual for the replacement cost software package was written. This manual is provided in Section 3 of this report.

7. The software package and sample output for the GS-11 Industrial Engineer was presented to the "Turnover Committee" at Seal Beach.

Section 3

OUTPUTS AND FINDINGS

The specific outputs of this study included in this report are:

1. Instructions for using the cost collection package (Appendix A). This package of forms and graphs is used in collection cost information relating to recruitment, selection, development (training), and separation (termination) and provides the raw data input for the computer program.

2. A summary of the replacement cost data for the GS-11 Industrial Engineer (Appendix B) gathered using the replacement cost collection package mentioned above.

3. The replacement cost software written in dBASE III. Hard copy of the data structures and program code for this program are provided in Appendix C. Disk copy of this program has also been provided to the U.S. Office of Naval Research.

4. Instructions (User's Manual) for the replacement cost software package follow. Note that the GS-11 Industrial Engineer is used as the sample position and output provides the findings for the replacement cost of this position at Seal Beach. Notice, however, that the package provides for the calculation of replacement cost information for multiple target positions on the same data disk.

INSTRUCTIONS FOR USING THE REPLACEMENT COST SOFTWARE PACKAGE

INTRODUCTION

This package will help you calculate the replacement cost of your human resources. More specifically, it will enable you to to determine costs related to recruitment, selection, development (training) and separation (termination) of employees. As you begin to use this package for data entry and analysis, you will find it helpful to manually "precollect" the information which you will need. Sample forms and instructions are provided to you in the "Cost Data Collection Package".

DEFINITIONS

Certain terms used in the Replacement Cost Software Package may be unfamiliar to you. These terms are defined below.

1. Target position. The position for which replacement cost will be calculated. It can be any position within your organization. However, the calculation of replacement cost may be particularly important for positions which experience high turnover.

2. Career ladders. All of the positions which a person normally occupies on the way to and including the target position, beginning with entry into the organization. (For further discussion, see the "Cost Data Collection Package".)

3. Replacement cost. The sacrifice that would have to be incurred today to replace human resources presently employed.

4. Explicit replacement cost. Elements of replacement cost for which specific economic outlays are made. These costs can be directly established through entering and analyzing the information obtained by using the forms in the "Cost Data Collection Package".

5. Opportunity replacement cost. Elements of replacement cost which are related to productivity lost, such as the losses incurred during the training or the pre-separation period. These costs are estimated from the productivity curves obtained on the graphs included in the "Cost Data Collection Package."

6. Separation costs. The costs incurred as a result of a position holder leaving the organization. These include productivity losses incurred during the pre-separation period as well as formal procedures used in the termination process.

7. Recruitment costs. The costs incurred to identify possible sources of human resources, including both inside and outside of the organization. These costs are also incurred to attract possible future members of an organization.

8. Selection costs. The costs incurred to determine who should and who should not be offered employment. These include all costs incurred in selecting people for membership in an organization.

9. Development costs. The costs incurred in training individuals so as to bring them up to a level of productivity normally expected at a given position.

GENERAL INSTRUCTIONS

1. The package is relatively simple to use and requires no previous programming experience.
2. As you begin to use this package, please keep in mind that the more information which you provide, the more accurate the calculated replacement cost will be. The program will only calculate; you must enter the data it will use for these calculations.
3. Examples are provided throughout these instructions to aid you in using the package.

LOADING THE PROGRAM

1. Be sure that the HRA program disk is backed up.
2. Boot the system with the modified version of DOS 2.0 (or higher). The modified version (containing a config.sys file) allows dBASE to keep many files open at the same time. See the dBASE Manual for details.
3. Copy the config.DB file found on the HRA program disk to the dBASE III system disk (system disk #2 for version 1.1 of dBASE III).
4. Insert the dBASE III system disk in drive A and the HRA disk in drive B.
5. Type "dbase menu" and hit <Return>.

6. The following menu will be displayed on the screen.

REPLACEMENT COST MENU

1. Work with position descriptions
2. Establish career ladders for target positions
3. Enter explicit replacement cost information
4. Enter opportunity replacement cost information
5. Change or delete existing cost data
6. Print separation cost data
7. Print recruitment cost data
8. Print selection cost data
9. Print development cost data
0. Print replacement cost summary

<RETURN>=Exit

ENTER ONE OF THE ABOVE

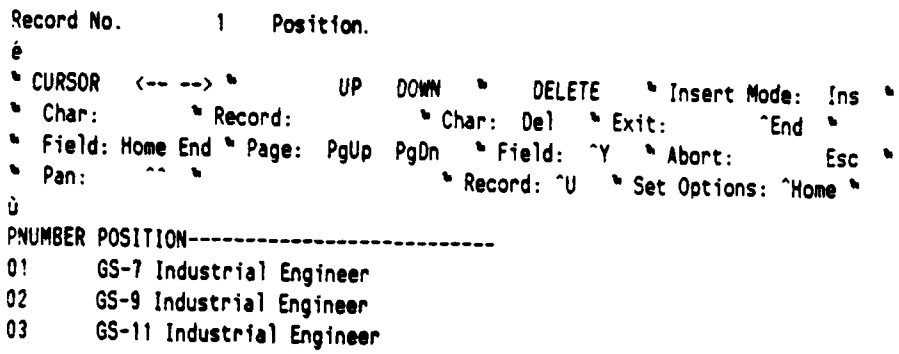
7. You are ready to begin entering, revising, or retrieving data by entering the number corresponding to the function you wish to perform.
8. Unless your printer can print 132 columns, you will need to condense the print size in order to print the information which this program will calculate. If necessary, exit the Replacement Cost Menu and refer to your printer's manual for instructions.
9. In order to return to the Replacement Cost Menu from the dBASE III dot prompt ("."), type "do menu" and hit <Return>.

DESCRIPTION OF AND INSTRUCTIONS FOR THE 10 FUNCTIONS

Function 1: Work with position descriptions

This function lets you enter the names of the positions in the career ladder(s) of concern or review positions previously entered. It also lets you enter the benefit loading factor. The benefit loading factor is the percentage of total labor costs represented by benefits.

1. When the screen displays the *REPLACEMENT COST MENU* and you type "1", the following will appear on the screen:



2. The top portion of this screen is to help you move the cursor around the document in order to review or revise information which appears here. Please refer to the dBASE III manual for instructions on how to use this "browse help menu".

3. The portion of the screen below the solid line identifies all positions which have previously been entered as part of a career ladder. Each of the variables displayed here is explained below.

   a. PNUMBER. An identification number for a position. In this example, "01" identifies the position labeled "GS-7 Industrial Engineer", "02" identifies the "GS-9 Industrial Engineer", and "03" identifies the "GS-11 Industrial Engineer".

   b. POSITION. The name of the position. For example, position "01" is called "GS-7 Industrial Engineer."

4. Options of this function

   a. To revise information:

      1) Move the cursor to the field which you wish to revise by hitting <Return> or by using the "Cursor Up" or

   b. To delete a position:

      1) Move the cursor to the line of information you wish to delete.

      2) Press the "Control" and the "U" key similtaneously. "*DEL*" will appear at the top of the screen.

      3) Exit the function as you normally would and the record will be deleted.

   c. To add new positions:

      1) Move the cursor down and "Add new records? (Y/N)" will appear at the top of the screen.

2) Type "Y". The cursor will move one line below the the existing information and you may begin entering the new information. If you had typed "N" in response to the prompt, the cursor would have returned to the last line of information displayed on the screen which, in this case, is that pertaining to the "03" position.

3) Each position entered in this step must be assigned a <u>different</u> PNUMBER which distinguishes it from all other positions. The PNUMBER must be entered as a two digit number. For example, "4" would be entered as "04".

4) The example below shows that we have added "GS-12 Supervisory Engineer" to the list of positions. It is designated by the PNUMBER "04".

```
Record No.       1    Position
É
³ CURSOR   <-- --> ³        UP   DOWN   ³    DELETE    ³ Insert Mode:  Ins  ³
³  Char:        ³ Record:          ³ Char:  Del   ³ Exit:        ^End  ³
³  Field: Home End ³ Page:  PgUp  PgDn   ³ Field:  ^Y   ³ Abort:       Esc  ³
³  Pan:     ^^  ³                      ³ Record: ^U   ³ Set Options: ^Home ³
Ù
PNUMBER POSITION---------------------------
01      GS-7 Industrial Engineer
02      GS-9 Industrial Engineer
03      GS-11 Industrial Engineer
04      GS-12 Supervisory Engineer
```

d. <u>To enter/change the loading factor.</u>

1) After the new position information has been entered, press the "Control" key and the "End" key similtaneously and the following will appear on the on the screen.

```
Enter loading for employee benefits  0.0
```

2) Enter the loading factor by typing in the appropriate numbers. In this case, we enter "30.0" as shown on the next page. If a loading factor has previously been entered for the positions in question, it will appear here. You can change an existing loading factor by simply typing over it. (Make sure to enter <u>all</u> digits or the correct number will not be registered. For example, if we had entered only the "3" in the tens position, the number registered would have been "3.0", not "30.0".)

Enter loading for employee benefits 30.0

e. <u>To print the list of positions:</u>

1) After you have entered the loading factor, "Print list of positions (Y/N)?" appears on the screen.

2) If you enter "Y", the printer will print the following:

List of positions as of 06/12/85

No.	Position Description	Loading
01	GS-7 Industrial Engineer	30.0
02	GS-9 Industrial Engineer	30.0
03	GS-11 Industrial Engineer	30.0
04	GS-12 Supervisory Engineer	30.0

As you begin to work with the other functions contained in this package, this printed list will serve as a convenient reference for identification of the positions of interest to you.

3) If you enter "N", you will immediately return to the main menu.

Function 2: Establish career ladders for target positions

This function allows you to define the career ladder for a particular target position.

1. **When the screen displays the REPLACEMENT COST MENU and you type "2", the following will appear on the screen:**

```
                    Establish career ladders

    01 GS-7 Industrial Engineer
    02 GS-9 Industrial Engineer
    03 GS-11 Industrial Engineer
    04 GS-12 Supervisory Engineer




                                  Work with which target position?
                                  Enter a number listed above
                                  Hit <RETURN> to exit
```

This lists all of the positions that have been entered in Function 1. As you can see in the example, there are four positions available to work with since we entered the GS-12 Supervisory Engineer in Function 1 and the GS-7, GS-9, and GS-11 Industrial Engineer positions had been entered previously.

2. You are now asked for which position you wish to establish a career ladder. You may enter "01", "02", "03" or "04". If you fail to enter the "0" in these numbers, you will remain on this menu. In this example, we assume that we are interested in establishing a career ladder for the GS-12 position. So, we will enter "04". If we decide that we do not want to work with any position, we can hit <Return> and return to the main menu.

3. If we enter "04", the following appears on the screen:

```
Establishing career ladder for: GS-12 Supervisory Engineer

Want to proceed (Y/N)?
```

a. If we respond by entering "N", we will return to the previous menu.

b. If we respond by entering "Y", the following appears:

```
Record No.       2    Target
é
³ CURSOR   <-- --> ³        UP   DOWN  ³   DELETE    ³ Insert Mode:  Ins  ³
³  Char:        ³ Record:           ³ Char:  Del   ³ Exit:        ^End  ³
³  Field: Home End ³ Page:  PgUp  PgDn   ³ Field:  ^Y   ³ Abort:        Esc  ³
³  Pan:     ^^  ³                    ³ Record: ^U   ³ Set Options: ^Home ³
ù
POS1 POS2 POS3 POS4 POS5 POS6 POS7 POS8 POS9
```

This template will be used for entering the position numbers (POS_) of the positions that make up the career ladder of the GS-12 Supervisory Engineer. If we had previously established a career ladder for this position, position numbers would appear in the blanks located under "POS1", "POS2", etc. POS1 is the first or entry level

position of the career ladder. POS2 is the next position, etc. The last position number to be entered is that of the target position which in this case is the GS-12 Supervisory Engineer.

4. To establish the career ladder, enter the PNUMBERs of the positions which comprise this ladder. These PNUMBERs were assigned in Function 1 so you should refer to the list of positions which you printed in the last step of this Function. Assume that, in this example, the positions which comprise the career ladder of the GS-12 Supervisory Engineer are the GS-9 Industrial Engineer (entry level position), the GS-11 Industrial Engineer, and the GS-12 Supervisory Engineer. The PNUMBERSs to be entered, then, are "02", "03", and "04". Entering these numbers, the screen displays the following:

```
Record No.       2    Target
É
³ CURSOR   <-- --> ³        UP   DOWN   ³    DELETE    ³ Insert Mode:  Ins  ³
³  Char:        ³ Record:           ³ Char:  Del   ³ Exit:        ^End  ³
³  Field: Home End ³ Page:  PgUp  PgDn   ³ Field:  ^Y   ³ Abort:        Esc  ³
³  Pan:     ^^  ³                    ³ Record: ^U   ³ Set Options: ^Home ³
Ù
POS1 POS2 POS3 POS4 POS5 POS6 POS7 POS8 POS9
02   03   04
```

5. Options of this Function:

   a. To revise information:

      1) Move the cursor to the field which you wish to revise and type over the existing information.

b. To delete a career ladder:

1) Move the cursor to the line of information you wish to delete.

2) Press the "Control" and the "U" keys similtaneously. "*DEL*" will appear at the top of the screen.

3) Exit the function as you normally would and the record will be deleted.

c. To exit the function:

1) Press the "Control" and "End" keys similtaneously and you will return to the screen which asks which position you wish to work with. You can then select another position to establish a career ladder for or return to the main menu by hitting <Return>.

Function 3: Enter the explicit replacement cost information

This function lets you enter separation, recruitment, selection, and development cost information related to the positions within the career ladder(s) of interest. To accomplish this task most efficiently, you should begin by manually collecting this information using the "Cost Data Collection Package". Under this step, you will only enter the information which appears on the forms. This information can be directly linked to a specific person performing a specific act for specific amount of time. Loss of productivity related to activities is ignored here and will be dealt with in Function 4.

1. When the screen displays the REPLACEMENT COST MENU and you type "3", the following will appear on the screen:

```
                    Enter explicit replacement cost information

01 GS-7 Industrial Engineer
02 GS-9 Industrial Engineer
03 GS-11 Industrial Engineer
04 GS-12 Supervisory Engineer




                                    Work with which position?
                                    Enter a number listed above
                                    Hit <RETURN> to exit
```

This lists all of the positions that have been entered in Function 1. As you can see in the example, there are four positions available to work with since we entered the GS-12 Supervisory Engineer in Function 1 and the GS-7, GS-9, and GS-11 positions had been entered previously.

2. You are now asked which position you wish to work with. You may enter "01", "02", "03", or "04". In this example, we will work with the GS-12 position. We will enter "04". If we decide that we do not want to work with any position, we can hit <Return> and return to the main menu.

3. If we enter "04", the following appears on the screen:

EXPLICIT COST RELATED TO: GS-12 Supervisory Engineer

1 Separation costs
2 Recruitment costs
3 Selection costs
4 Development costs

Cost element?
Enter a number listed above
Hit <RETURN> to exit

4. This menu asks on which element of replacement cost we wish to enter data. Note that in our example of the GS-12 Supervisory Engineer, recruitment and selection cost information would be entered for the GS-9 ("02") position since this is the entry level position of the GS-12 career ladder. We would enter enter development cost information for all positions ("02", "03", "04") in the career ladder. We would only enter separation cost information for the GS-12 Supervisory Engineer ("04") position.

In fact, this program only calculates recruitment and selection costs for the entry level position and separation costs for the target position. If, for example, you entered selection costs for the GS-11 ("03") position, this information would not be used in the calculation of the replacement cost for the GS-12 Supervisory Engineer since the inclusion of these costs is inconsistent with the career ladder you established in Function 2.

Another feature of this program which you should be aware of is that, should you use the same PNUMBER to identify a position which is included in two career ladders, you will need to review the existing cost information for its accuracy in relation to the career ladder of interest. For example, the development costs for a GS-9 may be higher when this position is entry level than when it is POS2 or POS3, due to a higher investment in "orientation" for entry level positions. If it is the case that the GS-9 position is an entry level

position in one career ladder and POS2 in another, then you may want to assign one *PNUMBER* to the entry level GS-9 position and another PNUMBER to the POS2 GS-9 position so as to avoid confusion or miscalculation of replacement costs.

5. In this case, we enter "1" indicating that we are interested in entering cost information pertaining to the separation of the GS-12 Supervisory Engineer. We might also have decided that we no longer want to work with the GS-12 position. If this is the case, we can hit <Return>, exit to the previous menu and select another position to work with. Notice that each time we hit <Return> we no longer return to the main menu, but instead return to the previous menu.

When "1" is entered, the following is displayed on the screen:

```
                EXPLICIT COST RELATED TO: GS-12 Supervisory Engineer

                              Separation costs

STEP NUMBER  1
ACTIVITY
PERSON INVOLVED
SALARY RATE    0.00
HOURS SPENT ON ACTIVITY    0.00
ALLOCATION RATIO    1.00
DESCRIPTION OF MATERIALS
COST OF MATERIALS      0.00
DESCRIPTION OF SERVICES
COST OF SERVICES       0.00

OK TO ADD (Y/N)?
```

6. Data Entry:

The information to be recorded in the spaces on this template can be taken directly from the forms contained in the "Cost Data Collection Package". Definitions of the variables listed and instructions for entering data are given below and on the following pages. (Movement from field to field is accomplished by striking <Return> or using the "Cursor Up" or "Cursor Down" keys).

a. STEP NUMBER. This number identifies the position of the activity within the sequence of activities which define separation, recruitment, selection, or development in the organization in question. In this example, a "1" appears in this blank. This indicates that we have not yet entered any separation cost data for this position and, therefore, we will begin entering information related to STEP NUMBER 1 of separation. When a number ("N") other than "1" appears in this blank, it is an indication that cost information related to "N-1" steps in the sequence of activities which define the cost element has already been entered.

b. ACTIVITY. This describes the activity which is being performed during each step. There is only one activity per step. In this case, the first activity we will record is "give notice of separation". Notice that you have limited space for entry of these descriptions. If the description is too long, the cursor will jump to the next field and you must go back to shorten it.

c. PERSON INVOLVED. This is the title of the person involved in the activity. If there is more than one person involved, you must enter him/her during another pass through this template. We will discuss this later. In the present example, we will record "supervisor" as one person involved.

d. SALARY RATE. This is the hourly rate of the person listed in PERSON INVOLVED. The rate must be in dollars and cents. The decimal point is provided to you. In this case, the salary rate is "20.50". We will record this amount, without the dollar sign, in the space provided.

e. HOURS SPENT ON ACTIVITY. This category is used to record the average number of hours the person listed in PERSON INVOLVED spends on the ACTIVITY. It is to be entered to the nearest hundredth of an hour. For example, 15 minutes = .25 hour, 5 minutes = .08 hour, etc. In this case, we will record "1 hour" as the amount of time that the supervisor spends with the individual giving notice of separation.

f. ALLOCATION RATIO. This ratio gives the allocation of cost per person separated, recruited, selected, or developed. You will have to calculate this from the information provided on the cost collection forms. It is calculated by dividing 1.00 by the number of people in the activity which are separated, selected, recruited, or developed. In the case of separation costs, the allocation ratio will always be 1.00 for every activity

since we assume that one person is leaving the organization. In any event, the allocation ratio will always be between 0 and 1.00. For example, if the PERSON INVOLVED is teaching a class (the ACTIVITY) with 20 people in it, the ALLOCATION RATIO would be .05 (1 - 20 = .05). In this case, the allocation ratio is "1.00" for the reasons given above.

g. DESCRIPTION OF MATERIALS. This is a description of any materials used in the ACTIVITY. Again, you may list only one category of materials at a time. In this example, we assume that some sort of forms are used. We will record "forms" in the space provided.

h. COST OF MATERIALS. This is the cost of materials listed in DESCRIPTION OF MATERIALS per person separated, recruited, selected, or developed. For example, if the forms mentioned above cost $.10 per form but two forms are used per person separated, then the cost listed under COST OF MATERIALS should be $.20. In our example, the cost of forms to be recorded is "$.50".

i. DESCRIPTION OF SERVICES. This is a description of any services such as travel, phone, etc. used in the ACTIVITY. In our example, we assume that none are used so we leave the space blank.

j. COST OF SERVICES. This is the cost of services per person separated, recruited, selected, or developed. In our example, we enter no cost since no services are used in this ACTIVITY.

Having entered this information, the screen now looks like this:

```
                    EXPLICIT COST RELATED TO: GS-12 Supervisory Engineer

                                  Separation costs

STEP NUMBER  1
ACTIVITY  give notice of separation
PERSON INVOLVED  supervisor
SALARY RATE   20.50
HOURS SPENT ON ACTIVITY     1.00
ALLOCATION RATIO     1.00
DESCRIPTION OF MATERIALS  forms
COST OF MATERIALS       0.50
DESCRIPTION OF SERVICES
COST OF SERVICES        0.00

OK TO ADD (Y/N)?
```

7. You are now asked, "OK TO ADD (Y/N)?". At this point, you should review the information for accuracy and respond appropriately. Whatever your response, you will then be asked, "Another entry related to this activity (Y/N)?"
   a. If your response is "N", you will be returned to the previous menu where you will be asked which cost element you are interested in.
   b. If your response is "Y", the cursor will return to the PERSON INVOLVED blank so that you may enter another person. If there are no other people involved, move the cursor down to DESCRIPTION OF MATERIALS or DESCRIPTION OF OF SERVICES blanks to add this information. Continue this procedure until you have entered all people involved and all materials and services used in the activity.

