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ACQUISITION INFORMATION RETRIEVAL AND SIMULATION (ACQUIRES) SYSTEM: A USER'S MANUAL

Brice M. Stone  
Vincent L. Wiggins  
Kevin M. Borden  
LeAnn M. Coleman

Metrica, Incorporated  
8301 Broadway, Suite 215  
San Antonio, TX 78209



Sheree K. Engquist, Captain, USAF

HUMAN RESOURCES DIRECTORATE  
MANPOWER AND PERSONNEL RESEARCH DIVISION  
Brooks Air Force Base, TX 78235-5000

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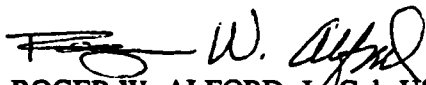
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SHEREE K. ENGQUIST, Capt, USAF  
Project Scientist

  
WILLIAM E. ALLEY, Tech Director  
Manpower and Personnel Rsrch Div

  
ROGER W. ALFORD, Lt Col, USAF  
Chief, Manpower and Personnel Research Division

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## **Preface**

This research and development effort was conducted by the Manpower and Personnel Division of the Armstrong Laboratory Human Resources Directorate (AL/HRM). This study was in response to a request from Headquarters Air Force Systems Command. In the Fall of 1990 with the passage of legislation and Air Force regulations concerning new requirements for acquisition personnel, management tools were needed. The purpose of the effort was the development of a civilian personnel simulation system to project personnel flows under Air Force Systems Command's Human Resource Development Program.

This simulation and information retrieval system was developed under work unit 77192020, Economic Models for Force Management, by Metrica, Inc, contract number F41689-88-D-0251 Task 54.

The authors wish to particularly thank Ms. Monica Marek for her assistance in developing this users manual. Her document editing and proofing were invaluable. Capt Dan Gerrig, HQ AFSC, was instrumental in gathering information concerning program requirements and setting up a multitude of briefings and meetings. The authors would also like to thank Peter Jones, HQ AFSC, for assistance in preparing test data files as the Manpower Personnel Database was updated.

# ACQUISITION INFORMATION RETRIEVAL AND SIMULATION (ACQUIRES) SYSTEM: A USER'S MANUAL

## SUMMARY

The Acquisition Information Retrieval Simulation (ACQUIRES) System was developed to model the flow of civilian personnel at Air Force Systems Command (AFSC).<sup>\*</sup> In particular, the ACQUIRES software system was designed to simulate the effects of AFSC's Acquisition Professional Development Program (APDP). The simulation system allows users to develop policy scenarios regarding implementation of the APDP and evaluate the effects on the number and distribution of qualified civilians in future years. ACQUIRES is focused on the areas of training and education where courses and degrees can be targeted to any desired groups.

ACQUIRES simulates the civilian force at the individual level and provides extensive database facilities for analyzing and summarizing this individual level data. The information on individual civilians in the initial database can be viewed or lists of individuals created. User designed tabulations, bar charts, and pie charts can be created for the initial database and any or all simulation years. In addition, the system provides print facilities and the ability to export results and data to other personal computer applications.

ACQUIRES is designed to operate directly with the personal computer download facility available at HQ AFSC. Provisions have been made to allow for changes in the format and content of this downloaded personnel data. The system is implemented under Microsoft Windows 3.0 and will run on IBM compatible 80386 or 80486 based computers. This document serves as a user's manual and introduction to ACQUIRES.

## CHAPTER 1. INTRODUCTION

This document describes the Acquisition Information Retrieval and Simulation (ACQUIRES) System. It has been written primarily as a manual and user's guide to ACQUIRES with documentation of the underlying assumptions and simulation mechanics provided in the appendices. ACQUIRES has been designed to provide complete facilities for specifying and analyzing the impact of policies affecting the civil service personnel at Air Force Systems Command with an emphasis on meeting new certification requirements. It is a database and personnel simulation package written in C to operate under Microsoft Windows 3.0 and meets all of the interface guidelines of Windows. Appendix A describes the system requirements and Appendix B describes the on-line help features. The database component of ACQUIRES is generic and can be used for analysis of any supplied data set for which proper documentation files have been prepared. The simulation component is tailored specifically for the civil service segment of Air Force Systems Command staff.