8. When you have entered all information related to the cost element in question, respond with "N" to the prompt "Another entry related to this activity (Y/N)?" and you will return to the previous menu. Then, hit <Return> and proceed backwards through the various menus which brought you to the data entry template. You will eventually arrive at the main menu.

Function 4: Enter opportunity replacement cost information

This function lets you enter cost information related to productivity changes which occur during pre-separation and training periods. This information is estimated through the use of curves which are recorded on the graphs provided to you in the "Cost Data Collection Package". Specifically, these curves are used to estimate the amount of time which a trainer spends in training an employee on the job (which results in a loss of productivity on the part of the trainer), low and increasing productivity related to an employee learning new skills, and pre-separation changes in productivity as the employee prepares to leave the organization.

1. When the screen displays the REPLACEMENT COST MENU and you type "4", the following will appear on the screen:

```
                    Enter opportunity cost data

01 GS-7 Industrial Engineer
02 GS-9 Industrial Engineer
03 GS-11 Industrial Engineer
04 GS-12 Supervisory Engineer

Work with which position?
Enter a number listed above
Hit <RETURN> to exit
```

This lists all of the positions that have been entered in Function 1. As you can see in the example, there are four positions available to work with since we entered the GS-12 Supervisory Engineer in Function 1 and the GS-7, GS-9, and GS-11 positions had been entered previously.

2. You are now asked which position you wish to work with. You may enter "01", "02", "03", or "04". In this example, we will work with the GS-12 position. We will enter "04". If we decide that we do not want to work with any position, we can hit <Return> and return to the main menu.

3. If we press "04", the following appears on the screen:

```
                OPPORTUNITY COST RELATED TO: GS-12 Supervisory Engineer

1 Separation costs
4 Development costs

                                                What cost element?
                                                Enter a number listed above
                                                Hit <RETURN> to exit
```

4. You are now asked on which element of replacement cost you wish to enter data. Note that only separation and development are listed since these are the only two elements of replacement cost in which a loss in productivity (which results in an opportunity cost) may occur. Note, also, that while we will plot "development" productivity curves for all positions, we should only plot a "separation" productivity curve for the target position which, in this example, is the GS-12 Supervisory Engineer. Again, as was the case with entry of direct cost information, if you enter information which does not meet the requirements of the career ladder which you created in Function 2, the program will not use it in the calculation of replacement cost for the target position.
5. In this example, we will work with the separation curve of the GS-12 Supervisory Engineer. To do so, we will enter "1". We might also have decided that we no longer want to work with the GS-12 position. If this is the case, we can hit <Return>, exit to the previous menu and select another position to work with. Notice that each time we hit <Return> we no longer go back to the main menu, but, instead, to the previous menu. When "1" is entered, the following is displayed on the screen:

ENTER THE OPPORTUNITY COSTS
COST RELATED TO: GS-12 Supervisory Engineer

Opportunity costs are represented by curves. These may be learning curves trainer's time spent with a person in a new position, or lost productivity due to separation. In the case of the trainer's time curve, the cost is represented by the area below the curve. The percentages for the other curves will have to be subtracted from 100% before you can enter them. The curve should be divided into 12 equal segments (or units) and those points should be entered below. Note that 70% is entered as 70. In the case where training for a position is over and 100% efficiency has not been reached, enter -1 for the first point after end of training.

Description of graph:
Rate per hour: 0.00 Hours per unit (segment): 0.0

0: 0 1: 0 2: 0 3: 0 4: 0 5: 0 6: 0

7: 0 8: 0 9: 0 10: 0 11: 0 12: 0

7. Data Entry:

The information to be recorded in the spaces on this template can be taken from the graphs in the "Cost Data Collection Package". Definitions of the variables listed and instructions for entering data are given below and on the following pages. (Movement from field to field is accomplished by striking <Return> or using the "Cursor Up" or "Cursor Down" keys).

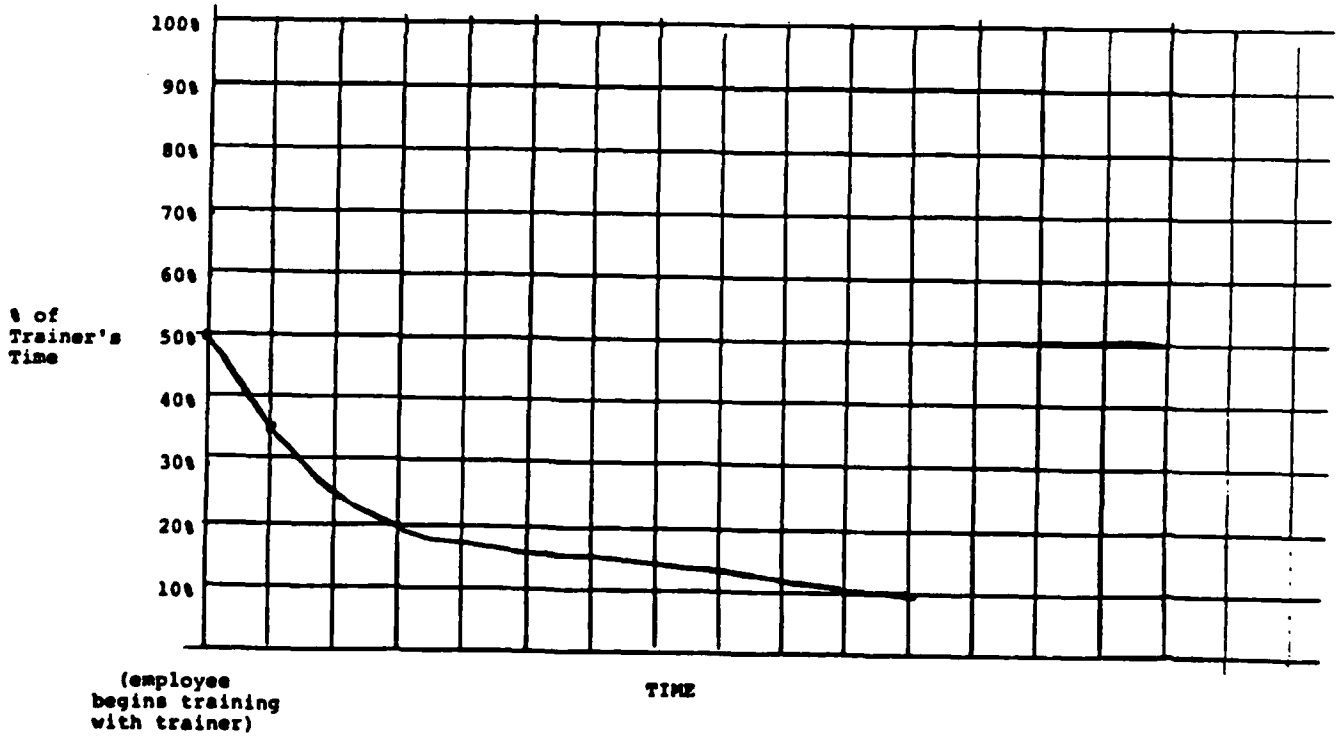
a. Description of graph: This provides a brief description of the indirect costs which are represented by the curve. In this case, we will enter "pre-separation, GS-12". Hit <Return> and the cursor will go to the next field.

b. Rate per hour: This is the dollar rate per hour of the person involved in the activity which is represented by the graph. In this case, we are interested in the GS-12 Supervisory Engineer who is separating from the organization. This person's hourly rate, $16.50, will be entered in the blank. Note that the "$" sign should not be entered. Hit <Return> and the cursor will go to the next field.

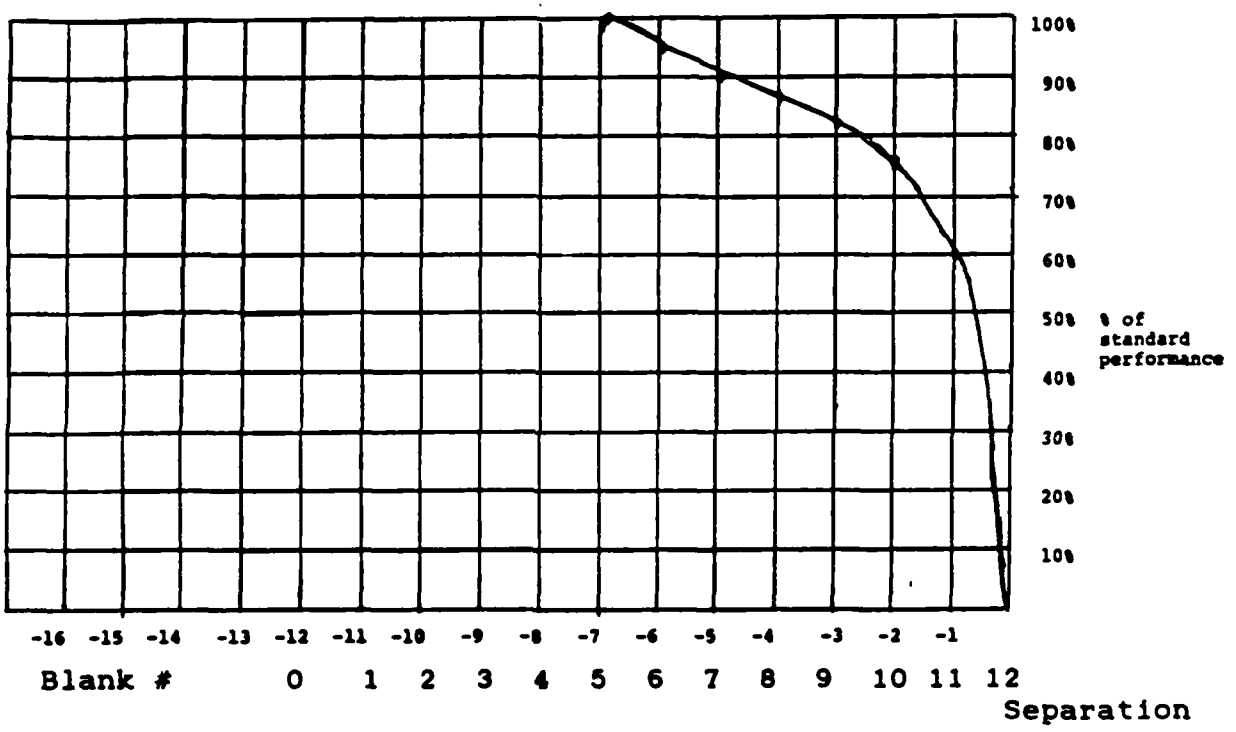
c. Hours per segment: This is the amount of time, in hours, represented by each segment of the graph. To enter information in this space, you will need to decide how many hours each segment will represent. Provided the curve extends no more than 12 units (e.g., days, weeks, months) you will have little difficulty in this procedure since you can assign 8 hours per segment for a day, 40 hours per segment for a week, and 160 hours per segment for a month. If, however, the curve extends for more than 12 days, weeks, or months, you must develop another unit schema. To keep it as uncomplicated as possible, you can simply multiply the original units by a factor of 2, 3, 4, or any whole number which will give you enough units to be able to record the information provided on the graph. If, for example your curve is 18 months in length, you might consider making each segment you record in this step equal to 2 months or 360 hours. In our example, each segment of the graph will represent one week. The curve is less than 12 weeks in length, so we will enter "40", which represents "40 hours per week."

d. Completing the segments of the chart:

1) To enter "trainer's time" information: Enter the percentage which represents the point where the curve intersects the "segment line." For example, if the curve looks like that below, "50" would be entered in the "0" blank, "35" in the "1" blank, etc. If the curve is non-continuous, ending at a point above zero as is the case in this example, enter "-1" in the last blank. If "-1" is not entered in blank 11, the program will treat the curve as if it continues past the eleventh period until it reaches zero. This may result in miscalculation of costs.

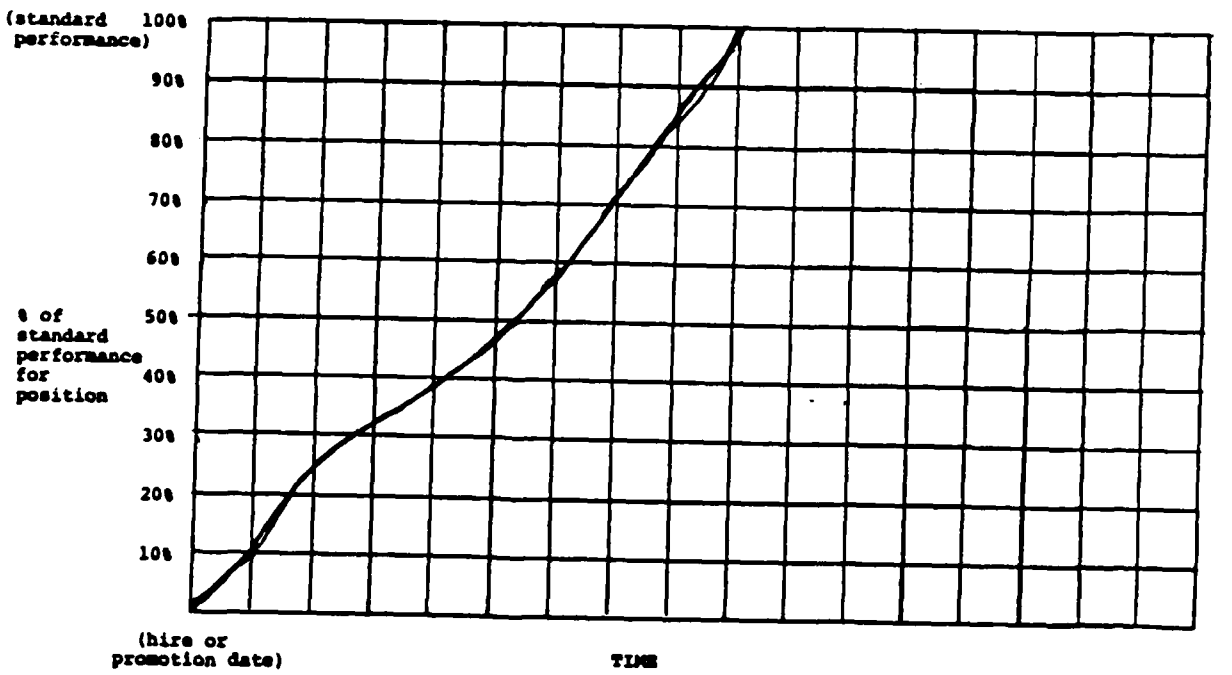


2) <u>To enter pre-separation productivity changes:</u> To enter these costs, you must invert the percentage scales since we are interested in the area above the curve. In our example, suppose that the pre-separation curve of the GS-12 Supervisory Engineer looked like:



Given this curve, the percentage entered in the fifth blank of the chart (seven units of time prior to separation) would be 0, not 100, since the person in question is producing at 100% of standard and,

2) <u>To enter productivity changes related to learning new skills:</u> To enter these costs, you must invert the percentage scales since we are interested in the area above the curve. For example, if the curve looks like that below, "100" would be entered in the "0" blank, not "0", since the person is producing at 0% of standard performance and therefore has a 100% productivity loss related to training. The percentage entered in the second blank would be "90", in the third blank, "75", etc.



therefore, has a 0% productivity loss related to pre-separation. Completing this process for this graph, the chart looks like that given below:

```
ENTER THE OPPORTUNITY COSTS
COST RELATED TO: GS-12 Supervisory Engineer

    Opportunity costs are represented by curves. These may be
learning curves, trainer's time spent with a person in a new
position, or lost productivity due to separation. In the case
of the trainer's time curve, the cost is represented by the area
below the curve. The percentages for the other curves will have
to be subtracted from 100% before you can enter them. The curve should
be divided into 12 equal segments (or units) and those points should
be entered below. Note that 70% is entered as 70. In the case
where training for a position is over and 100% efficiency has not
been reached, enter -1 for the first point after end of training.

    Description of graph:    pre-separation, GS-12
    Rate per hour:   16.50      Hours per unit (segment):   40.0

    0:  0  1:  0  2:  0  3:  0  4:  0  5:  0  6:  5

           7: 10  8: 12  9: 18 10: 24 11: 40 12: 100

    Do you want to add this (Y/N)?
```

8. When you have completed the data entry and have hit <Return> to advance you through any remaining fields on the template, "Do you want to add this (Y/N)?" appears on the screen. At this point, you should review the information for accuracy and respond appropriately. Whatever your response, you will be returned to the previous menu and may then choose to enter other opportunity cost information related to the GS-12 position or hit <Return> and proceed backwards through the various menus which brought you to this data entry template, eventually arriving at the main menu.

Function 5: Change or delete existing cost data

This function lets you review data already entered into the system and change or delete it, as necessary.

1. When the screen displays the REPLACEMENT COST MENU and you type "5", the following will appear on the screen:

```
Edit explicit or opportunity costs?
Enter <1> for explicit or <2> for opportunity


Hit <RETURN> to exit
```

2. This asks which type of cost data you wish to review and revise: explicit or opportunity. In this example, we will work with explicit costs. We will enter "1". If we decide that we do not want to work with either type of cost, we can hit <Return> and return to the main menu. If we type "1", the following appears on the screen:

```
                    EDIT EXISTING COST DATA

01 GS-7 Industrial Engineer
02 GS-9 Industrial Engineer
03 GS-11 Industrial Engineer
04 GS-12 Supervisory Engineer

Work with which position?
Enter the number listed above
Hit <RETURN> to exit
```

This lists all of the positions that have been entered in Function 1. As you can see in the example, there are four positions available to work with since we entered the GS-12 Supervisory Engineer in Function 1 and the GS-7, GS-9, and GS-11 Industrial Engineer positions had been entered previously.

3. You are now asked which position you wish to work with. You may enter "01", "02", "03", or "04". In this example, we will examine explicit cost information related to the GS-7 position so we will enter "01". If we decide that we do not want to work with any position, we can hit <Return> and return to the previous menu and select the type of cost (explicit or opportunity) we wish to work with. Notice that each time we hit <Return> we no longer return to the main menu, but, instead to the previous menu.

   When "01" is entered, the following is displayed on the screen:

```
                    COST RELATED TO: GS-7 Industrial Engineer

                    1 Separation costs
                    2 Recruitment costs
                    3 Selection costs
                    4 Development costs

                                                  Cost element?
                                                  Enter a number listed above
                                                  Hit <RETURN> to exit
```

4. You are now asked for which of the components of replacement cost you wish to review or revise data. Note that, in this particular case, recruitment and selection cost information will be available for the GS-7 Industrial Engineer since this is the entry level position in the GS-11 career ladder. This information will also be available for the GS-9 position (provided we have entered it) since this position is the entry level position in the GS-12 Supervisory Engineer career ladder. Development cost information will be available for all positions (provided we have entered such information for the new GS-12 position). Separation cost information will be available for both the GS-11 and the GS-12 (provided we have entered it) positions. In this case, we enter "2" indicating that we wish to review information related to recruitment costs. If we enter the number of a cost element for which there is no existing information available, the following message appears: "No cost entries meet conditions set. Press any key and continue." By pressing any key, the menu will be redisplayed and you may proceed.

5. When we type "2", the following appears on the screen:

```
Record No.      11    Explicit.
É
³ CURSOR   <-- --> ³        UP   DOWN   ³    DELETE    ³ Insert Mode:  Ins  ³
³  Char:        ³ Record:          ³ Char:  Del   ³ Exit:        ^End  ³
³  Field: Home End ³ Page:  PgUp  PgDn   ³ Field:  ^Y   ³ Abort:        Esc  ³
³  Pan:     ^^  ³                    ³ Record: ^U   ³ Set Options: ^Home ³
Ù
PNUMBER ENUMBER STEPNO ACTIVITY--------------------------
01      2       1      Requisition
01      2       1      Requisition
01      2       1      Requisition
01      2       2      College recruiting
01      2       2      College recruiting
```

If we move the cursor to the right by pressing the "Control" and "Cursor Right" keys similtaneously, we will see the remainder of the recorded information, which looks like:

```
Record No.      11    Explicit.
É
º CURSOR   <-- -->  º        UP   DOWN   º    DELETE    º Insert Mode:  Ins  º
º  Char:        º Record:          º Char:  Del   º Exit:        ^End  º
º  Field: Home End º Page:  PgUp  PgDn   º Field:  ^Y   º Abort:        Esc  º
º  Pan:     ^^   º                    º Record: ^U   º Set Options: ^Home º
Ù
PEOPLE---------------------- RATE_HR HOURS- ALLOC- MATERIALS------------ MCOST--- SERVICES---------------- SCOST--- EXPLAN
1st line supervisor             16.50   8.00   1.00                        0.00                          0.00 memo
Personnel Mgmt. coordinator      8.40   3.00   1.00                        0.00                          0.00 memo
Personnel Dept. representative   8.40   1.00   1.00 FORMS                  3.00                          0.00 memo
Engineer (recruiter)            18.00  70.00   0.33                        0.00 Travel expense        1000.00 memo
Staff Spec. (Recruiting coord)  13.80  18.00   0.33                        0.00 Phone                  750.00 memo
```

6. We can edit any information which is incorrect by using the "Delete" or "Insert" functions or by simply moving the cursor to the appropriate field and typing over existing information.
7. By pressing the "Control" and "End" keys similtaneously, we can return to the previous menu and select another cost element related to the position in question or hit <Return> and proceed backwards through the various menus to eventually arrive at the main menu.

Function 6: Print separation cost data

This function lets you obtain a print-out of separation costs related to the separation of a person occupying a specified position.

1. When the screen displays the REPLACEMENT COST MENU and you type "6", the following will appear on the screen:

```
                    PRINT SEPARATION COST DATA

    01 GS-7 Industrial Engineer
    02 GS-9 Industrial Engineer
    03 GS-11 Industrial Engineer
    04 GS-12 Supervisory Engineer




                    Print data for which position?
                    Enter a number listed above
                    Hit <RETURN> to exit
```

This lists all of the positions that have been entered in Function 1. As you can see in this example, there are four positions available to work with since we entered the GS-12 Supervisory Engineer in Function 1 and the GS-7, GS-9, and GS-11 Industrial Engineer positions had been entered previously.

2. You are now asked for which position you wish to print information. You may enter "01", "02", "03", or "04". However, we know that there is no separation cost information available for positions "01" and "02" since they are not "target" positions in the career ladders we have created. If we do enter "01" or "02", the print-out will contain only zeros. In this example, we will print separation cost data for the GS-11 Industrial Engineer so we will enter "03". If we decide that we do not want to work with any position, we can hit <Return> and return to the main menu.
3. When we enter "03", the printer begins printing separation cost information for the GS-11 Industrial Engineer. This information is also displayed on the screen. The printer and cursor will pause at the end of each section (i.e., at the end of "DIRECT LABOR", "INDIRECT LABOR", and "MATERIALS AND SERVICES") in order to complete calculations.
4. After all the information related to the cost of separation for the GS-11 Industrial Engineer has been printed, you will be returned to the main menu.
5. An example of the output from this operation is given on the next page.

Separation costs for GS-11 Industrial Engineer as of 06/12/85

EXPLICIT LABOR COSTS:

Activity	People involved	Rate	Hours	Cost
Notice of termination	Employee (GS-11)	14.50	0.33	4.79
Notice of termination	1st line supervisor	16.50	0.25	4.12
Notice of termination	Personnel Mgmt coordinator	8.40	0.08	0.67
Discussion of reason for separation	employee	14.50	1.00	14.50
Discussion of reason for separation	1st line supervisor	16.50	0.75	12.38
Discussion of reason for separation	2nd line supervisor	19.50	0.50	9.75
Discussion of reason for separation	Personnel assistant	8.40	0.25	2.10
Admin. functions to delete employee	Employee	14.50	4.00	58.00
Admin. functions to delete employee	Personnel Mgmt. coordinator	8.40	1.00	8.40
Admin. functions to delete employee	Other department personnel	8.40	2.00	16.80
TOTAL EXPLICIT LABOR COSTS:				131.51

OPPORTUNITY LABOR COSTS:

Pre-separation opportunity cost (see graph):	638.00
TOTAL LABOR COST (unloaded):	769.51
TOTAL LABOR COST (benefits loading = 30.0%)	1000.36

MATERIALS AND SERVICES:

Activity	Description	Cost
Notice of termination	Forms	0.10
Admin. functions to delete employee	Forms	5.00
Admin. functions to delete employee	Computer time	10.00
TOTAL MATERIALS AND SERVICE COST:		15.10
TOTAL SEPARATION COST:		1015.46

Function 7: Print recruitment cost data

This function lets you obtain a print-out of recruitment costs related to the recruitment of a person which will be developed into a target position holder.

1. When the screen displays the REPLACEMENT COST MENU and you enter "7", the following will appear on the screen:

```
                    PRINT RECRUITMENT COST DATA

        01 GS-7 Industrial Engineer
        02 GS-9 Industrial Engineer
        03 GS-11 Industrial Engineer
        04 GS-12 Supervisory Engineer


                                  Print data for which position?
                                  Enter a number listed above
                                  Hit <RETURN> to exit
```

This lists all of the positions that have been entered in Function 1. As you can see in this example, there are four positions available to work with since we entered the GS-12 Supervisory Engineer in Function 1 and the GS-7, GS-9, and GS-11 Industrial Engineer positions had been entered previously.

2. You are now asked for which position you wish to print information. You may enter "01", "02", "03", or "04". However, we know that there is only recruitment cost information available for positions "01" and "02" since they are the only entry level positions in the career ladders we have created. If we enter "03" or "04", the print-out will contain only zeros. In this example, we will print recruitment cost data for the GS-7 Industrial Engineer so we will enter "01". If we decide that we do not want to work with any position, we can hit <Return> and return to the main menu.
3. When we enter "01", the printer begins printing recruitment cost information for the GS-7 Industrial Engineer. This information is also displayed on the screen. The printer and cursor will pause at the end of each section (i.e., at the end of "DIRECT LABOR", "INDIRECT LABOR", and "MATERIALS AND SERVICES") in order to complete calculations.
4. After all the information related to the cost of recruitment for the GS-7 Industrial Engineer has been printed, you will be returned to the main menu.
5. An example of the output from this operation is given on the next page.

Recruitment costs for GS-7 Industrial Engineer as of 06/12/85

EXPLICIT LABOR COSTS:

Activity	People involved	Rate	Hours	Alloc.	Cost
Requisition	1st line supervisor	16.50	8.00	1.00	132.00
Requisition	Personnel Mgmt. coordinator	8.40	3.00	1.00	25.20
Requisition	Personnel Dept. representative	8.40	1.00	1.00	8.40
College recruiting	Engineer (recruiter)	18.00	70.00	0.33	415.80
College recruiting	Staff Spec. (Recruiting coord)	13.80	18.00	0.33	81.97
TOTAL EXPLICIT LABOR COSTS (unloaded):					663.37
TOTAL LABOR COST (benefits loading = 30.0%)					962.38

MATERIALS AND SERVICES:

Activity	Description	Cost	
Requisition	FORMS	3.00	
College recruiting	Travel expense	330.00	
College recruiting	Phone	247.50	
TOTAL MATERIALS AND SERVICE COST:			580.50
TOTAL RECRUITMENT COST:			1442.88

Function 8: Print selection cost data

This function lets you obtain a print-out of selection costs related to the selection of a person which will be developed into a target position holder.

1. When the screen displays the REPLACEMENT COST MENU and you type "8", the following will appear on the screen:

```
                    PRINT SELECTION COST DATA

01 GS-7 Industrial Engineer
02 GS-9 Industrial Engineer
03 GS-11 Industrial Engineer
04 GS-12 Supervisory Engineer

Print data for which position?
Enter a number listed above
Hit <RETURN> to exit
```

This lists all of the positions that have been enterd in Function 1. As you can see in this example, there are four positions available to work with since we entered the GS-12 Supervisory Engineer in Function 1 and the GS-7, GS-9, and GS-11 Industrial Engineer positions had been entered previously.

2. You are now asked for which position you wish to print information. You may enter "01", "02", "03", or "04". However, we know that selection cost information is only available for positions "01" and "02" since these are the entry level positions in the career ladders we have created. If we enter "03" or "04", the print-out will contain only zeros. In this example, we will print selection cost data for the GS-7 Industrial Engineer so we will enter "01". If we decide that we do not want to work with any position, we can hit <Return> and return to the main menu.
3. When we enter "01", the printer begins printing selection cost information for the GS-7 Industrial Engineer. This information is also displayed on the screen. The printer and cursor will pause at the end of each section (i.e., at the end of "DIRECT LABOR", "INDIRECT LABOR", and "MATERIALS AND SERVICES") in order to complete calculations.
4. After all the information related to the cost of selection for the GS-7 Industrial Engineer has been printed, you will be returned to the main menu.
5. An example of the output from this operation is given on the next page.

Selection costs for GS-7 Industrial Engineer as of 06/12/85

EXPLICIT LABOR COSTS:

Activity	People involved	Rate	Hours	Alloc.	Cost
Review of applications	Staffing specialist	13.80	0.25	1.00	3.45
Review of applications	Clerk	7.50	0.25	1.00	1.88
Security clearance	Clerk	7.50	10.00	0.20	15.00
Security clearance	Personnel Security specialist	13.80	3.00	0.20	8.28
Security clearance	Personnel Clerk	7.50	1.00	0.20	1.50
Interview of applicants	1st line supervisor	16.60	1.00	1.00	16.60
Staff decision to hire or not	1st line supervisor	16.50	4.00	1.00	66.00
Staff decision to hire or not	2nd line supervisor	19.50	2.00	1.00	39.00
Staff decision to hire or not	Department head	23.50	1.00	1.00	23.50
TOTAL EXPLICIT LABOR COSTS (unloaded):					175.21
TOTAL LABOR COST (benefits loading = 30.0%)					227.77

MATERIALS AND SERVICES:

Activity	Description	Cost
Security clearance	Forms	4.00
TOTAL MATERIALS AND SERVICE COST:		4.00
TOTAL SELECTION COST:		231.77

Function 9: Print development cost data

This function lets you obtain a print-out of development costs related to any position in the career ladder of the target position of interest.

1. When the screen displays the REPLACEMENT COST MENU and you type "9", the following will appear on the screen:

```
                    PRINT DEVELOPMENT COST DATA

    01 GS-7 Industrial Engineer
    02 GS-9 Industrial Engineer
    03 GS-11 Industrial Engineer
    04 GS-12 Supervisory Engineer

                                  Development costs related to?
                                  Enter a number listed above
                                  Hit <RETURN> to exit
```

This lists all of the positions that have been entered in Function 1. As you can see in this example, there are four positions available to work with since we entered the GS-12 Supervisory Engineer in Function 1 and the GS-7, GS-9, and GS-11 Industrial Engineer positions had been entered previously.

2. You are now asked for which position you wis to print information. You may enter "01", "02", "03", or "04". If you have made any changes or added new information, you must print development cost information for all positions in a career ladder before printing a replacement cost summary for the target position. In this example, we will print development cost information for only the GS-7 Industrial Engineer position, but we will include in this manual examples of print-outs obtained for the GS-9 and GS-11 positions. To print information pertaining to the GS-7 position, we will enter "01". If we decide that we do not want to work with any position, we can hit <Return> and return to the main menu.
3. When we enter "01", the printer begins printing development cost information for the GS-7 Industrial Engineer. This information is also displayed on the screen. The printer and cursor will pause at the end of each section (i.e., at the end of "DIRECT LABOR", "INDIRECT LABOR", and "MATERIALS AND SERVICES") in order to complete calculations.
4. After all the information related to the cost of development for the GS-7 Industrial Engineer has been printed, you will be returned to the main menu.
5. Examples of the output from this operation are given on the next page.

DEVELOPMENT COSTS RELATED TO: GS-7 Industrial Engineer as of 05/12/85

EXPLICIT LABOR COSTS:

Activity	People involved	Rate	Hours	Alloc.	Cost
New employee orientation	Classification specialist	13.80	0.33	0.05	0.23
New employee orientation	Staff specialist	13.80	0.33	0.05	0.23
New employee orientation	Employee development spec.	13.80	0.33	0.05	0.23
New employee orientation	Employee relations spec.	13.80	0.34	0.05	0.23
New employee orientation	EEO, QA Specialist	13.80	0.34	0.05	0.23
New employee orientation	Commanding officer	18.00	0.33	0.05	0.30
New employee orientation	Employee	10.30	2.00	1.00	20.60
Introduction of employee to system	Processing clerk	7.50	1.00	1.00	7.50
Introduction of employee to system	Employee	10.30	1.00	1.00	10.30
Univac EXEC-8 Training	Computer specialist	14.50	40.00	0.06	34.80
Univac EXEC-8 Training	Employee	10.30	40.00	1.00	412.00
Dial programming	Computer specialist	16.50	24.00	0.03	11.88
Dial programming	Employee	10.30	24.00	1.00	247.20
EEO and weapons station orient.	Specialist	13.30	1.00	0.05	0.67
EEO and weapons station orient.	Employee	10.30	1.00	1.00	10.30
Safety orientation	Safety specialist	13.30	2.00	0.04	1.06
Safety orientation	Employee	10.30	2.00	1.00	20.60
Security orientation	Security trainer	13.30	2.00	0.04	1.06
Security orientation	Employee	10.30	2.00	1.00	20.60
TOTAL EXPLICIT LABOR COSTS:					800.02
OPPORTUNITY LABOR COSTS:					
Opportunity learning costs (see graphs):					15732.72
TOTAL LABOR COST (unloaded):					16532.74
TOTAL LABOR COST (benefits loading =30.0%)					21492.56

MATERIALS AND SERVICES:

Activity	Description	Cost
Introduction of employee to system	Forms & computer time	82.00
TOTAL MATERIALS AND SERVICE COST:		82.00
TOTAL DEVELOPMENT COST:		21574.56

DEVELOPMENT COSTS RELATED TO: GS-9 Industrial Engineer as of 06/12/85

EXPLICIT LABOR COSTS:

Activity	People involved	Rate	Hours	Alloc.	Cost
Off-Site training	Employee	13.30	90.00	1.00	1197.00
TOTAL EXPLICIT LABOR COSTS:					1197.00
OPPORTUNITY LABOR COSTS:					
Opportunity learning costs (see graphs):					8320.80
TOTAL LABOR COST (unloaded):					9517.80
TOTAL LABOR COST (benefits loading =30.0%)					12373.14

MATERIALS AND SERVICES:

Activity	Description	Cost	
Off-Site training	Travel & Tuition	2500.00	
TOTAL MATERIALS AND SERVICE COST:			2500.00
TOTAL DEVELOPMENT COST:			14873.14

DEVELOPMENT COSTS RELATED TO: GS-11 Industrial Engineer as of 06/12/85

EXPLICIT LABOR COSTS:

Activity	People involved	Rate	Hours	Alloc.	Cost
Off-site training	Employee	14.50	90.00	1.00	1305.00
TOTAL EXPLICIT LABOR COSTS:					1305.00

OPPORTUNITY LABOR COSTS:

Opportunity learning costs (see graphs):	0.00
TOTAL LABOR COST (unloaded):	1305.00
TOTAL LABOR COST (benefits loading =30.0%)	1696.50

MATERIALS AND SERVICES:

Activity	Description	Cost	
Off-site training	Tuition & travel	2500.00	
TOTAL MATERIALS AND SERVICE COST:			2500.00
TOTAL DEVELOPMENT COST:			4196.50

Function 0: Print replacement cost summary

This function lets you obtain a print-out which lists the total separation, recruitment, selection, and development costs related to a specific target position.

1. Before printing the replacement cost summary, be sure that your detailed print-outs of relevant separation, recruitment, selection, and development costs (Functions 6 through 9) are up-to-date. If changes, additions, or deletions of cost data have been made, reprint the relevant cost data. (Remember that you must print all costs relevant to a target position using Functions 6 through 9 before printing the replacement cost summary if information has been added, deleted, or changed).
2. When the screen displays the REPLACEMENT COST MENU and you type "O", the following will appear on the screen:

```
                    PRINT REPLACEMENT COST SUMMARY

03 GS-11 Industrial Engineer
04 GS-12 Supervisory Engineer

Cost for which target position
Enter a number listed above
Hit <RETURN> to exit
```

This lists all of the positions that have been entered in Function 1. As you can see in this example, there are four positions available to work with since we entered the GS-12 Supervisory Engineer in Function 1 and the GS-7, GS-9, and GS-11 Industrial Engineer positions had been entered previously.

3. You are now asked for which position you wish to print information. You may enter "01", "02", "03", or "04". However, we know that positions "01" and "02" are not target positions. If we do enter "01" or "02", we will obtain information related to only the position we have entered since we have not created career ladders for these two positions. In this example, we will print a replacement cost summary for the GS-11 Industrial Engineer position, so we will enter "03". If we decide that we do not want to work with any position, we can hit <Return> and we will return to the main menu.
4. When we enter "03", the printer begins printing a replacement cost summary for the GS-11 Industrial Engineer. This information is also displayed on the screen.
5. After all the information related to the replacement cost of a GS-11 Industrial Engineer has been printed, you will be returned to the main menu.
6. An example of the output from this operation is given on the next page.

REPLACEMENT COST SUMMARY FOR GS-11 Industrial Engineer AS OF 06/12/85

Cost element	Cost
Separation cost	1015.46
Recruitment cost	1442.88
Selection cost	231.77
Development Costs -- GS-7 Industrial Engineer	21574.56
Development Costs -- GS-9 Industrial Engineer	14873.14
Development Costs -- GS-11 Industrial Engineer	4196.50
TOTAL	43334.31

Section 4

IMPLICATIONS AND SUMMARY

A microcomputer software package to enter, maintain and calculate replacement cost information for critical personnel positions potentially has widespread applications in human resource management, as well as in human resource policy formation. However, it must be recognized a software package to gather and calculate replacement cost data, as the one developed in this study, is only a beginning step.

While calculating the replacement cost for critical positions is of interest in itself, it is in the potential uses of this information where the ultimate value of this information lies. Along this line, the following are some areas of human resource management where replacement cost information is likely to have applicability:

1. Turnover management -- Replacement cost measurement coupled with human resource mobility patterns and especially turnover rates highlights the magnitude of financial resources which must be sacrificed to maintain and/or replace lost employees. This act of measurement in itself can feature the need for management to develop strategies for the conservation of human resources at its disposal.

2. Compensation analysis -- Optimal compensation for a personnel classification, taking into account positional

replacement costs and projected personnel mobility under alternative compensation scenarios can be developed. Policy questions, for example whether or not to allow inter-regional differences in compensation because of factors such as competition in regional labor markets, can be addressed.

3. Evaluation of training -- Alternative training programs for employees in the career path(s) leading to a designated position could be evaluated and selected on a cost effective basis. The effects of the alternative programs on career mobility and productivity could be estimated and coupled with the development (training) component of replacement cost in order to do this analysis.

4. Personnel budgeting -- Annual personnel acquisition and training budgets necessary to reach intermediate and long-term personnel goals can be built using replacement cost data. Budgets could be generated for selected personnel classifications or in aggregate (for an entire department or division). The explicit financial cash outlays as well as the opportunity costs involved in meeting the personnel plan could be separately detailed. (Opportunity costs include efficiency measures typically relating to personnel training and separation.) These budgets could reflect currently documented components of the replacement cost for a position, and could provide for adjusting these costs in each year of a multiple year personnel budget plan.

5. Make Or Buy Decisions -- Replacement cost data can be used to support the analysis of decisions regarding whether to acquire employees for targeted personnel classifications from the outside, to train totally from within, or bring personnel in at an intermediate level and do more limited internal training. The economic consequences of each personnel acquisition strategy could be calculated and evaluated in light of any other non-financial policy consideration which may exist in an organization.

Hence, this study is seen as providing a necessary first step in using Human Resource Accounting replacement cost information in human resource decision making. The measuring and maintaining of replacement cost data for critical positions is a prerequisite to analyze personnel issues in monetary terms. The software provided in this study can be a substantive aid in doing so. However, it is in in the building of models to effectively use this information in human resource planning and decision making (as suggested above) where the full utility of replacement cost data will be seen.

APPENDIX A

INSTRUCTIONS FOR USING THE COST DATA COLLECTION PACKAGE

COST DATA COLLECTION PACKAGE

Introduction

This package of forms and graphs is to be used in collecting information on the costs related to the recruitment, selection, development (training), and separation (termination) of an employee. This information will be collected by answering six basic questions:

1. What are the normal steps that the organization takes to recruit, select, develop, and terminate (separate) an employee? In other words, what are the "definitions" of recruitment, selection, development (training), and separation (termination) in the organization?
2. What organizational members are the principal actors in each step? "Who does what" in recruiting, selecting, developing, and terminating (separating) and employee?
3. What is the average time these principal actors spend on these activities per employee recruited, selected, developed, or terminated (separated)?
4. What is the hourly rate (including benefits) of each of the principal actors?
5. What materials (forms, advertising space, training manuals, etc.) are used in the recruitment, selection, development (training) and termination (separation) of an employee and what do these materials cost?
6. What services (travel expenses, phone charges, etc.) are employed to recruit, select, develop (train), and terminate (separate) an employee and what do these services cost?

Definitions

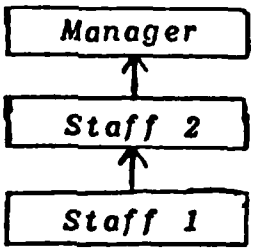
As you begin to complete the forms and graphs included in this package, several definitions may be useful.