A major motivating factor in the development of ACQUIRES is the adoption of new guidelines for the development of professionals in the acquisition staff. In particular, specific requirements for education, experience, and training will significantly affect the ability to fill key positions in the acquisition force. ACQUIRES is designed to allow personnel managers and planners to project the effect of these new guidelines and to assess the impact of policies designed to meet the new requirements. Through such analysis, planners and managers can develop effective strategies that will ensure a steady flow of qualified personnel into key acquisition positions.

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<sup>\*</sup>Air Force Systems Command (AFSC) is now Air Force Materiel Command (AFMC).



Technically, ACQUIRES implements an entity based, next event simulation model. This means that the simulation stores the characteristics of each civilian being simulated (grade, location, pay plan, current position, etc.). ACQUIRES simulations start with a set of records containing the characteristics of all civilians to be included in the simulation (referred to as the initial database). Given user supplied assumptions and model defaults, ACQUIRES projects the values of those characteristics into the future. A more detailed description of simulation mechanics is provided in Appendix C, but the entity-based nature of the simulation is critical in determining the user's interaction with the simulation and database. In all cases the simulation is operating on individuals and all queries or reports from the initial database or simulation results are accessing information on individuals. Due to the random selection of paths which individuals might take, only aggregate information is available from the simulation. Individual level lists or record views, allowed on the initial database, cannot be performed on the simulation results. However, the aggregate results are still based on collections of individual level records, and requests to the database are in those terms.

The nature of the certification guidelines for acquisition staff places a large emphasis on education and training. Flexibility in developing education and training policies is a primary focus of ACQUIRES. Complete freedom is available in targeting specific training courses to user defined target groups of civilians. (As outlined in Appendix D it is possible to define complete sets of equivalent or substitute courses, if so desired). Likewise, educational attainment can be targeted to reflect the results of any special education incentive programs. Within the framework of 10 functional areas and 3 certification levels, it is also possible to modify the educational, experience, and training requirements for certification.

ACQUIRES has been developed to work in concert with the Manpower Personnel Database (MPDP) download facility available at HQ AFSC. Format files describing the download files which are transferred to a personal computer (PC) by this system are provided with ACQUIRES. These manpower and personnel databases can be directly encoded into an ACQUIRES format which allows them to be queried or simulated. Appendix E discusses the other files necessary for this download capability. A list of variables in each file downloaded is contained in Appendix F. Standard reports can be developed in ACQUIRES which will allow a quick analysis of monthly updates available from the MPDP system. Any future changes to the format of these downloaded files can be handled by editing the format files as described in Appendix G. Appendix H discusses the procedures to maintain multiple databases on a PC.

Chapter 2 discusses how to get started with the software and Chapter 3 describes how to load a database to begin a simulation. The capability to create a user-specific standard report is detailed in Chapter 5. ACQUIRES facilities for specifying user designed simulation scenarios are described in Chapter 6. These allow the development of the training and education policies mentioned above, as well as access to some force-level policy levers and flow rates. The ACQUIRES user can develop, run, and analyze any number of policy scenarios on an initial civilian database.

Chapters 4 and 7 detail the use of ACQUIRES database facilities on both initial civilian databases and simulation results. These facilities include selecting sub-populations and creating tabulations, pie-charts, and bar charts. Additional facilities available for initial databases include listing characteristics (variables) by individual and viewing individual records. All tabulations, charts, lists, and views can be printed to any device supported by MS Windows 3.0. The data underlying tabulations, charts, and lists can also be output to a comma-separated file for importing into spreadsheets or other packages.

## CHAPTER 2. GETTING STARTED

### Program Installation

To install ACQUIRES, run the installation program "INSTALL.EXE" contained on the ACQUIRES floppy disk. The installation program is run by typing "A:INSTALL" or "B:INSTALL," depending on the drive. Once the installation program is complete, one can place ACQUIRES in the Program Manager using the "New" option under the "File" menu. See page 89 of the *Microsoft Windows 3.0 Users Guide* for details.