1. Separation costs. The costs incurred as a result of a position holder leaving the organization. There are two types of separation: 1) voluntary and 2) involuntary. Voluntary separation is initiated by the employee, while involuntary separation is initiated by the organization. The two types of separation may result in differing costs to the organization.
2. Recruitment costs. The costs incurred to identify possible sources of human resources, including both inside and outside of the organization. These costs are also incurred to attract possible future members of an organization.
3. Selection costs. The costs incurred to determine who should and who should not be offered employment. These include all costs incurred in selecting people for membership in an organization.
4. Development costs. The costs incurred in training individuals so as to bring them up to a level of productivity normally expected at a given position.
5. Replacement Cost of Human Resources. The sacrifice that would have to be incurred today to replace human resources presently employed.
6. Standard performance. The level of performance of an "average" employee at a given position within the organization.

Importance of Career Ladders

Career ladders are important since they determine the positions on which cost information must be collected. If the critical position (the position of interest to the organization) is a "non-entry" level position, the recruitment, selection, and development costs must include all costs incurred to "grow" an entry level person into a person who can fill the position in question.

Exhibit 1



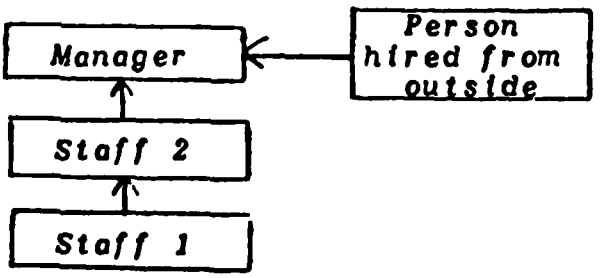
If, for example, the career ladder looks like that shown in Exhibit 1 and you are interested in the costs incurred to recruit, select, and develop a manager, you will need to perform three steps:

1. Calculate the costs incurred to recruit, select, and develop a "Staff 1".
2. Add to #1 the costs to develop a "Staff 2" from a "Staff 1".
3. Add to the total costs already calculated the costs to develop a "Manager" from a "Staff 2".

Separation costs will only be calculated for the "terminal" position which, in this case, is the "Manager" position.

The system of collecting cost information becomes slightly more complex when alternative career paths exist. A case of two alternative career paths exists when a maanger may be hired from without or "grown" from within as shown in Exhibit 2.

Exhibit 2



To calculate the "replacement" cost of a manager in this case, the costs of hiring a manager from within and the costs of hiring a manager from without must be calculated. This involves:

1. Calculating the costs to grow a manager. These are the costs incurred to recruit, select, and develop a "Staff 1", plus the costs to develop a "Staff 2", plus the costs to develop a "Manager".

2. *Calculating the costs to buy a manager. These are the costs incurred to recruit, select, and train a Manager (hired from the outside).*

In this case, two sets of forms and graphs must be completed: one set outlining the costs of career path #1 and the other outlining the costs associated with career path #2. Only one set of forms and graphs need to be completed for separation costs (one graph for volunatary and one for involuntary separation) since these costs are not dependent on the career path.

General Instructions for Forms and Graphs

1. *All forms and graphs assume that there is 1 vacant position for which recruiting and selection is occurring. If it is the case that two or more positions are normally involved in the recruitment and selection process, please indicate this on the forms.*
2. *Please keep in mind that the more information that you provide on the forms, the more accurate the calculated costs of separation, recruitment, selection, and development will be.*
3. *Examples are included to aid you in understanding the information asked for on the forms and graphs.*
4. *Each form and graph has its own set of instructions.*

FORM #1: SEPARATION COSTS PER _____

1. *Decide whether or not this form will be used for collecting cost information on voluntary or involuntary separation. You will need to collect information on both types of separation costs, and you should use a separate form for each. In both cases, follow these instructions. Indicate the type of separation by circling either "voluntary" or "involuntary" on the form.*

2. *Fill in the blank indicating the position to be studied.*

3. *In the first column of the form, list all of the steps your organization normally completes in order to terminate an employee. Examples of steps include:*
   - *Notice of termination*
   - *Exit interview*
   - *Forms which need to be completed.*

4. *In the second column, briefly explain what occurs in each step.*

Separation Costs per _____ voluntary involuntary

Description of Activity	Explanation of Activity	Who is involved in this Activity?	Salary rate of principal actor(s) involved	Average time spent by principal actor(s) on this activity	Materials Forms, letters, manuals, etc.		Services Travel, phone, etc.	
					What?	Cost	What?	Cost
Exit Interview	Employee meets with supervisor and department head to discuss reasons for termination.							

5. *In the third column, list <u>all</u> prinicipal actors who participate in the activity steps <u>including</u> the employee who is leaving the organization.*

Separation Costs per _____ voluntary involuntary

Description of Activity	Explanation of Activity	Who is involved in this Activity?	Salary rate of principal actor(s) involved	Average time spent by principal actor(s) on this activity	Materials Forms, letters, manuals, etc.		Services Travel, phone, etc.	
					What?	Cost	What?	Cost
Exit Interview	Employee meets with supervisor and department head to discuss reasons for termination.	1st line supervisor Department Head Employee						

6. *In the fourth column, record the hourly rates for each of the principal actors.*

Separation Costs per _____ voluntary involuntary

Description of Activity	Explanation of Activity	Who is involved in this Activity?	Salary rate of principal actor(s) involved	Average time spent by principal actor(s) on this activity	Materials Forms, letters, manuals, etc.		Services Travel, phone, etc.	
					What?	Cost	What?	Cost
Exit Interview	Employee meets with supervisor and department head to discuss reasons for termination.	1st line supervisor Department Head Employee	$15.00/hr. $30.00/hr. $10.00/hr.					

7. *In column #5, record the average amount of time that each of the principal actors spends on each activity.*

Separation Costs per _____ voluntary involuntary

Description of Activity	Explanation of Activity	Who is involved in this Activity?	Salary rate of principal actor(s) involved	Average time spent by principal actor(s) on this activity	Materials Forms, letters, manuals, etc.		Services Travel, phone, etc.	
					What?	Cost	What?	Cost
Exit Interview	Employee meets with supervisor and department head to discuss reasons for termination.	1st line supervisor	$15.00/hr.	.50 hr.				
		Department Head	$30.00/hr.	.50 hr.				
		Employee	$10.00/hr.	.50 hr.				

8. *In column #6, list any materials used in this activity and in column #7 list the cost of these materials. If no materials are used, please indicate this by writing "None" in columns #6 and #7.*

Separation Costs per _____ voluntary involuntary

Description of Activity	Explanation of Activity	Who is involved in this Activity?	Salary rate of principal actor(s) involved	Average time spent by principal actor(s) on this activity	Materials Forms, letters, manuals, etc.		Services Travel, phone, etc.	
					What?	Cost	What?	Cost
Exit Interview	Employee meets with supervisor and department head to discuss reasons for termination.	1st line supervisor	$15.00/hr.	.50 hr.	Form for recording outcome of interview	$0.05		
		Department Head	$30.00/hr.	.50 hr.				
		Employee	$10.00/hr.	.50 hr.				

9. *In column #8, list any services used to accomplish this activity and in column #9 record the cost of these services. If no services are used, please indicate this by writing "None" in columns #8 and #9.*

Separation Costs per _____ voluntary involuntary

Description of Activity	Explanation of Activity	Who is involved in this Activity?	Salary rate of principal actor(s) involved	Average time spent by principal actor(s) on this activity	Materials Forms, letters, manuals, etc.		Services Travel, phone, etc.	
					What?	Cost	What?	Cost
Exit Interview	Employee meets with supervisor and department head to discuss reasons for termination.	1st line supervisor	$15.00/hr.	.50 hr.	Form for recording outcome of interview	$0.05	None	None
		Department Head	$30.00/hr.	.50 hr.				
		Employee	$10.00/hr.	.50 hr.				

END OF FORM #1, GO ON TO FORM #2

Separation Costs per _____ voluntary involuntary

Description of Activity	Explanation of Activity	Who is involved in this Activity?	Salary rate of principal actor(s) involved	Average time spent by principal actor(s) on this activity	Materials Forms, letters, manuals, etc.		Services Travel, phone, etc.	
					What?	Cost	What?	Cost

FORM #2: RECRUITMENT COSTS PER _____

1. *Fill in the blank indicating the position to be studied. (Remember, if this is a non-entry level position, you will need to complete the form for the entry-level position from which candidates for the position in question are "grown").*

2. *In the first column of the form, list all of the steps your organization normally takes to identify possible sources of human resources to fill a vacated position. Examples of steps include:*
   - *Requisition*
   - *Newspaper advertising*
   - *College recruiting*

3. *In the second column, briefly explain what occurs in each step.*

Recruitment Costs per _____

Description of Activity	Explanation of Activity	Who is involved in this Activity?	Salary rate of principal actor(s) involved	Average time spent by principal actor(s) on this activity	Average number of applicants impacted per activity	Materials Forms, letters, manuals, etc.		Services Travel, phone etc.	
						What?	Cost	What?	C
College Recruiting	*Colleges are contacted and recruiting schedules are set. College recruited visits colleges and interviews applicants.*								

4. *In the third column, list <u>all</u> principal actors who participate in the activity steps.*

Recruitment Costs per _____

Description of Activity	Explanation of Activity	Who is involved in this Activity?	Salary rate of principal actor(s) involved	Average time spent by principal actor(s) on this activity	Average number of applicants impacted per activity	Materials Forms, letters, manuals, etc.		Services Travel, phone etc.	
						What?	Cost	What?	C
College Recruiting	*Colleges are contacted and recruiting schedules are set. College recruited visits colleges and interviews applicants.*	*Staff person (Scheduler)* *College Recruiter*							

5. *In the fourth column, record the hourly rates for each of the principal actors.*

Recruitment Costs per _____

Description of Activity	Explanation of Activity	Who is involved in this Activity?	Salary rate of principal actor(s) involved	Average time spent by principal actor(s) on this activity	Average number of applicants impacted per activity	Materials Forms, letters, manuals, etc.		Services Travel, phone etc.	
						What?	Cost	What?	Co
College Recruiting	*Colleges are contacted and recruiting schedules are set. College recruited visits colleges and interviews applicants.*	*Staff person (Scheduler)* *College Recruiter*	*$ 7.50/hr.* *$15.00/hr.*						

6. *In column #5, record the average amount of time that each of the principal actors spends on each activity.*

Recruitment Costs per _____

Description of Activity	Explanation of Activity	Who is involved in this Activity?	Salary rate of principal actor(s) involved	Average time spent by principal actor(s) on this activity	Average number of applicants impacted per activity	Materials Forms, letters, manuals, etc.		Services Travel, phone etc.	
						What?	Cost	What?	Co
College Recruiting	*Colleges are contacted and recruiting schedules are set. College recruited visits colleges and interviews applicants.*	*Staff person (Scheduler)*	*$ 7.50/hr.*	*8 hours*					
		College Recruiter	*$15.00/hr.*	*70 hours for interviews*					
				80 hours travel time					

7. *In column #6, list the number of applicants that the activity affects or impacts. For example, a newspaper advertisement may bring 30 requests for applications, an internal acquisition may result in 4 requests for applications, and a college recruiter may interview 100 applicants for the position.*

Recruitment Costs per _____

Description of Activity	Explanation of Activity	Who is involved in this Activity?	Salary rate of principal actor(s) involved	Average time spent by principal actor(s) on this activity	Average number of applicants impacted per activity	Materials Forms, letters, manuals, etc.		Services Travel, phone etc.	
						What?	Cost	What?	Co
College Recruiting	*Colleges are contacted and recruiting schedules are set. College recruited visits colleges and interviews applicants.*	*Staff person (Scheduler)*	*$ 7.50/hr.*	*8 hours*					
		College Recruiter	*$15.00/hr.*	*70 hours for interviews*	*360 applicants interviewed*				
				80 hours travel time					

8. *In column #7, list any materials used in this activity and in column #8 list the cost of these materials. If no materials are used, please indicate this by writing "None" in columns #7 and #8.*

Recruitment Costs per _____

Description of Activity	Explanation of Activity	Who is involved in this Activity?	Salary rate of principal actor(s) involved	Average time spent by principal actor(s) on this activity	Average number of applicants impacted per activity	Materials Forms, letters, manuals, etc.		Services Travel, phone etc.	
						What?	Cost	What?	Co
College Recruiting	*Colleges are contacted and recruiting schedules are set. College recruited visits colleges and interviews applicants.*	*Staff person (Scheduler)*	*$ 7.50/hr.*	*8 hours*		*Letters & Envelopes to confirm schedule*	*$0.03 per letter x 30 letters = $0.90*		
		College Recruiter	*$15.00/hr.*	*70 hours for interviews*	*360 applicants interviewed*	*Postage*	*$0.30 per letter x 30 letters = $6.00*		
				80 hours travel time		*Forms to record interview inform.*	*$0.05 per form x 360 applicants = $7.00*		

9. In column #9, list any services used to accomplish this activity and in column #10 record the cost of these services. If no services are used, please indicate this by writing "None" in columns #9 and #10.

Recruitment Costs per _____

Description of Activity	Explanation of Activity	Who is involved in this Activity?	Salary rate of principal actor(s) involved	Average time spent by principal actor(s) on this activity	Average number of applicants impacted per activity	Materials Forms, letters, manuals, etc.		Services Travel, phone, etc.	
						What?	Cost	What?	Cost
College Recruiting	Colleges are contacted and recruiting schedules are set. College recruited visits colleges and interviews applicants.	Staff person (Scheduler) College Recruiter	$ 7.50/hr. $15.00/hr.	8 hours 70 hours for interviews 80 hours travel time	160 applicants interviewed	Letters & Envelopes to confirm schedule	$0.03 per letter x 30 letters = $0.90	Phone charges	$0.50 per call x 30 = $9.00
						Postage	$0.20 per letter x 80 letters = $6.00	Travel expenses	$1000
						Forms to record interview inform.	$0.05 per form x 160 applicants = $7.00		

END OF FORM #2, GO ON TO FORM #3

Recruitment Costs per _____

Description of Activity	Explanation of Activity	Who is involved in this Activity?	Salary rate of principal actor(s) involved	Average time spent by principal actor(s) on this activity	Average number of applicants impacted per activity	Materials Forms, letters, manuals, etc.		Services Travel, phone, etc.	
						What?	Cost	What?	Cost

FORM #3: SELECTION COSTS PER _____

1. *Fill in the blank indicating the position to be studied. (Remember, if this is a non-entry level position, you will need to complete the form for the entry-level position from which candidates for the position in question are "grown").*

2. *In the first column of the form, list all of the steps your organization normally takes to determine who should be offered employment. Examples of steps include:*
   - *Reviewing applications*
   - *Interviews*
   - *Discussion among appropriate personnel to determine who will be selected*

3. *In the second column, briefly explain what occurs in each step.*

Selection Costs per _____

Description of Activity	Explanation of Activity	Who is involved in this Activity?	Salary rate of principal actor(s) involved	Average time spent by principal actor(s) on this activity	Average number of applicants impacted per activity	Materials Forms, letters, manuals, etc.		Services Travel, phone, etc.	
						What?	Cost	What?	Cost
Department interview	*1st line supervisor interviews people to determine applicants' qualifications for the job.*								

4. *In the third column, list <u>all</u> principal actors who participate in the activity steps.*

Selection Costs per _____

Description of Activity	Explanation of Activity	Who is involved in this Activity?	Salary rate of principal actor(s) involved	Average time spent by principal actor(s) on this activity	Average number of applicants impacted per activity	Materials Forms, letters, manuals, etc.		Services Travel, phone, etc.	
						What?	Cost	What?	Cost
Department interview	*1st line supervisor interviews people to determine applicants' qualifications for the job.*	*1st line supervisor*							

5. *In the fourth column, record the hourly rates for each of the principal actors.*

Selection Costs per _____

Description of Activity	Explanation of Activity	Who is involved in this Activity?	Salary rate of principal actor(s) involved	Average time spent by principal actor(s) on this activity	Average number of applicants impacted per activity	Materials Forms, letters, manuals, etc.		Services Travel, phone, etc.	
						What?	Cost	What?	Cost
Department interview	*1st line supervisor interviews people to determine applicants' qualifications for the job.*	*1st line supervisor*	*$16.00/hr.*						

6. *In column #5, record the average amount of time that each of the principal actors spends on each activity.*

Selection Costs per _____

Description of Activity	Explanation of Activity	Who is involved in this Activity?	Salary rate of principal actor(s) involved	Average time spent by principal actor(s) on this activity	Average number of applicants impacted per activity	Materials Forms, letters, manuals, etc.		Services Travel, phone, etc.	
						What?	Cost	What?	Cost
Department interview	1st line supervisor interviews people to determine applicants' qualifications for the job.	1st line supervisor	$15.00/hr.	8 hours					

7. *In column #6, list the number of applicants that the activity affects or impacts. For example, 15 applications may be reviewed by members of the personnel department and 8 applicants may be interviewed. (Remember, we are assuming that one position is vacant).*

Selection Costs per _____

Description of Activity	Explanation of Activity	Who is involved in this Activity?	Salary rate of principal actor(s) involved	Average time spent by principal actor(s) on this activity	Average number of applicants impacted per activity	Materials Forms, letters, manuals, etc.		Services Travel, phone, etc.	
						What?	Cost	What?	Cost
Department interview	1st line supervisor interviews people to determine applicants' qualifications for the job.	1st line supervisor	$15.00/hr.	8 hours	8 applicants				

8. *In column #7, list any materials used in this activity and in column #8 list the cost of these materials. If no materials are used, please indicate this by writing "None" in columns #7 and #8.*

Selection Costs per _____

Description of Activity	Explanation of Activity	Who is involved in this Activity?	Salary rate of principal actor(s) involved	Average time spent by principal actor(s) on this activity	Average number of applicants impacted per activity	Materials Forms, letters, manuals, etc.		Services Travel, phone, etc.	
						What?	Cost	What?	Cost
Department interview	1st line supervisor interviews people to determine applicants' qualifications for the job.	1st line supervisor	$15.00/hr.	8 hours	8 applicants	forms to record interview information	$0.05 per form $0.40		

9. *In column #9, list any services used to accomplish this activity and in column #10 record the cost of these services. If no services are used, please indicate this by writing "None" in columns #9 and #10.*

Selection Costs per _____

Description of Activity	Explanation of Activity	Who is involved in this Activity?	Salary rate of principal actor(s) involved	Average time spent by principal actor(s) on this activity	Average number of applicants impacted per activity	Materials Forms, letters, manuals, etc.		Services Travel, phone, etc.	
						What?	Cost	What?	Cost
Department interview	1st line supervisor interviews people to determine applicants' qualifications for the job.	1st line supervisor	$15.00/hr.	8 hours	8 applicants	forms to record interview information	$0.05 per form $0.40	Travel expenses (8 out of area applicants interviewed per opening)	$200 per applic. x 8 $1600

END OF FORM #3, GO ON TO FORM #4

Selection Costs per _____

Description of Activity	Explanation of Activity	Who is involved in this Activity?	Salary rate of principal actor(s) involved	Average time spent by principal actor(s) on this activity	Average number of applicants impacted per activity	Materials Forms, letters, manuals, etc.		Services Travel, phone, etc.	
						What?	Cost	What?	Cost

FORM #4: DEVELOPMENT COSTS PER _____

1. *Fill in the blank indicating the position to be studied. (Remember, if this is a non-entry level position, you will need to collect information on the development costs of all positions through which an individual progresses before reaching the position of interest).*

2. *In the first column of the form, list all of the steps your organization normally takes to train individuals so as to bring them up to a level of productivity normally expected at the position in question. Examples of steps include:*
   - *Initial orientation to the organization*
   - *Formal workshops (specify)*
   - *On-the-job training*

3. *In the second column, briefly explain what occurs in each step.*

Development Costs per_____

Description of Activity	Explanation of Activity	Who is involved in this Activity?	Salary rate of principal actor(s) involved	Average time spent by principal actor(s) on this activity	Average number of new employees impacted per activity	Materials Forms, letters, manuals, etc.		Services Travel, phone, etc.	
						What?	Cost	What?	Cost
Initial Orientation	*Organization's policies and procedures are formally introduced to new employees.*								

4. *In the third column, list <u>all</u> principal actors who participate in the activity steps including the new employees.*

Development Costs per_____

Description of Activity	Explanation of Activity	Who is involved in this Activity?	Salary rate of principal actor(s) involved	Average time spent by principal actor(s) on this activity	Average number of new employees impacted per activity	Materials Forms, letters, manuals, etc.		Services Travel, phone, etc.	
						What?	Cost	What?	Cost
Initial Orientation	*Organization's policies and procedures are formally introduced to new employees.*	*Employee Relations Specialist* *EEO Specialist* *Department Head* *Personnel Head* *New Employee*							

5. *In the fourth column, record the hourly rates for each of the principal actors.*

Development Costs per_____

Description of Activity	Explanation of Activity	Who is involved in this Activity?	Salary rate of principal actor(s) involved	Average time spent by principal actor(s) on this activity	Average number of new employees impacted per activity	Materials Forms, letters, manuals, etc.		Services Travel, phone, etc.	
						What?	Cost	What?	Cost
Initial Orientation	*Organization's policies and procedures are formally introduced to new employees.*	*Employee Relations Specialist* *EEO Specialist* *Department Head* *Personnel Head* *New Employee*	*$12.00/hr.* *$12.00/hr.* *$30.00/hr.* *$10.00/hr.*						

6. *In column #5, record the average amount of time that each of the principal actors spends on each activity.*

Development Costs per_____

Description of Activity	Explanation of Activity	Who is involved in this Activity?	Salary rate of principal actor(s) involved	Average time spent by principal actor(s) on this activity	Average number of new employees impacted per activity	Materials Forms, letters, manuals, etc.		Services Travel, phone, etc.	
						What ?	Cost	What ?	Cost
Initial Orientation	*Organization's policies and procedures are formally introduced to new employee.*	*Employee Relations Specialist*	*$12.00/hr.*	*.25 hr.*					
		EEO Specialist	*$12.00/hr.*	*.25 hr.*					
		Department Head	*$30.00/hr.*	*.25 hr.*					
		Personnel Head	*$18.00/hr.*	*.25 hr.*					
		New Employee	*$ 8.00/hr.*	*3.00 hr.*					

7. *In column #6, record the number of new employees that the activity affects or impacts. For example, orientation and formal classroom training sessions may involve 30 new employees while on-the-job training may only involve 1 employee working with his or her supervisor.*

Development Costs per_____

Description of Activity	Explanation of Activity	Who is involved in this Activity?	Salary rate of principal actor(s) involved	Average time spent by principal actor(s) on this activity	Average number of new employees impacted per activity	Materials Forms, letters, manuals, etc.		Services Travel, phone, etc.	
						What ?	Cost	What ?	Cost
Initial Orientation	*Organization's policies and procedures are formally introduced to new employee.*	*Employee Relations Specialist*	*$12.00/hr.*	*.25 hr.*	*30*				
		EEO Specialist	*$12.00/hr.*	*.25 hr.*					
		Department Head	*$30.00/hr.*	*.25 hr.*					
		Personnel Head	*$18.00/hr.*	*.25 hr.*					
		New Employee	*$ 8.00/hr.*	*3.00 hr.*					

8. *In column #7, list any materials used in this activity and in column #8 list the cost of these materials. If no materials are used, please indicate this by writing "None" in columns #7 and #8.*

Development Costs per_____

Description of Activity	Explanation of Activity	Who is involved in this Activity?	Salary rate of principal actor(s) involved	Average time spent by principal actor(s) on this activity	Average number of new employees impacted per activity	Materials Forms, letters, manuals, etc.		Services Travel, phone, etc.	
						What ?	Cost	What ?	Cost
Initial Orientation	*Organization's policies and procedures are formally introduced to new employee.*	*Employee Relations Specialist*	*$12.00/hr.*	*.25 hr.*	*30*	*manuals (policy & procedures)*	*$5.00 ea. x 30 = $100.00*		
		EEO Specialist	*$12.00/hr.*	*.25 hr.*					
		Department Head	*$30.00/hr.*	*.25 hr.*		*health & safety information*	*$2.00 ea. x 20 = $40.00*		
		Personnel Head	*$18.00/hr.*	*.25 hr.*					
		New Employee	*$ 8.00/hr.*	*3.00 hr.*					

9. *In column #9, list any services used to accomplish this activity and in column #10 record the cost of these services. If no services are used, please indicate this by writing "None" in columns #9 and #10.*

Development Costs per_____

Description of Activity	Explanation of Activity	Who is involved in this Activity?	Salary rate of principal actor(s) involved	Average time spent by principal actor(s) on this activity	Average number of new employees impacted per activity	Materials Forms, letters, manuals, etc.		Services Travel, phone, etc.	
						What ?	Cost	What ?	Cost
Initial Orientation	*Organization's policies and procedures are formally introduced to new employees.*	*Employee Relations Specialist*	*$12.00/hr.*	*.25 hr.*	*20*	*manuals (policy & procedures)*	*$5.00 ea. x 20 $100.00*	*None*	*None*
		EEO Specialist	*$12.00/hr.*	*.25 hr.*					
		Department Head	*$30.00/hr.*	*.25 hr.*		*health & safety information*	*$2.00 ea. x 20 $40.00*		
		Personnel Head	*$18.00/hr.*	*.25 hr.*					
		New Employee	*$ 8.00/hr.*	*2.00 hr.*					

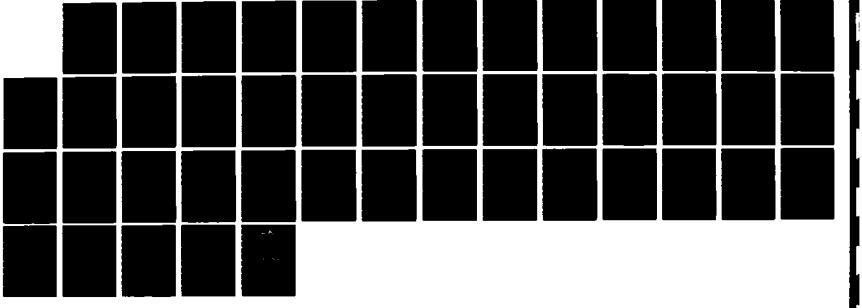
END OF FORM #4, GO ON TO GRAPH #1

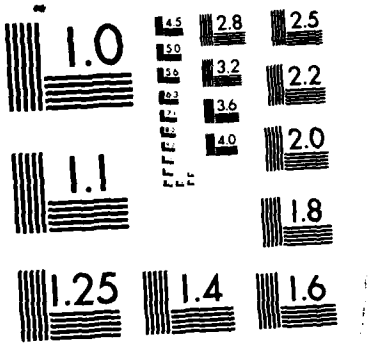
Development Costs per_____

Description of Activity	Explanation of Activity	Who is involved in this Activity?	Salary rate of principal actor(s) involved	Average time spent by principal actor(s) on this activity	Average number of new employees impacted per activity	Materials Forms, letters, manuals, etc.		Services Travel, phone, etc.	
						What?	Cost	What?	Cost

AD-A163 045 HUMAN RESOURCE ACCOUNTING: OPERATIONALIZATION AND EFFECTS OF HUMAN RESOUR (U) CALIFORNIA UNIV LOS ANGELES CENTER FOR HUMAN RESOURCE MANAGEM... 2/2

UNCLASSIFIED E G FLAMHOLTZ 20 DEC 85 CHRM-85-01 F/G 5/1 NL





GRAPH #1: CHANGE IN PRODUCTIVITY DUE TO PENDING SEPARATION OF _____

Introduction: This graph is intended as a way to assess the change in productivity (if one occurred) an average employee exhibits prior to leaving the organization. You will need to complete two different graphs: one for voluntary and one for involuntary separation.

Instructions:

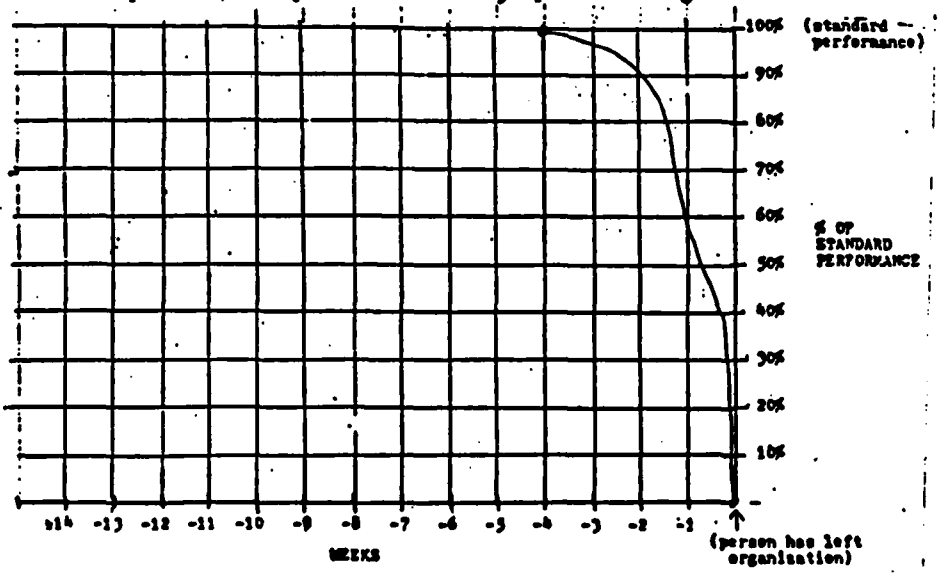
1. *Indicate the type of separation that the change in productivity is being plotted for by circling either voluntary or involuntary at the top of the graph.*

2. *Fill in the blank indicating the position of interest.*

3. *Think about the following questions:*
   a. *How did the percentage of productivity for the employee vary across time prior to exit?*
   b. *How long was the pre-exit, post-decision to separate time period (e.g., was there any noticeable change in productivity prior to official notice of intention to separate)?*
   c. *What percentage of performance was the employee exhibiting on the day just prior to exit from the organization?*

4. *Assume that the employee in question was at standard performance prior to the decision (by the organization or the employee) to separate from the organization and that on the day of departure from the organization, the productivity of this employee was 0% of standard performance.*

5. *An example of a productivity plot is given below.*

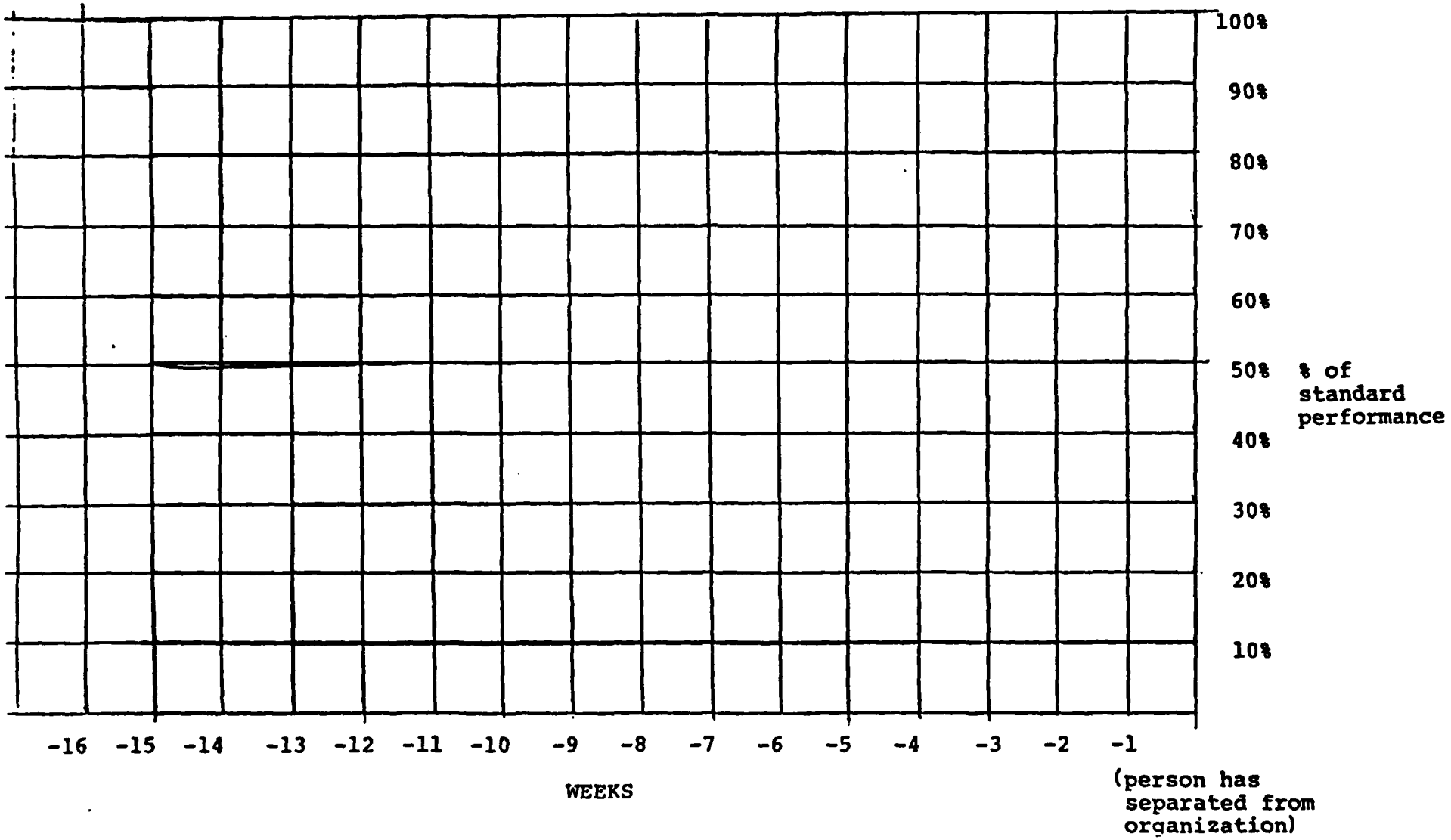


6. *Now please plot the productivity "curve" or "line" on the attached graph.*

END OF GRAPH #1, GO ON TO GRAPH #2

CHANGE IN PRODUCTIVITY DUE TO PENDING SEPARATION OF _____

voluntary involuntary



GRAPH #2: PERCENTAGE OF TRAINER'S TIME SPENT WITH _____

Introduction: This graph will be used to estimate the percentage of time a trainer spends in developing an employee (excluding classroom training). A trainer is defined as anyone who spends a portion of their work-day in helping to develop an employee's job capabilities (e.g., a supervisor, a co-worker, etc.). The employee in question can be a "new" employee or an employee who is being developed so as to be promoted to a new postion within the organization.

Instructions:

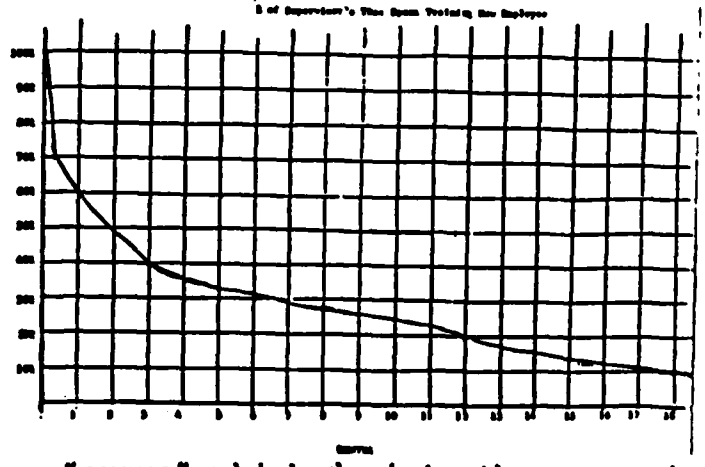
1. *Fill in the blank indicating the position of interest. (Remember, if this is a non-entry level position, you will need to complete graphs for all positions which the individual holds in order to "grow" into the position in question).*

2. *Fill in the blank indicating the trainer's title. (A separate graph must be used to plot the time that each trainer spends with the employee in question, if more than one person serves as "trainer").*

3. *Please indicate on the lower axis what the scale of "time" will be (weeks, months, days).*

4. *Assuming that the employee has just entered the position in question, think about the following questions:*
   a. *What percentage of the trainer's work week/day is normally spent training an employee in the position in question over the course of his or her training period? (This percentage may vary over time).*
   b. *In terms of this trainer's involvement, how long was the training period for an employee in the position in question?*

5. *An example of how one person plotted this percentage of time is given below:*

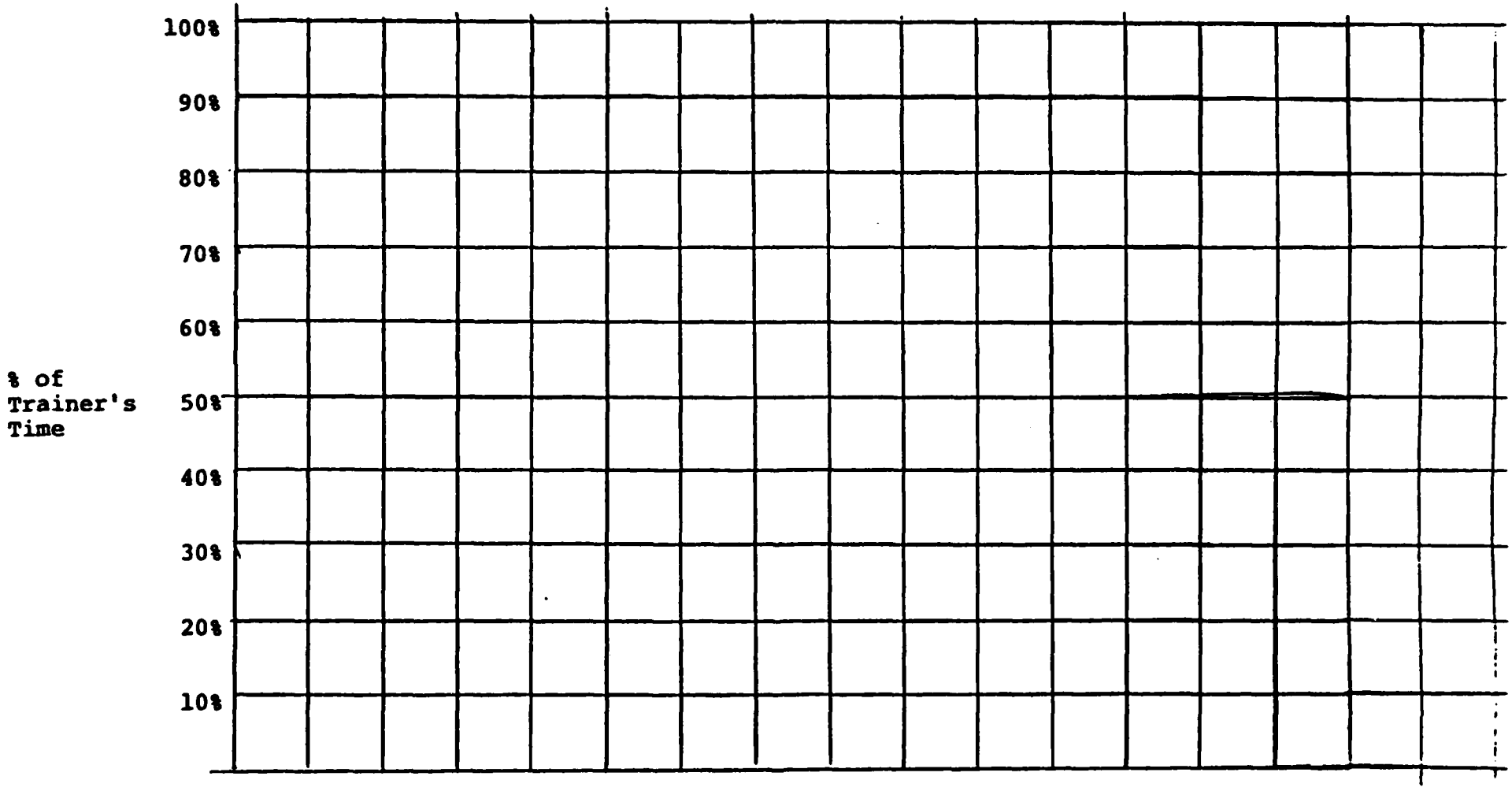


6. *Please plot the "line" or "curve" which depicts the percentage of the trainer's time devoted to training an employee in the position in question.*

END OF GRAPH #2, GO ON TO GRAPH #3

% OF TRAINER'S TIME SPENT WITH _____

TRAINER'S TITLE _____



Scale of axis: _____ (Weeks, Months, etc.)

Units of Scale per block on graph _____ (e.g., 1 Week, 2 Weeks, 1 Month, etc.)

GRAPH #3: PERCENTAGE OF STANDARD PERFORMANCE ATTAINED BY _____ DURING TRAINING PERIOD

Introduction: This graph will be used to obtain an estimate of the amount of time that it takes an average new employee or an employee who has just been promoted to a new position to reach a standard level of performance for that position.

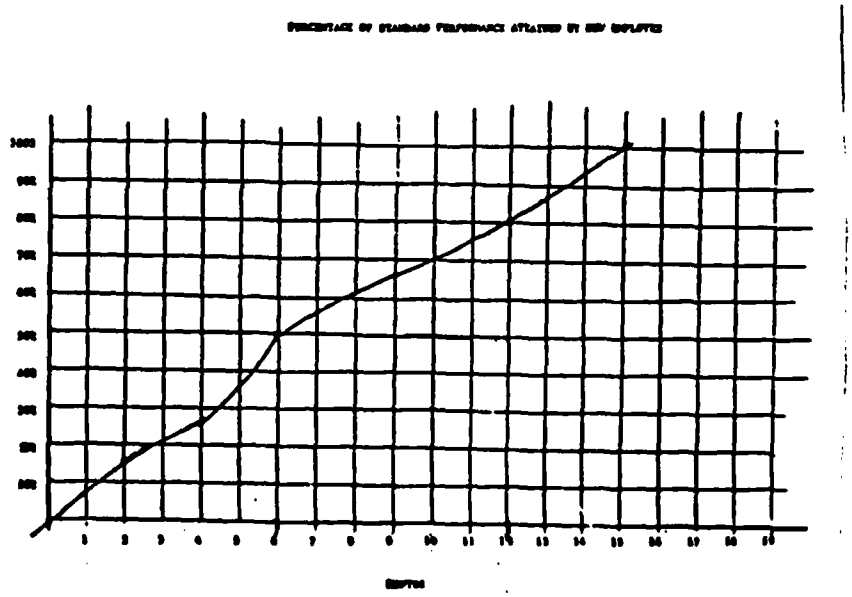
Instructions:

1. Fill in the blank indicating the position to be studied. (Remember, if this is a non-entry level position, you will need to complete graphs for all positions which the individual holds before he or she reaches this position; i.e., all other positions lower than this one in the career ladder of the organization).