### Starting the Program

The ACQUIRES program can be launched in three different ways. From DOS, the program may be run by changing to the ACQUIRES program directory and typing "WIN ACQUIRES." From within Windows, the program may be run two ways. If the ACQUIRES icon appears in the program manager, the program can be run by double clicking the icon. Otherwise, ACQUIRES can be run by selecting the "Run" option under the "File" menu in the Program Manager, followed by typing the full path name of the ACQUIRES program. The screen in Figure 2.1 appears when ACQUIRES is started. Move the cursor over the OK button at the bottom of the window and press the mouse button to continue the program.

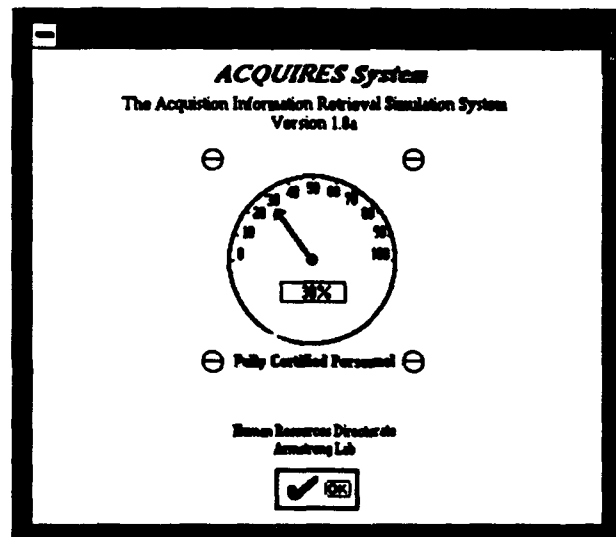


Figure 2.1 - ACQUIRES Title Screen

After pressing the OK on the title screen, a window labeled "Choose Database or Simulation" will appear on the screen. Normally this is where the user chooses the simulation or database he or she wants to work on (see "Loading a Database or Simulation"). If no ACQUIRES databases have been created, skip this screen by moving the cursor over the Cancel button and press the left button on the mouse.

## Main Screen Overview

The main window of ACQUIRES is divided into four parts: the menu bar, the report window, the information box, and command buttons (see Figure 2.2). The command buttons and menu bar are used to execute commands. The report window is used to display graphs and tables based on a database or on simulation results. In the analysis mode, the information box displays the name of the current population and size of the current population. In the simulation mode, the information box shows the name of the current "Scenario" or simulation parameter file.

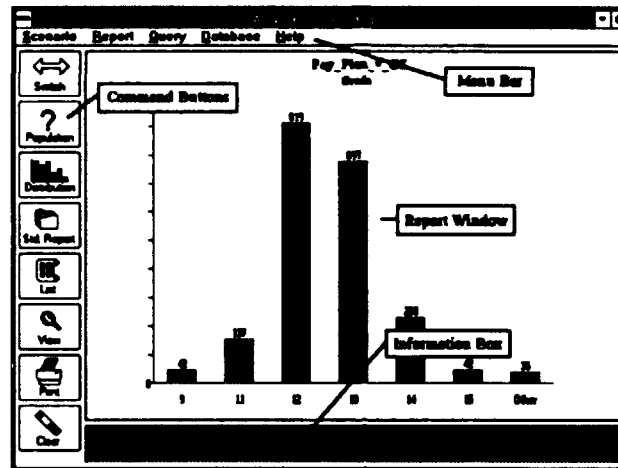


Figure 2.2 - The Main Window

## ACQUIRES Commands Overview

ACQUIRES commands can be executed in two different ways. The first way is by selecting a command from the menu bar. The second way is by selecting one of the command buttons on the left side of the main window. To select a command from the menu bar, use the mouse to move the cursor over a name in the menu bar, and press the left mouse button once. A menu will "drop down" from the word selected (see Figure 2.3). Next, move the mouse over the name of the command desired and press the left mouse button again. To use a command button, move the cursor over a command button and press the left mouse button. Command buttons or menu items that appear in gray represent commands that are currently invalid. Most of the commands in ACQUIRES can be executed from both the menu bar and the command buttons. A few can only be executed from the menu bar. The Switch command (described below) is only available on a command button.