2. Please indicate on the lower axis what the scale of "time" will be (weeks, months, days).

3. Assuming an employee has recently entered the organization at this position or has recently been promoted to this position, think about the following questions:
   a. What was the percentage of standard performance for the position in question at which the new employee or recently promoted employee began work?
   b. How did this percentage vary over his or her on-the-job training period?
   c. How long did it take him or her to reach standard performance?

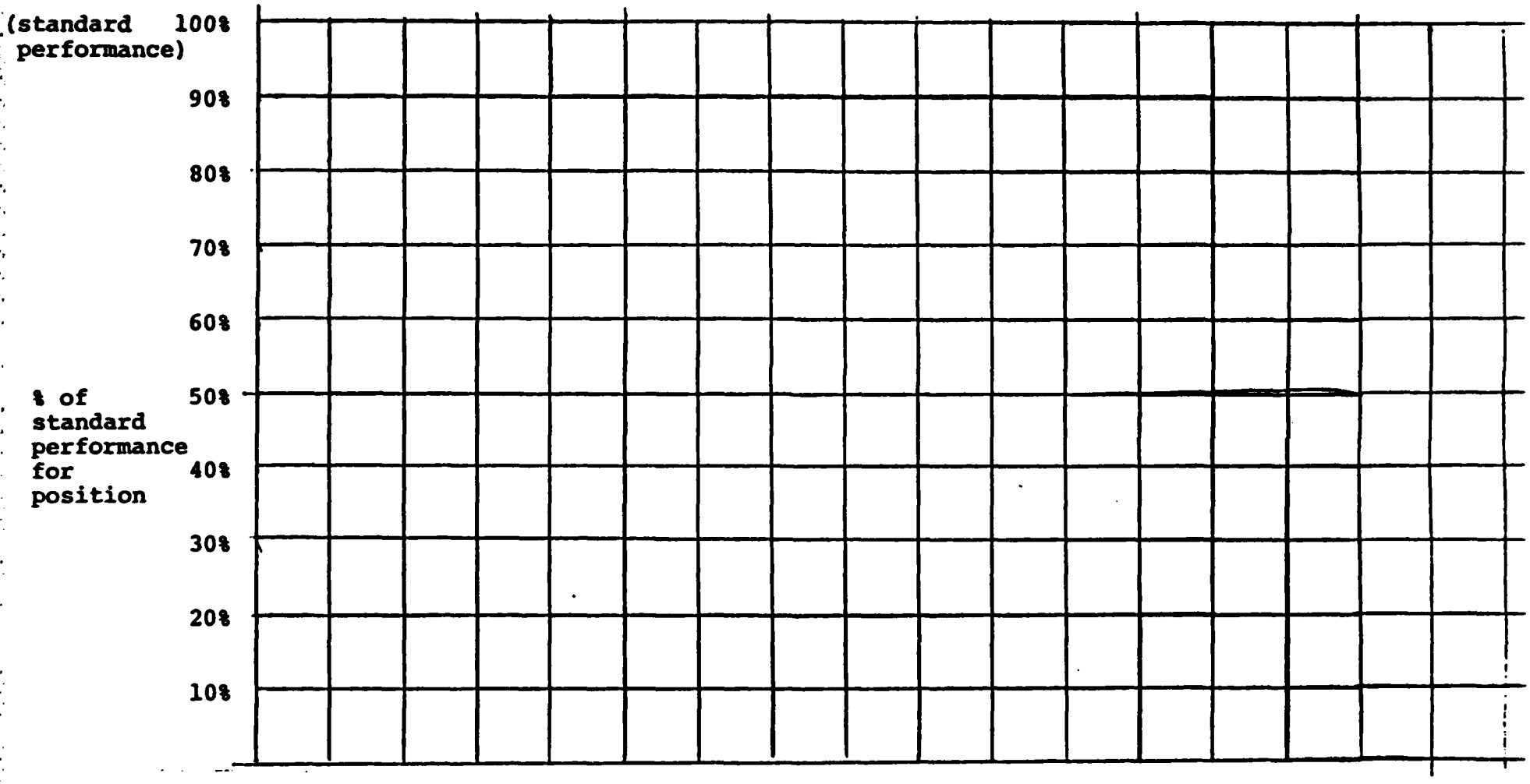
4. An example of how one person used the above information to plot this percentage of standard performance curve is given below:



5. Please plot the trainee's percentage of standard performance "curve" of line on the attached graph.

END OF GRAPH #3, END OF COST DATA COLLECTION

PERCENTAGE OF STANDARD PERFORMANCE ATTAINED BY _____
DURING TRAINING PERIOD



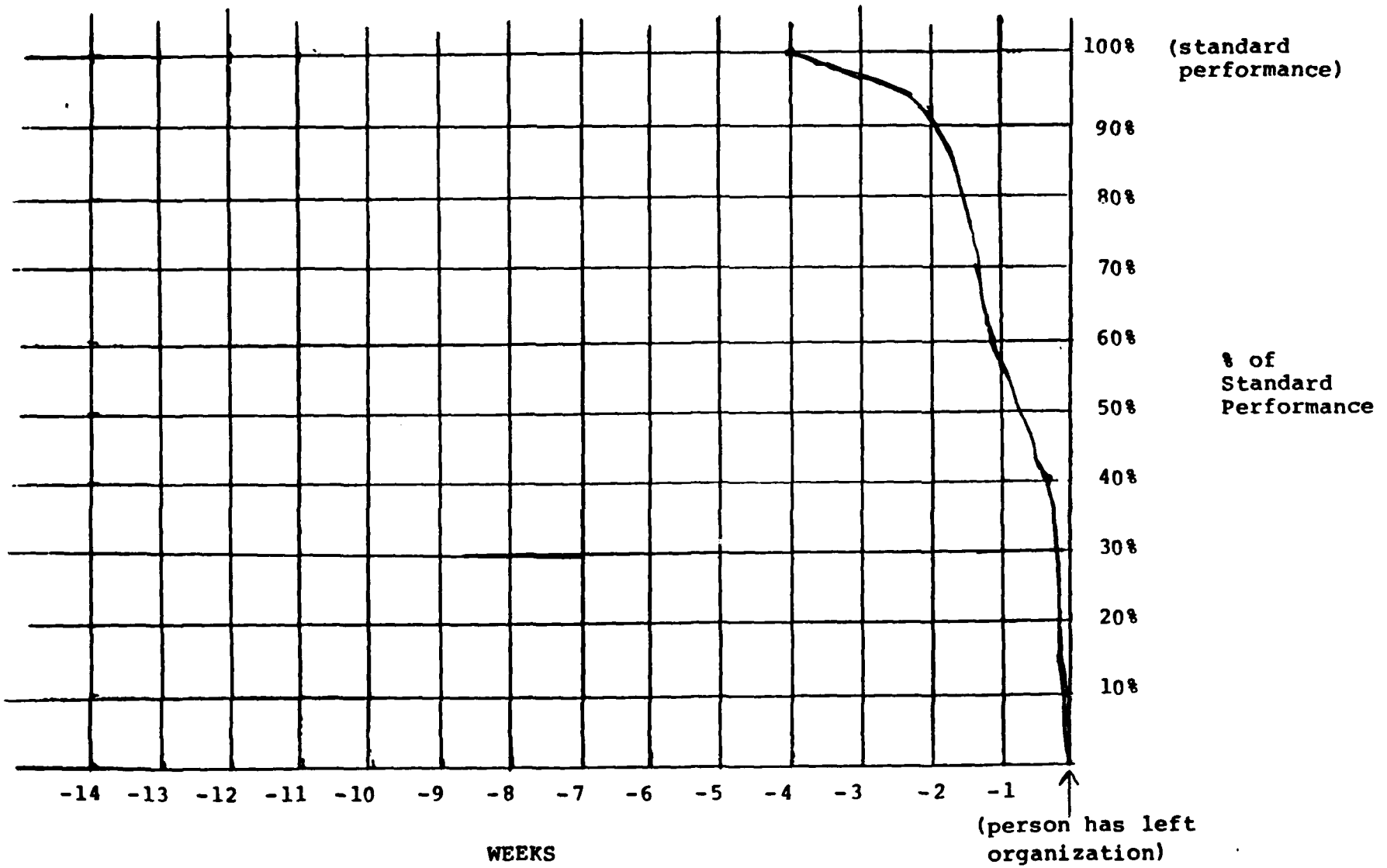
Scale of axis: _____(Weeks, Months, etc.)

Units of Scale per block on graph _____(eg., 1 Week, 2 Weeks, 1 Month, etc.)

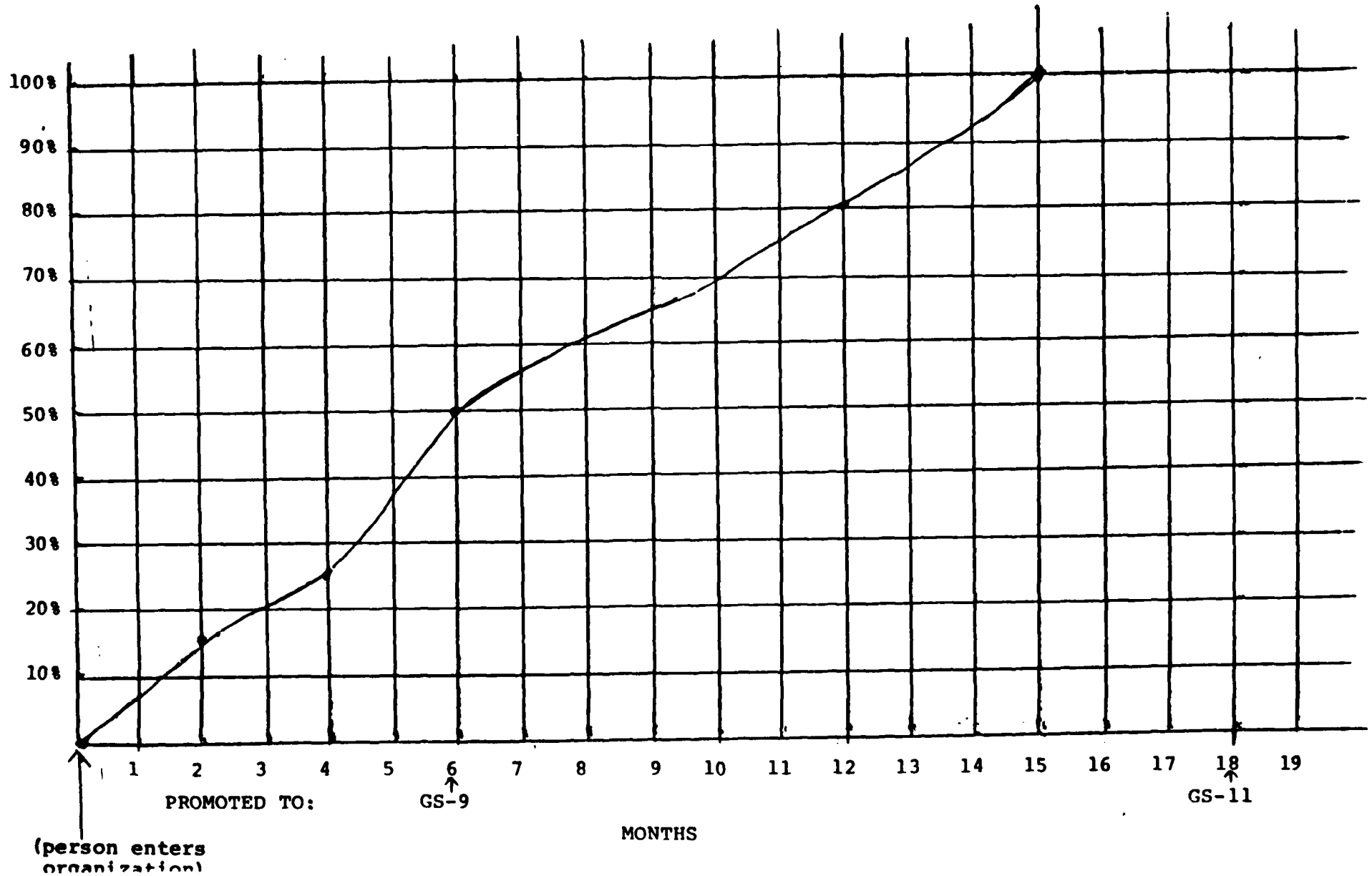
APPENDIX B

SUMMARY OF REPLACEMENT COST DATA
FOR GS-11 INDUSTRIAL ENGINEER
COLLECTED FROM SEAL BEACH NAVAL WEAPONS STATION
1984

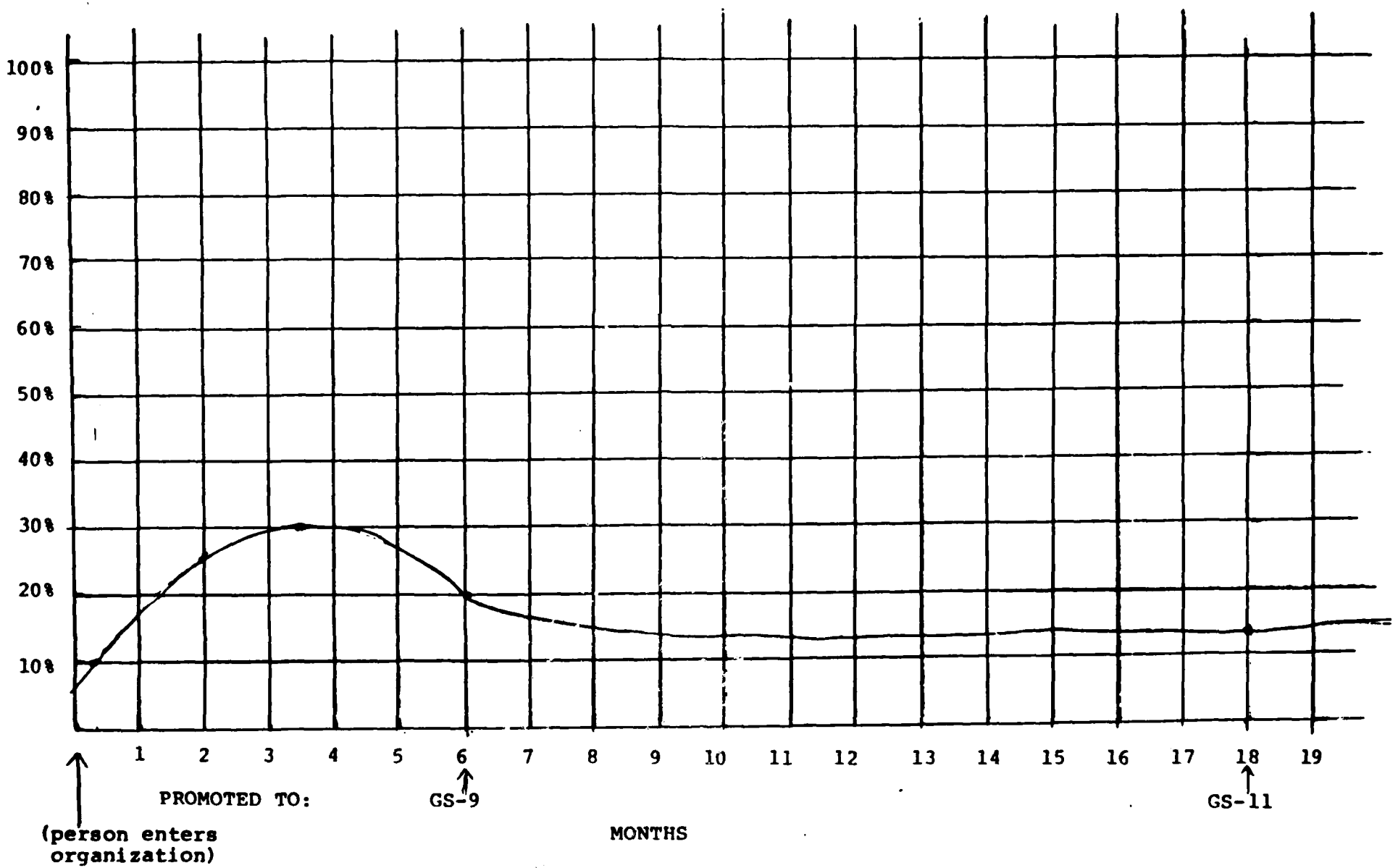
CHANGE IN STANDARD PERFORMANCE RESULTING
FROM DECISION TO LEAVE ORGANIZATION



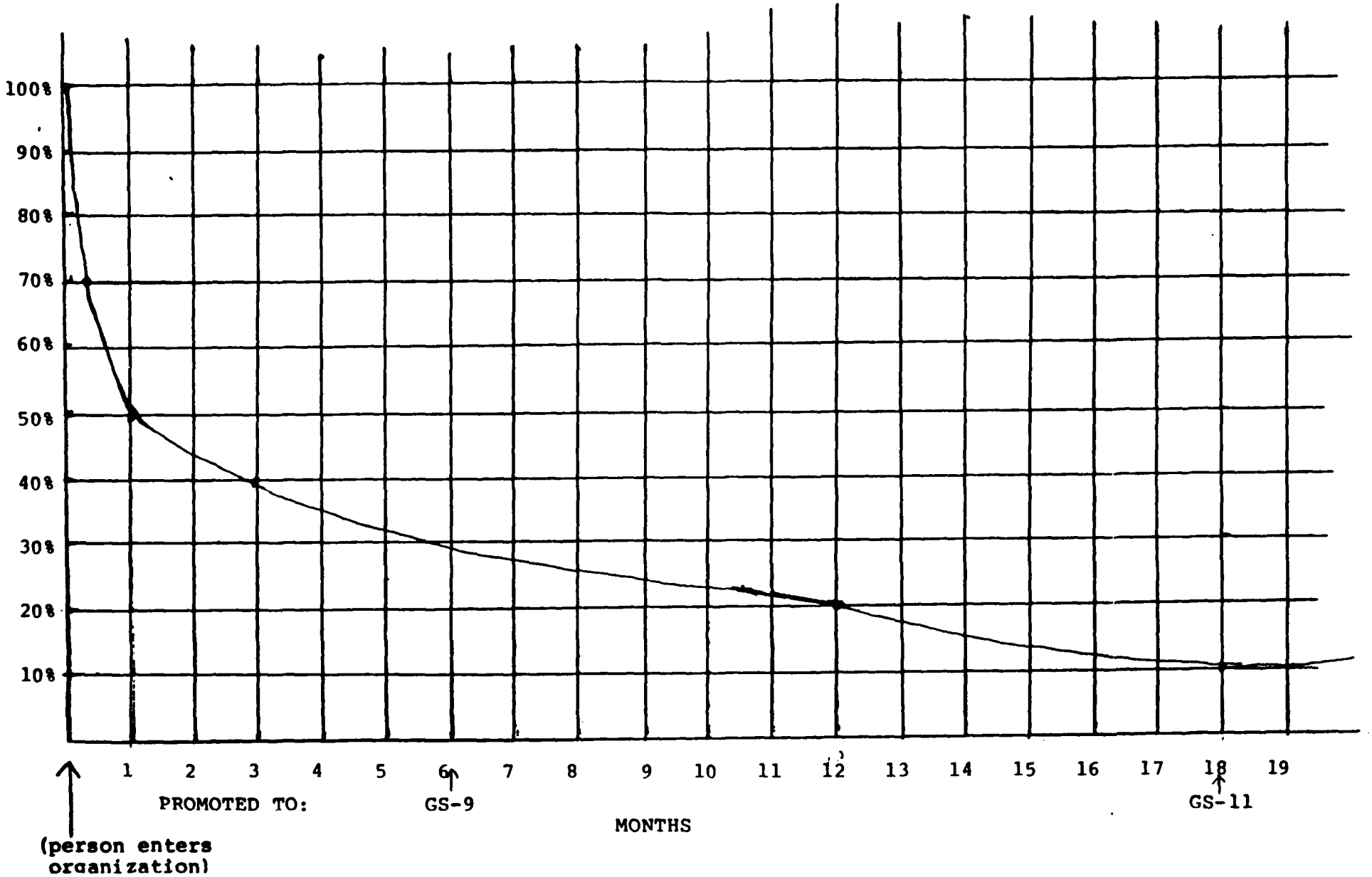
% OF STANDARD PERFORMANCE ACHIEVED BY
NEW HIRE OVER COURSE OF TRAINING
(100% = standard performance of GS-11)



% OF GS-11's TIME SPENT TRAINING GS-7 THROUGH GS-11



% OF GS-12's TIME SPENT TRAINING GS-7 THROUGH GS-11



Cost per Separation of Industrial Engineer, GS-11

Description of Activity	Explanation of Activity	Principal actor(s) involved in activity	Salary rate of principal actor(s) involved	Average time spent by principal actor(s) on activity	Materials Forms, letters, manuals, computer time		Services Travel, phone etc.	
					What	Cost	What	Cost
Notice of Termination	Employee informs supervisor of decision to leave organization. Employee completes form on which decision to terminate employment is noted.	Employee (GS-11, 5)	$14.50/hr.	.333 hr.				
		1st Line Sup. (GS-12, 5)	$16.50/hr.	.25 hr.				
		Personnel Mgmt. Coordinator	$ 8.40/hr.	.083 hr.	Form	$ .10		
Discussion of Reason for Separation	Employee first meets with own supervisor and then with both own supervisor and division head to discuss reason for separation.	Employee	$14.50/hr.	1.00 hr.				
		1st Line Sup.	$16.50/hr.	.75 hr.				
		2nd Line Sup. (GM-13)	$19.50/hr.	.50 hr.				
		Personnel Asst.	$ 8.40/hr.	.25 hr.				
Department Administrat. Functions to Delete Employee	Employee obtains "Employee Separation Clearance" form and hand carries it to own department, dispensary, Civilian Personnel Department, Safety Department, and Comptroller's Department to obtain appropriate signatures.	Employee	$14.50/hr.	4.00 hr.				
		Personnel Mgmt Coordinator	$ 8.40/hr.	1.00 hr.				
		Other Dept. Personnel	$ 8.40/hr. (average)	2.00 hr.	Forms	$ 5.00		
					Computer time	$10.00		

Cost per Recruitment of Industrial Engineer, GS-5/7, GS-9/11
(Note: Most GS-5/7's are obtained through college recruiting)

Description of Activity	Explanation of Activity	Principal actor(s) involved in activity	Salary rate of principal actor(s) involved	Average time spent by principal actor(s) on activity	Average number of applicants per activity	Materials Forms, letters, manuals, computer time	
						What	Cost
Requisition	2nd line supervisor informs department secretary that there is a vacancy which needs to be filled. Requisition is sent to Personnel where position is classified. 1st line supervisor writes a position description for vacant position which Personnel may edit as necessary.	1st Line Sup. Personnel Mgmt. Coordinator Personnel Dept. Represent.	$16.50/hr. $ 8.40/hr. $ 8.40/hr.	8.00 hr. 3.00 hr.	Not known.	Forms Forms	$ 1.00 $ 2.00
Communication of job availability - Internal candidates - Other govt. install. - Reinstat.	Position availability is communicated internally and to other government installations.	Staffing Spec. Personnel Clerk Supervisor (Job Anal.)	$13.80/hr. $ 7.50/hr. $18.00/hr.	4.00 hr. 1.00 hr. 2.00 hr.	May only apply to new hires who are at GS-9 or GS-11 at time of hire. Only 5% of all new hires are hired at the GS-9 or GS-11 levels.		
College Recruiting	Recruiting is done at approximately 75 college campuses per year.	Engineer (Recruiter) Staff Spec. (College Recruiting Coordinator)	$18.00/hr. $13.80/hr.	70.00 hr. 18.00 hr.	75 arrangements made 140 interviewed 10 offers 3 accept.		

Cost per Selection of Industrial Engineer, GS-5/7, GS-9/11

Description of Activity	Explanation of Activity	Principal actor(s) involved in activity	Salary rate of principal actor(s) involved	Average time spent by principal actor(s) on activity	Average number of applicants per activity	Materials Forms, letters, manuals, computer time	
						What	Cost
Review of Applications	Applications are reviewed on the basis of certain criteria in order to select qualified candidates.	Staffing Spec. Clerk	$13.80/hr. $ 7.50/hr.	.25 hr. .25 hr.	1 1		
Security Clearance	Security clearance checks are made on all qualified candidates.	Clerk Personnel Sec. Spec. Personnel Clerk	$ 7.50/hr. $13.80/hr. $ 7.50/hr.	10.00 hr. 3.00 hr. 1.00 hr.	5 5 5	Forms	$20.00
Interviews of Applicants	The 1st line supervisor reviews the applications of all qualified candidates and selects those to be interviewed. Interviews are conducted.	1st Line Supervisor	$16.50/hr.	8.00 hr.	8		
Staff Decision to Hire or Refuse Employment	After the interviews, the 1st line supervisor meets with the 2nd line supervisor and the Department Head to decide which candidate to hire.	1st Line Sup. 2nd Line Sup. Dept. Head	$16.50/hr. $19.50/hr. $23.50/hr.	4.00 hr. 2.00 hr. 1.00 hr.	1 1 1		

Cost per Development of Industrial Engineer GS-7

Description of Activity	Explanation of Activity	Principal actor(s) involved in activity	Salary rate of principal actor(s) involved	Average time spent by principal actor(s) on activity	Average number of new employees per activity	Materials Forms, letters, manuals, computer time	
						What	Cost
New Employee Orientation	Formal session to introduce new employee to organization and its personnel.	Classification Spec.	$13.80/hr.	.33 hr.	20-25		
		Staff Spec.	$13.80/hr.	.33 hr.			
		Empl. Dev. Spec.	$13.80/hr.	.33 hr.			
		Empl. Rel. Spec.	$13.80/hr.	.34 hr.			
		EEO, QA Spec.	$13.80/hr.	.34 hr.			
		Commanding Off.	$18.00/hr.	.33 hr.			
		Employee	$10.30/hr.	2.00 hr.			
Introduction of New Employee into the System	Employee completes forms for insurance, retirement, payroll. Clerk processes forms.	Processing Clerk	$ 7.50/hr.	1.00 hr.	1	Forms & computer time	$ 82.00
		Employee (GS-7, 1)	$10.30/hr.	1.00 hr.	1		
Univac EXEC-8 Training	Formal Training in classroom.	Computer Spec. (GS-11, 5)	$14.50/hr.	40.00 hr.	15-20		
		Employee	$10.30/hr.	40.00 hr.			
DIAL Programming	Formal Training in classroom.	Computer Spec. (GS-12, 5)	$16.50/hr.	24.00 hr.	40		
		Employee	$10.30/hr.	24.00 hr.			

Cost per Development of Industrial Engineer, GS-7

Description of Activity	Explanation of Activity	Principal actor(s) involved in activity	Salary rate of principal actor(s) involved	Average time spent by principal actor(s) on activity	Average number of new employees per activity	Materials Forms, letters, manuals, computer time	
						What	Cost
EEO and Weapons Station Orientation	Formal Classroom Training.	Spec. (GS-9, 5) Employee	$13.30/hr. $10.30/hr.	1 hr. 1 hr.	20-25		
Safety Orientation	Formal Classroom Training.	Safety Spec. (GS-9, 5) Employee	$13.30/hr. $10.30/hr.	2 hr. 2 hr.	20-25		
Security Orientation	Formal Classroom Training.	Sec. Trainer (GS-9, 5) Employee	$13.30/hr. $10.30/hr.	2 hr. 2 hr.	20-25		

Cost per Development of Industrial Engineer, GS-9

Description of Activity	Explanation of Activity	Principal actor(s) involved in activity	Salary rate of principal actor(s) involved	Average time spent by principal actor(s) on activity	Average number of employees per activity	Materials Forms, letters, manuals, computer time	
						What	Cost
Off-Site Training	Employee participates in one off-site educational program per year.	Employee	$13.30/hr.	80-100 hrs.	1		

Cost per Development of Industrial Engineer, GS-11

Description of Activity	Explanation of Activity	Principal actor(s) involved in activity	Salary rate of principal actor(s) involved	Average time spent by principal actor(s) on activity	Average number of employees per activity	Materials Forms, letters, manuals, computer time	
						What	Cost
Off-Site Training	Employee participates in one off-site educational program per year.	Employee	$14.50/hr.	80-100 hrs.	1		