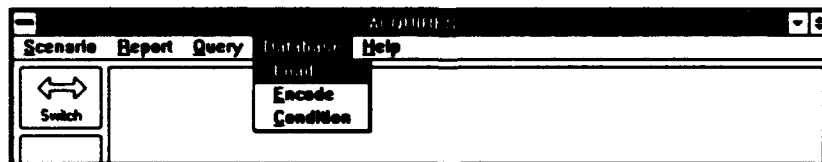


Figure 2.3 - A Drop Down Menu

ACQUIRES has a total of 13 command buttons. However, only eight of these buttons will fit on the screen at a time. Because of this, the command buttons are divided into two sets. The set that appears on the screen when the program starts are the simulation command buttons. These buttons are used to manipulate simulation parameters or "Scenario" files as well as run simulations. The second

set of buttons is used for data analysis. The **Switch** button toggles between these two sets of buttons. The **Switch** button also toggles the information displayed in the information box. A brief description of the function of each command button is listed below.

#### **Simulation Buttons**

- Switch- Switch to the analysis buttons
- New- Create a new set of simulation parameters (a scenario)
- Open- Load an existing scenario from the disk
- Save- Write the current scenario to the disk
- Parameters- Edit scenario
- Run- Run a simulation using the current scenario

#### **Analysis Buttons**

- Switch- Switch to the simulation buttons
- Population- Choose a population in a database or simulation
- Distribution- Make a graph or table of the current population
- Std. Report- Produce or create a user-defined standard report
- List- List the records in the current population
- View- Look at an individual record

The following is a list of all menu commands and a brief description of their function:

#### **"Scenario" Menu**

- New- Create a new scenario
- Open- Load a scenario from the disk
- Save- Write the current scenario to the disk
- Information- Edit basic simulation parameters
- Training- Edit or create training program
- Education- Edit or create training program
- Force Structure- Edit force structure parameters
- Run- Run the simulation with the current scenario
- Exit- Exit ACQUIRES

#### **"Report" Menu**

- Printer Setup- Alter printer settings
- Print- Print the current report
- Save to Text File- Save the current report to a comma separated text file
- Clear- Erase the current report and clear the report window

#### **"Query" Menu**

- Population- Choose a population in a database or simulation
- Distribution- Produce a graph or table base on the current population
- Std. Report- Produce or create a user-defined standard report
- List- List the records in the current population
- View- Look at an individual record

### "Database" Menu

Load- Load a database or simulation

Encode- Convert a text database to the ACQUIRES format

Condition- Add required simulation variables to an MPDP downloaded database

### "Help" Menu

Index- Go to on-line help index

Using Help- Go to on-line help instructions

MS-Windows Help- Go to on-line help for Microsoft Windows

## CHAPTER 3. BUILDING AND LOADING A DATABASE

### Loading a Database or Simulation

The Load Database screen appears when ACQUIRES is launched. The screen also appears when the "Load" command under the "Database" menu is selected. The purpose of this screen is to let the user choose an ACQUIRES database or ACQUIRES simulation results. The first time that the program is run, there probably will not be any databases or simulations to load. If this is the case, move the mouse over the Cancel button, press the left mouse button, and skip to the "Conditioning a Database" section of this manual.

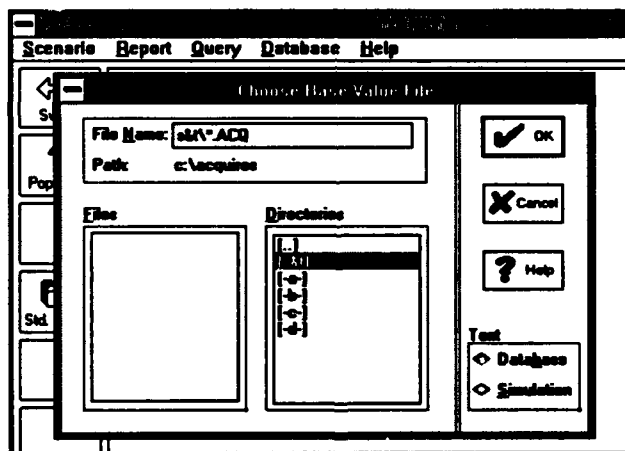


Figure 3.1 - The Load Database Screen

To load a database or simulation, follow these steps:

1. Choose between loading a database and simulation results. To choose one of the options, move the cursor over the word "Database" or "Simulation" at the bottom right corner of the screen and press the mouse button.
2. Choose the directory which contains the item to be loaded. The current directory is written near the top of the screen after the "Path" label. To change to a different directory, move the mouse over the name of the directory in the "Directories" list box that you wish to go to and quickly click the mouse button twice (double click). Alternately, you may click once on the directory, then click on the OK button. If the name of the directory you want is not visible, you may have to use the scroll bar to scroll the directory name into view.
3. Choose a file name. The file name can be typed in the "File Name" input box or chosen from the "File" list box. To type in the "File Name" box, move the cursor over the box and press the

mouse button and type normally. To choose a file name from the "File" list box, follow the same procedure for choosing a directory.

After completing the last step, move the cursor over the OK button and press the mouse button to load the selected item. If you do not want to load a database or simulation, the Cancel button will end the dialog without taking any action.

### Conditioning a Database

The original data for ACQUIRES lacks several important variables needed for a simulation. Because of this, a special procedure is needed to calculate the values of the missing variables. The procedure is called "Conditioning" a database. "Conditioning" adds two new text files to the raw text database. Because the new files are text files, a database must be conditioned before it is encoded. The command for conditioning a database is the "Condition" command under the "Database" menu. To choose this command, move the cursor over the word "Database" at the top of the screen and press the mouse button once. A box containing the word "Load," "Encode," and "Condition" will appear below "Database." Move the cursor over the word "Condition" and press the mouse button again. The Input File dialog will appear on the screen (see Figure 3.2).

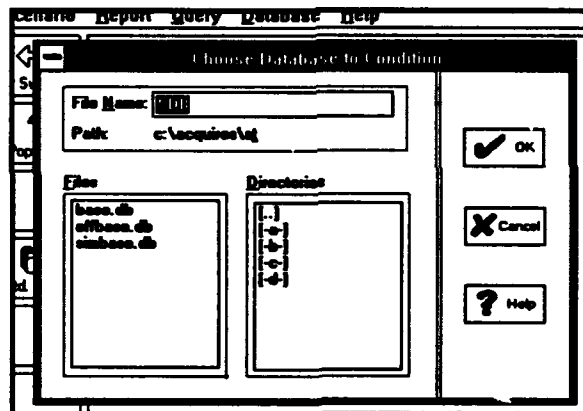


Figure 3.2 - The Input File Dialog

To choose a database to condition, follow these steps:

1. Choose the directory which contains the database you want to condition. To change to a different directory, move the mouse over the name of the directory in the "Directories" list box that you wish to go to and quickly click the mouse button twice. Alternately, you may click once on the directory, then click on the OK button. If the name of the directory you want is not visible, you may have to use the scroll bar to scroll the directory name into view.
2. Choose a database description file name. If you use the standard description file, this will be "base.db." The file name can be typed in the "File Name" input box or chosen from the "File" list box. To type in the "File Name" box, move the cursor over the box and press the mouse button and type normally. To choose a file name from the "File" list box, follow the same procedure for choosing a directory.

After completing the last step, move the cursor over the OK button and press the mouse button to condition the database. If you want to leave the dialog box without taking any action, press Cancel.

If you hit **OK**, a window will appear to let you know how the conditioning is progressing. When the conditioning is finished, the window will disappear. When the conditioning is finished, the database is ready to be encoded. The default name for the new database description file is **"simbase.db."** This is the file you will choose when encoding the conditioned database.