APPENDIX C

DATABASE STRUCTURES
AND PROGRAM CODE
FOR REPLACEMENT COST SOFTWARE

```
Structure for database : B:position.dbf
Number of data records :        3
Date of last update    : 06/12/85
Field  Field name  Type       Width    Dec
    1  PNUMBER     Character      2
    2  POSITION    Character     35
    3  LOADING     Numeric        4      1
    4  SEPCOST     Numeric        9      2
    5  RECCOST     Numeric        9      2
    6  SELCOST     Numeric        9      2
    7  DEVCOST     Numeric        9      2
** Total **                      78

.

Currently selected database:
Select area -  1, Database in use: B:position.dbf   Alias - POSITION
    Index file: B:number.ndx  key - pnumber



Structure for database : B:target.dbf
Number of data records :        1
Date of last update    : 03/18/85
Field  Field name  Type       Width    Dec
    1  PNUMBER     Character      2
    2  PER1        Numeric        3
    3  POS1        Character      2
    4  POS2        Character      2
    5  POS3        Character      2
    6  POS4        Character      2
    7  POS5        Character      2
    8  POS6        Character      2
    9  POS7        Character      2
   10  POS8        Character      2
   11  POS9        Character      2
   12  PER2        Numeric        3
   13  POS21       Character      2
   14  POS22       Character      2
   15  POS23       Character      2
   16  POS24       Character      2
   17  POS25       Character      2
   18  POS26       Character      2
   19  POS27       Character      2
   20  POS28       Character      2
   21  POS29       Character      2
** Total **                      45
```

```
Structure for database : B:explicit.dbf
Number of data records :      45
Date of last update    : 06/06/85
Field  Field name  Type       Width    Dec
    1  PNUMBER     Character      2
    2  ENUMBER     Character      1
    3  STEPNO      Character      1
    4  ACTIVITY    Character     35
    5  PEOPLE      Character     30
    6  RATE_HR     Numeric        6      2
    7  HOURS       Numeric        6      2
    8  ALLOC       Numeric        6      2
    9  MATERIALS   Character     25
   10  MCOST       Numeric        8      2
   11  SERVICES    Character     25
   12  SCOST       Numeric        8      2
   13  EXPLAN      Memo          10
** Total **                     164

.


Currently selected database:
Select area -  1, Database in use: B:explicit.dbf   Alias - EXPLICIT
    Index file: B:pnumber.ndx  key - PNUMBER+ENUMBER+STEPNO



Structure for database : B:element.dbf
Number of data records :       4
Date of last update    : 01/23/85
Field  Field name  Type       Width    Dec
    1  ENUMBER     Character      1
    2  ELEMENT     Character     20
** Total **                      22
```

```
Structure for database : B:opport.dbf
Number of data records :       7
Date of last update    : 06/06/85
Field  Field name  Type       Width    Dec
    1  PNUMBER     Character      2
    2  ENUMBER     Character      1
    3  DESCRIPT    Character     35
    4  RATE_HR     Numeric        6      2
    5  HOURS_UNIT  Numeric        5      1
    6  P0          Numeric        3
    7  P1          Numeric        3
    8  P2          Numeric        3
    9  P3          Numeric        3
   10  P4          Numeric        3
   11  P5          Numeric        3
   12  P6          Numeric        3
   13  P7          Numeric        3
   14  P8          Numeric        3
   15  P9          Numeric        3
   16  P10         Numeric        3
   17  P11         Numeric        3
   18  P12         Numeric        3
** Total **                      89

Currently selected database:
Select area -  1, Database in use: B:opport.dbf   Alias - OPPORT
    Index file: B:pnum.ndx  key - PNUMBER+ENUMBER
```

```
* MENU.PRG -- Replacement cost menu

USE Position INDEX Number
SELECT 2
USE Target
SELECT 3
USE Explicit INDEX Pnumber
SELECT 4
USE Element
SELECT 5
USE Opport INDEX Pnum
SET TALK OFF
SET HEADING OFF
SET SAFETY OFF
STORE DTOC(DATE()) TO cdate
DO WHILE .t.
   option=' '
   CLEAR
   @ 2,65 SAY cdate
   @ 4,25 SAY 'REPLACEMENT COST MENU'
   @  8,15 SAY '1.  Work with position descriptions'
   @  9,15 SAY '2.  Establish career ladders for target positions'
   @ 10,15 SAY '3.  Enter explicit replacement cost information'
   @ 11,15 SAY '4.  Enter opportunity replacement cost information'
   @ 12,15 SAY '5.  Change or delete existing cost data'
   @ 13,15 SAY '6.  Print separation cost data'
   @ 14,15 SAY '7.  Print recruitment cost data'
   @ 15,15 SAY '8.  Print selection cost data'
   @ 16,15 SAY '9.  Print development cost data'
   @ 17,15 SAY '0.  Print replacement cost summary'
   @ 19,15 SAY '<RETURN>=Exit'
   @ 22,15 SAY 'ENTER ONE OF THE ABOVE' GET option
   READ
   SET MENUS ON
   DO CASE
      CASE option='1'
         DO Menu1
      CASE option='2'
         DO Menu2
      CASE option='3'
         DO Menu3
      CASE option='4'
         DO Menu4
      CASE option='5'
         DO Menu5
      CASE option='6'
         DO Menu6
      CASE option='7'
         DO Menu7
      CASE option='8'
         DO Menu8
      CASE option='9'
         DO Menu9
      CASE option='0'
         DO Menu0
```

```
      CASE LEN(TRIM(option))=0
         SET TALK ON
         CLOSE DATABASES
         SET MENUS OFF
         RETURN
   ENDCASE
ENDDO
```

```
* Menul.PRG -- Program to work with position descriptions

SELECT 1
GO TOP
IF EOF()
   APPEND BLANK
ENDIF
BROWSE FIELDS Pnumber,Position
COUNT TO del FOR DELETE()
IF del>0
   PACK
ENDIF
GO TOP
mload=Loading
@ 1,1 SAY 'Enter loading for employee benefits ' GET mload PICTURE '99.9'
READ
REPLACE ALL Loading WITH mload
print=' '
@ 3,1 SAY 'Print list of positions (Y/N)? ' GET print PICTURE '!'
READ
IF print='Y'
   SET MARGIN TO 15
   SET PRINT ON
   ? SPACE(10)+'List of positions as of '+cdate
   ?
   ? 'No.  Position Description                    Loading'
   ? '---  -----------------------------------  -------'
   GO TOP
   DO WHILE .NOT. EOF()
      ? Pnumber+'   '+Position+'     '+STR(Loading,4,1)
      SKIP
   ENDDO
   SET MARGIN TO 0
   EJECT
   SET PRINT OFF
RETURN
```

```
* Menu2.PRG -- Program to establish career ladders for target positions

 DO WHILE .t.
   SELECT 1
   CLEAR
   tnum='   '
   ? SPACE(25)+'Establish career ladders'
   ?
   DISPLAY OFF Pnumber,Position ALL
   @ 21,40 SAY 'Work with which target position?'
   @ 22,40 SAY 'Enter a number listed above' GET tnum
   @ 23,40 SAY 'Hit <RETURN> to exit'
   READ
   IF LEN(TRIM(tnum))=0
      RETURN
   ELSE
      FIND &tnum
      IF EOF()
         LOOP
      ENDIF
   ENDIF
   CLEAR
   ok=' '
   ? ' Establishing career ladder for: '+Position
   @ 3,1 SAY 'Want to proceed (Y/N)? ' GET ok PICTURE '!'
   READ
   IF ok<>'Y'
      LOOP
   ENDIF
   SELECT 2
   SET FILTER TO Pnumber=tnum
   GO TOP
   IF EOF()
      APPEND BLANK
      REPLACE Pnumber WITH tnum
   ENDIF
   BROWSE FIELDS POS1,POS2,POS3,POS4,POS5,POS6,POS7,POS8,POS9
   SET FILTER TO
   COUNT TO del FOR DELETE()
   IF del>0
      PACK
   ENDIF
ENDDO
```

```
* Menu3.PRG -- Program for entering explicit replacement cost information

DO WHILE .t.
   SELECT 1
   CLEAR
   pnum='  '
   ? SPACE(20)+'Enter explicit replacement cost information'
   ?
   DISPLAY OFF Pnumber,Position ALL
   @ 21,40 SAY 'Work with which position?'
   @ 22,40 SAY 'Enter a number listed above' GET pnum
   @ 23,40 SAY 'Hit <RETURN> to exit'
   READ
   IF LEN(TRIM(pnum))=0
      RETURN
   ELSE
      FIND &pnum
      IF EOF()
         LOOP
      ELSE
         mpos=Position
      ENDIF
   ENDIF
   DO WHILE .t.
      CLEAR
      ? SPACE(13)+'EXPLICIT COST RELATED TO: '+mpos
      ?
      SELECT 4
      enum=' '
      DISPLAY OFF Enumber,Element ALL
      @ 21,40 SAY 'Cost element?'
      @ 22,40 SAY 'Enter a number listed above' GET enum
      @ 23,40 SAY 'Hit <RETURN> to exit'
      READ
      IF LEN(TRIM(enum))=0
         EXIT
      ELSE
         LOCATE FOR Enumber=enum
         IF EOF()
            LOOP
         ENDIF
      ENDIF
      @ 2,0 CLEAR
      ? SPACE(25)+Element
      SELECT 3
      SET FILTER TO Pnumber='&pnum' .AND. Enumber='&enum'
      GO BOTTOM
      add=' '
      mstep=STR(VAL(Stepno)+1,1)
      mact=SPACE(35)
      mpeople=SPACE(30)
      STORE 0.00 TO mrate,mhours,matcost,servcost
      malloc=1.00
      STORE SPACE(25) TO mmat,mserv
      @  6,1 SAY 'STEP NUMBER ' GET mstep PICTURE '9'
```

```
        @  7,1 SAY 'ACTIVITY ' GET mact
        @  8,1 SAY 'PERSON INVOLVED ' GET mpeople
        @  9,1 SAY 'SALARY RATE ' GET mrate PICTURE '###.##'
        @ 10,1 SAY 'HOURS SPENT ON ACTIVITY ' GET mhours PICTURE '###.##'
        @ 11,1 SAY 'ALLOCATION RATIO ' GET malloc PICTURE '###.##'
        @ 12,1 SAY 'DESCRIPTION OF MATERIALS ' GET mmat
        @ 13,1 SAY 'COST OF MATERIALS ' GET matcost PICTURE '#####.##'
        @ 14,1 SAY 'DESCRIPTION OF SERVICES ' GET mserv
        @ 15,1 SAY 'COST OF SERVICES ' GET servcost PICTURE '#####.##'
        @ 17,1 SAY 'OK TO ADD (Y/N)? ' GET add PICTURE '!'
        READ
        IF add='Y'
           APPEND BLANK
           REPLACE Pnumber WITH pnum,Enumber WITH enum,Stepno ;
WITH mstep,Activity WITH mact,People WITH mpeople,Rate_hr WITH mrate,;
Hours WITH mhours,Alloc WITH malloc,Materials WITH mmat,Mcost WITH matcost
           REPLACE Services WITH mserv,Scost WITH servcost
        ENDIF
        more=' '
        @ 19,1 SAY 'Another entry related to this activity (Y/N)?' ;
        GET more PICTURE '!'
        READ
        DO WHILE more='Y'
           @ 8,0 CLEAR
           add=' '
           mpeople=SPACE(30)
           STORE 0.00 TO mrate,mhours,matcost,servcost
           malloc=1.00
           STORE SPACE(25) TO mmat,mserv
           @  8,1 SAY 'PERSON INVOLVED ' GET mpeople
           @  9,1 SAY 'SALARY RATE ' GET mrate PICTURE '###.##'
           @ 10,1 SAY 'HOURS SPENT ON ACTIVITY ' GET mhours PICTURE '###.##'
           @ 11,1 SAY 'ALLOCATION RATIO ' GET malloc PICTURE '###.##'
           @ 12,1 SAY 'DESCRIPTION OF MATERIALS ' GET mmat
           @ 13,1 SAY 'COST OF MATERIALS ' GET matcost PICTURE '#####.##'
           @ 14,1 SAY 'DESCRIPTION OF SERVICES ' GET mserv
           @ 15,1 SAY 'COST OF SERVICES ' GET servcost PICTURE '#####.##'
           @ 17,1 SAY 'OK TO ADD (Y/N)? ' GET add PICTURE '!'
           READ
           IF add='Y'
              APPEND BLANK
              REPLACE Pnumber WITH pnum,Enumber WITH enum,;
Stepno WITH mstep,Activity WITH mact,People WITH mpeople,Rate_hr WITH ;
mrate,Hours WITH mhours,Alloc WITH malloc,Materials WITH mmat
              REPLACE Mcost WITH matcost,Services WITH mserv,Scost WITH ;
servcost
           ENDIF
           more=' '
           @ 19,1 SAY 'Another entry related to this activity (Y/N)? ';
           GET more PICTURE '!'
           READ
        ENDDO
     ENDDO
     SET FILTER TO
ENDDO
RETURN
```

```
* Menu4.PRG -- Program to enter opportunity cost data

DO WHILE .t.
   SELECT 1
   CLEAR
   pnum='  '
   ? SPACE(24)+'Enter opportunity cost data'
   ?
   DISPLAY OFF Pnumber,Position ALL
   @ 21,40 SAY 'Work with which position?'
   @ 22,40 SAY 'Enter a number listed above' GET pnum
   @ 23,40 SAY 'Hit <RETURN> to exit'
   READ
   IF LEN(TRIM(pnum))=0
      RETURN
   ELSE
      FIND &pnum
      IF EOF()
         LOOP
      ELSE
         mpos=Position
      ENDIF
   ENDIF
   DO WHILE .t.
      CLEAR
      ? SPACE(13)+'OPPORTUNITY COST RELATED TO: '+mpos
      ?
      SELECT 4
      enum=' '
      DISPLAY OFF Enumber,Element FOR Enumber$'1,4'
      @ 21,40 SAY 'What cost element?'
      @ 22,40 SAY 'Enter a number listed above' GET enum
      @ 23,40 SAY 'Hit <RETURN> to exit'
      READ
      IF LEN(TRIM(enum))=0
         EXIT
      ELSE
         IF .NOT. enum$'1,4'
            LOOP
         ENDIF
      ENDIF
      SELECT 5
      CLEAR
      ? SPACE(20)+'ENTER THE OPPORTUNITY COSTS'
      ? SPACE(20)+'COST RELATED TO: '+mpos
      ?
      ?
      TEXT
     Opportunity costs are represented by curves.  These may be
learning curves, trainer's time spent with a person in a new
position, or lost productivity due to separation.  In the case
of the trainer's time curve, the cost is represented by the area
below the curve.  The percentages for the other curves will have
to be subtracted from 100% before you can enter them.  The curve should
be divided into 12 equal segments (or units) and those points should
```

```
be entered below.  Note that 70% is entered as 70.  In the case
where training for a position is over and 100% efficiency has not
been reached, enter -1 for the first point after end of training.
      ENDTEXT
      STORE 0 TO s0,s1,s2,s3,s4,s5,s6,s7,s8,s9,s10,s11,s12
      desc=SPACE(35)
      rate=0.00
      unit=0.0
      @ 16,5 SAY 'Description of graph:    ' GET desc
      @ 17,5 SAY 'Rate per hour: ' GET rate PICTURE '###.##'
      @ 17,33 SAY 'Hours per unit (segment): ' GET unit PICTURE '###.#'
      z=0
      DO WHILE z<13
         a=5+(9*z)
         b=19
         IF a>60
            a=a-54
            b=21
         ENDIF
         IF z<10
            w=STR(z,1)
         ELSE
            a=a-1
            w=STR(z,2)
         ENDIF
         point='s&w'
         @ b,a SAY '&w.:' GET &point PICTURE '###'
         z=z+1
      ENDDO
      READ
      good=' '
      @ 23,5 SAY 'Do you want to add this (Y/N)?' GET good PICTURE '!'
      READ
      IF good='Y'
         APPEND BLANK
         REPLACE Pnumber WITH pnum,Enumber WITH enum,Descript WITH desc,;
         Rate_hr WITH rate,Hours_unit WITH unit,P0 WITH s0,P1 WITH s1,;
         P2 WITH s2,P3 WITH s3,P4 WITH s4,P5 WITH s5,P6 WITH s6,P7 WITH s7
         REPLACE P8 WITH s8,P9 WITH s9,P10 WITH s10,P11 WITH s11,P12 WITH s12
      ENDIF
   ENDDO
ENDDO
```

```
* Menu5.PRG -- Program to change or delete existing data

DO WHILE .t.
   CLEAR
   ctype=' '
   DO WHILE .NOT. ctype $ '1,2'
      @ 15,15 SAY 'Edit explicit or opportunity costs?'
      @ 16,15 SAY 'Enter <1> for explicit or <2> for opportunity ' GET ctype
      @ 20,15 SAY 'Hit <RETURN> to exit'
      READ
      IF LEN(TRIM(ctype))=0
         RETURN
      ENDIF
   ENDDO
   DO WHILE .t.
      SELECT 1
      CLEAR
      pnum='  '
      ? SPACE(25)+'EDIT EXISTING COST DATA'
      ?
      DISPLAY OFF Pnumber,Position ALL
      @ 21,40 SAY 'Work with which position?'
      @ 22,40 SAY 'Enter the number listed above' GET pnum
      @ 23,40 SAY 'Hit <RETURN> to exit'
      READ
      IF LEN(TRIM(pnum))=0
         EXIT
      ELSE
         FIND &pnum
         IF EOF()
            LOOP
         ELSE
            mpos=Position
         ENDIF
      ENDIF
      DO WHILE .t.
         CLEAR
         ? SPACE(20)+'COST RELATED TO: '+mpos
         ?
         SELECT 4
         enum=' '
         DISPLAY OFF Enumber,Element ALL
         @ 19,40 SAY 'Cost element?'
         @ 20,40 SAY 'Enter a number listed above' GET enum
         @ 21,40 SAY 'Hit <RETURN> to exit'
         READ
         IF LEN(TRIM(enum))=0
            EXIT
         ENDIF
         IF ctype='1'
            SELECT 3
         ELSE
            SELECT 5
         ENDIF
         SET FILTER TO Pnumber=pnum .AND. ENUMBER=enum
```

```
            GO TOP
            IF EOF()
               WAIT 'No cost entries meet conditions set.  Press any key ;
to continue.'
            ENDIF
            BROWSE
            SET FILTER TO
            COUNT TO del FOR DELETE()
            IF del>0
               PACK
            ENDIF
         ENDDO
      ENDDO
ENDDO
```

```
* Menu6.PRG -- Program to print separation cost data

SELECT 1
DO WHILE .t.
   CLEAR
   pnum='  '
   ? SPACE(25)+'PRINT SEPARATION COST DATA'
   ?
   DISPLAY OFF Pnumber,Position ALL
   @ 21,40 SAY 'Print data for which position?'
   @ 22,40 SAY 'Enter a number listed above' GET pnum
   @ 23,40 SAY 'Hit <RETURN> to exit'
   READ
   IF LEN(TRIM(pnum))=0
      RETURN
   ELSE
      FIND &pnum
      IF EOF()
         LOOP
      ELSE
         l=Loading
         EXIT
      ENDIF
   ENDIF
ENDDO
SET PRINT ON
? SPACE(10)+'Separation costs for '+TRIM(Position)+' as of '+cdate
?
? 'EXPLICIT LABOR COSTS:'
?
? 'Activity                                  People involved                ;
  Rate   Hours      Cost'
? '----------------------------------  ------------------------------  ;
------  ------  --------'
SELECT 3
enum='1'
FIND &pnum&enum
s='0'
c=0
DO WHILE Pnumber=pnum .AND. Enumber=enum .AND. .NOT. EOF()
   sub=Rate_hr*Hours
   IF s<>Stepno
      ?
   ENDIF
   ? Activity+'  '+People+'  '+STR(Rate_hr,6,2)+'  '+STR(Hours,6,2);
   +'  '+STR(sub,8,2)
   s=Stepno
   c=sub+c
   SKIP
ENDDO
?
? 'TOTAL EXPLICIT LABOR COSTS:'+SPACE(57)+STR(c,9,2)
?
?
? 'OPPORTUNITY LABOR COSTS:'
```

```
SELECT 5
FIND &pnum&enum
cost=0
u=0
DO WHILE Pnumber=pnum .AND. Enumber=enum .AND. .NOT. EOF()
   cost=0
   u=0
   DO WHILE u<12
      DO CASE
         CASE u<9
            v=STR(u,1)
            w=STR(u+1,1)
         CASE u=9
            v=STR(u,1)
            w=STR(u+1,2)
         CASE u>9
            v=STR(u,2)
            w=STR(u+1,2)
      ENDCASE
      sub=(P&v+P&w)*Rate_hr*Hours_unit/200
      cost=cost+sub
      u=u+1
   ENDDO
   SKIP
ENDDO
? '  Pre-separation opportunity cost (see graph):'+SPACE(38)+STR(Cost,9,2)
?
? 'TOTAL LABOR COST (unloaded):'+SPACE(56)+STR(c+cost,9,2)
lcost=(100+1)*(c+cost)/100
?
? 'TOTAL LABOR COST (benefits loading = '+STR(1,4,1)+'%)'+SPACE(41)+;
STR(lcost,9,2)
? SPACE(84)+'---------'
?
?
? 'MATERIALS AND SERVICES:'
?
? 'Activity                                Description                   Cost'
? '-----------------------------------  -------------------------  ---------'
SELECT 3
FIND &pnum&enum
k=0
DO WHILE Pnumber=pnum .AND. Enumber=enum .AND. .NOT. EOF()
   IF Mcost>0
      ? Activity+'  '+Materials+'  '+STR(Mcost,9,2)
   ENDIF
   IF Scost>0
      ? Activity+'  '+Services+'  '+STR(Scost,9,2)
   ENDIF
   k=k+Mcost+Scost
   SKIP
ENDDO
?
? 'TOTAL MATERIALS AND SERVICE COST:'+SPACE(51)+STR(k,9,2)
?
```

```
?
? 'TOTAL SEPARATION COST:'+SPACE(62)+STR(k+1cost,9,2)
? SPACE(84)+'=========='
SELECT 1
REPLACE Sepcost WITH k+1cost
EJECT
SET PRINT OFF
RETURN
```

```
* Menu7.PRG -- Program to print recruitment costs

SELECT 1
DO WHILE .t.
   CLEAR
   pnum='  '
   ? SPACE(25)+'PRINT RECRUITMENT COST DATA'
   ?
   DISPLAY OFF Pnumber,Position ALL
   @ 21,40 SAY 'Print data for which position?'
   @ 22,40 SAY 'Enter a number listed above' GET pnum
   @ 23,40 SAY 'Hit <RETURN> to exit'
   READ
   IF LEN(TRIM(pnum))=0
      RETURN
   ELSE
      FIND &pnum
      IF EOF()
         LOOP
      ELSE
         l=Loading
         EXIT
      ENDIF
   ENDIF
ENDDO
SET PRINT ON
? SPACE(10)+'Recruitment costs for '+TRIM(Position)+' as of '+cdate
?
? 'EXPLICIT LABOR COSTS:'
?
? 'Activity                                  People involved                ;
  Rate   Hours  Alloc.      Cost'
? '----------------------------------  ------------------------------  ;
------  ------  ------  --------'
SELECT 3
enum='2'
FIND &pnum&enum
s='0'
c=0
DO WHILE Pnumber=pnum .AND. Enumber=enum . AND. .NOT. EOF()
   sub=Rate_hr*Hours*Alloc
   IF s<>Stepno
      ?
   ENDIF
   ? Activity+'  '+People+'  '+STR(Rate_hr,6,2)+'  '+STR(Hours,6,2);
   +'  '+STR(Alloc,6,2)+'  '+STR(sub,8,2)
   s=Stepno
   c=sub+c
   SKIP
ENDDO
?
? 'TOTAL EXPLICIT LABOR COSTS (unloaded):'+SPACE(54)+STR(c,9,2)
lcost=(100+1)*c/100
?
? 'TOTAL LABOR COST (benefits loading = '+STR(1,4,1)+'%)'+SPACE(49)+;
```

```
STR(lcost,9,2)
? SPACE(92)+'---------'
?
?
? 'MATERIALS AND SERVICES:'
?
? 'Activity                                             Description                                 Cost'
? '-------------------------------------  -------------------------  ---------'
SELECT 3
FIND &pnum&enum
k=0
DO WHILE Pnumber=pnum .AND. Enumber=enum .AND. .NOT. EOF()
   IF Mcost>0
      ? Activity+'  '+Materials+'  '+STR(Mcost*Alloc,9,2)
   ENDIF
   IF Scost>0
      ? Activity+'  '+Services+'  '+STR(Scost*Alloc,9,2)
   ENDIF
   k=k+(Mcost+Scost)*Alloc
   SKIP
ENDDO
?
? 'TOTAL MATERIALS AND SERVICE COST:'+SPACE(59)+STR(k,9,2)
?
?
? 'TOTAL RECRUITMENT COST: +SPACE(69)+STR(k+lcost,9,2)
? SPACE(92)+'========='
SELECT 1
REPLACE Reccost WITH k+lcost
EJECT
SET PRINT OFF
RETURN
```

```
* Menu8.PRG -- Program to print selection costs

SELECT 1
DO WHILE .t.
   CLEAR
   pnum='  '
   ? SPACE(25)+'PRINT SELECTION COST DATA'
   ?
   DISPLAY OFF Pnumber,Position ALL
   @ 21,40 SAY 'Print data for which position?'
   @ 22,40 SAY 'Enter a number listed above' GET pnum
   @ 23,40 SAY 'Hit <RETURN> to exit'
   READ
   IF LEN(TRIM(pnum))=0
      RETURN
   ELSE
      FIND &pnum
      IF EOF()
         LOOP
      ELSE
         l=Loading
         EXIT
      ENDIF
   ENDIF
ENDDO
SET PRINT ON
? SPACE(10)+'Selection costs for '+TRIM(Position)+' as of '+cdate
?
? 'EXPLICIT LABOR COSTS:'
?
? 'Activity                                  People involved                ;
  Rate   Hours  Alloc.      Cost'
? '------------------------------------  ------------------------------  ;
------  ------  ------  --------'
SELECT 3
enum='3'
FIND &pnum&enum
s='0'
c=0
DO WHILE Pnumber=pnum .AND. Enumber=enum .AND. .NOT. EOF()
   sub=Rate_hr*Hours*Alloc
   IF s<>Stepno
      ?
   ENDIF
   ? Activity+'  '+People+'  '+STR(Rate_hr,6,2)+'  '+STR(Hours,6,2);
   +'  '+STR(Alloc,6,2)+'  '+STR(sub,8,2)
   s=Stepno
   c=sub+c
   SKIP
ENDDO
?
? 'TOTAL EXPLICIT LABOR COSTS (unloaded):'+SPACE(54)+STR(c,9,2)
lcost=(100+l)*c/100
?
? 'TOTAL LABOR COST (benefits loading = '+STR(l,4,1)+'%)'+SPACE(49)+;
```

```
STR(lcost,9,2)
? SPACE(92)+'---------'
?
?
? 'MATERIALS AND SERVICES:'
?
? 'Activity                                Description                            Cost'
? '-----------------------------------  -------------------------  ---------'
SELECT 3
FIND &pnum&enum
k=0
DO WHILE Pnumber=pnum .AND. Enumber=enum .AND. .NOT. EOF()
   IF Mcost>0
      ? Activity+'  '+Materials+'  '+STR(Mcost*Alloc,9,2)
   ENDIF
   IF Scost>0
      ? Activity+'  '+Services+'  '+STR(Scost*Alloc,9,2)
   ENDIF
   k=k+(Mcost+Scost)*Alloc
   SKIP
ENDDO
?
? 'TOTAL MATERIALS AND SERVICE COST:'+SPACE(59)+STR(k,9,2)
?
?
? 'TOTAL SELECTION COST:'+SPACE(71)+STR(k+lcost,9,2)
? SPACE(92)+'========='
SELECT 1
REPLACE Selcost WITH k+lcost
EJECT
SET PRINT OFF
RETURN
```

```
* Menu9.PRG -- Program to print development cost data

DO WHILE .t.
   SELECT 1
   CLEAR
   pnum='  '
   ? SPACE(25)+'PRINT DEVELOPMENT COST DATA'
   ?
   DISPLAY OFF Pnumber,Position ALL
   @ 21,40 SAY 'Development costs related to?'
   @ 22,40 SAY 'Enter a number listed above' GET pnum
   @ 23,40 SAY 'Hit <RETURN> to exit'
   READ
   IF LEN(TRIM(pnum))=0
      RETURN
   ELSE
      FIND &pnum
      IF EOF()
         LOOP
      ELSE
         l=Loading
      ENDIF
   ENDIF
   SET PRINT ON
   ? SPACE(10)+'DEVELOPMENT COSTS RELATED TO: '+TRIM(Position)+' as of ';
   +cdate
   ?
   ? 'EXPLICIT LABOR COSTS:'
   ?
   ? 'Activity                                    People involved                ;
  Rate   Hours  Alloc.      Cost'
   ? '------------------------------------  ------------------------------  ;
------  ------  ------  --------'
   SELECT 3
   enum='4'
   FIND &pnum&enum
   s='0'
   c=0
   DO WHILE Pnumber=pnum .AND. Enumber=enum .AND. .NOT. EOF()
      sub=Rate_hr*Hours*Alloc
      IF s<>Stepno
         ?
      ENDIF
      ? Activity+'  '+People+'  '+STR(Rate_hr,6,2)+'  '+STR(Hours,6,2);
      +'  '+STR(Alloc,6,2)+'  '+STR(sub,8,2)
      s=Stepno
      c=sub+c
      SKIP
   ENDDO
   ?
   ? 'TOTAL EXPLICIT LABOR COSTS:'+SPACE(65)+STR(C,9,2)
   ?
   ?
   ? 'OPPORTUNITY LABOR COSTS:'
   SELECT 5
```

```
FIND &pnum&enum
cost=0
DO WHILE Pnumber=pnum .AND. Enumber=enum .AND. .NOT. EOF()
   u=0
   DO WHILE u<12
      DO CASE
         CASE u<9
            v=STR(u,1)
            w=STR(u+1,1)
         CASE u=9
            v=STR(u,1)
            w=STR(u+1,2)
         CASE u>9
            v=STR(u,2)
            w=STR(u+1,2)
      ENDCASE
      IF P&v>=0 .AND. P&w>=0
         Sub=(P&v+P&w)*Rate_hr*Hours_unit/200
         cost=cost+Sub
      ENDIF
      u=u+1
   ENDDO
   SKIP
ENDDO
? '  Opportunity learning costs (see graphs):'+SPACE(50)+STR(cost,9,2)
?
? 'TOTAL LABOR COST (unloaded):'+SPACE(64)+STR(c+cost,9,2)
lcost=(100+1)*(c+cost)/100
?
? 'TOTAL LABOR COST (benefits loading ='+STR(1,4,1)+'%)'+SPACE(50)+;
STR(lcost,9,2)
? SPACE(92)+'---------'
?
?
? 'MATERIALS AND SERVICES:'
?
? 'Activity                                      Description                          Cost'
? '-----------------------------------   -------------------------   ---------'
SELECT 3
FIND &pnum&enum
k=0
DO WHILE Pnumber=pnum .AND. Enumber=enum .AND. .NOT. EOF()
   IF Mcost>0
      ? Activity+'  '+Materials+'  '+STR(Mcost,9,2)
   ENDIF
   IF Scost>0
      ? Activity+'  '+Services+'  '+STR(Scost,9,2)
   ENDIF
   k=k+Mcost+Scost
   SKIP
ENDDO
?
? 'TOTAL MATERIALS AND SERVICE COST:'+SPACE(59)+STR(k,9,2)
?
?
```

```
    ? 'TOTAL DEVELOPMENT COST:'+SPACE(69)+STR(k+1cost,9,2)
    ? SPACE(92)+'=========='
    SELECT 1
    REPLACE Devcost WITH k+1cost
    EJECT
    SET PRINT OFF
ENDDO
```

```
* Menu0.PRG -- Program to print replacement cost summary

SELECT 2
GO TOP
targ=TRIM(' ')
DO WHILE .NOT. EOF()
   targ=targ+Pnumber
   SKIP
ENDDO
DO WHILE .t.
   SELECT 1
   CLEAR
   pnum='  '
   ? SPACE(25)+'PRINT REPLACEMENT COST SUMMARY'
   ?
   DISPLAY OFF Pnumber,Position FOR Pnumber$Targ
   @ 21,40 SAY 'Cost for which target position'
   @ 22,40 SAY 'Enter a number listed above' GET pnum
   @ 23,40 SAY 'Hit <RETURN> to exit'
   READ
   IF LEN(TRIM(pnum))=0
      RETURN
   ELSE
      FIND &pnum
      IF .NOT. pnum$Targ
         LOOP
      ELSE
         EXIT
      ENDIF
   ENDIF
ENDDO
SET PRINT ON
SET MARGIN TO 7
? 'REPLACEMENT COST SUMMARY FOR '+TRIM(Position)+' AS OF '+cdate
?
?
? 'Cost element                                                    Cost'
? '-------------------------                                    ---------'
?
? 'Separation cost'+SPACE(48)+STR(Sepcost,9,2)
mtotal=Sepcost
?
SELECT 2
LOCATE FOR Pnumber=pnum
recruit=POS1
SELECT 1
FIND &recruit
? 'Recruitment cost'+SPACE(47)+STR(Reccost,9,2)
?
? 'Selection cost'+SPACE(49)+STR(Selcost,9,2)
?
mtotal=mtotal+Reccost+Selcost
u=1
DO WHILE u<10
   v=STR(u,1)
```

```
    SELECT 2
    t=POS&v
    IF t<>'  '
       SELECT 1
       FIND &t
       ? 'Development Costs -- '+Position+SPACE(7)+STR(Devcost,9,2)
       mtotal=mtotal+Devcost
    ENDIF
    u=u+1
ENDDO
?
?
? 'TOTAL'+SPACE(58)+STR(mtotal,9,2)
? SPACE(63)+'=========='
EJECT
SET MARGIN TO 0
SET PRINT OFF
RETURN
```

END

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