### **Encoding a Database**

Because ACQUIRES uses a special format for its databases, raw text databases must be encoded before any other work can be done on them. After a database is encoded, the original text database files are not used by ACQUIRES and can be deleted. If you intend to simulate off of a database, a database must be conditioned before it is encoded (see **Conditioning a Database**). The command for encoding a database is the "Encode" command under the "Database" menu. To choose this command, move the cursor over the word "Database" at the top of the screen and press the mouse button once. A box containing the word "Load," "Encode," and "Condition" will appear below database. Move the cursor over the word "Encode" and press the mouse button again. The Input File dialog will appear on the screen. Follow the following steps:

1. Choose the directory which contains the database you want to encode. To change to a different directory, move the mouse over the name of the directory in the "Directories" list box that you wish to go to and quickly click the mouse button twice. Alternately, you may click once on the directory, then click on the **OK** button. If the name of the directory you want is not visible, you may have to use the scroll bar to scroll the directory name into view.
2. Choose a database description file name. If you use the standard description file, this will be **"base.db."** If you conditioned the database, choose **"simbase.db."** The file name can be typed in the "File Name" input box or chosen from the "File" list box. To type in the "File Name" box, move the cursor over the box and press the mouse button and type normally. To choose a file name from the "File" list box, follow the same procedure for choosing a directory.

After completing the last step, move the cursor over the **OK** button and press the mouse button to condition the database. If you want to leave the dialog box without taking any action, press **Cancel**. If you hit **OK**, a window will appear to let you know how the encoding is progressing. When the encoding is finished, the window will disappear. If you encode using **"base.db"** or **"simbase.db,"** the name of the newly encoded database will be **"civ.acq."** When the encoding is finished, the new database is ready to be loaded by ACQUIRES. To load the new database, move the cursor over the word "Database" at the top of the screen and press the mouse button once. A box containing the word "Load," "Encode," and "Condition" will appear below database. Move the cursor over the word "Load" and press the mouse button again (see **Loading a Database or Simulation**).

**Note:** Because windows is a multitasking system, you can use other Windows programs while a database is being conditioned or encoded. However, this can be dangerous since another application could cause the system to crash. If this happens, you could have to redo the conditioning or encoding.

## CHAPTER 4. DATABASE QUERIES

### Selecting a Population

The first step for obtaining information from a database is selecting a population. To do this, press the command button marked **Population** or select "Population" from the "Query" menu. The dialog box in Figure 4.1 will appear. A list of previously defined populations will appear in the "Population" list box (this can be empty if no populations have been designed). If the name of the population you want appears in the list, move the cursor over that name and press the left mouse button. If the population you want is not in the list, you can add and edit populations with the **Add** and **Edit** buttons (discussed in the next section). Underneath the "Population" list box, there is a list of options. The diamond next to the "Database" option should be colored in. The other options are used for simulations and will be discussed later. If the "Database" option is not selected, move the mouse over the word "Database" and press the left mouse button. After selecting your population, move the mouse over the **OK** and press the left mouse button. If you decide not to select a population you may press the **Cancel** button.

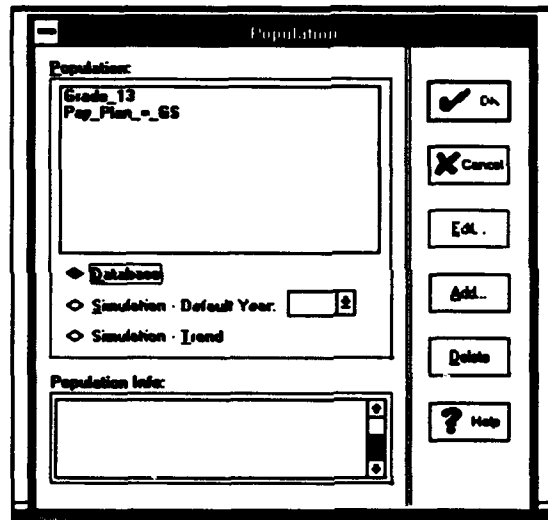


Figure 4.1 - The Population Dialog Box

The following is a summary of the function of each control in the Population Dialog Box:

**Population:** The population list box lists all existing sub-populations. To select a population, move the cursor over the selected population name and press the mouse button. If many populations are available, the scroll bar may be used to change the visible populations.

**Options:** Directly below the population list box is a list of three options used for different types of populations. For now, only use the "Database" option.

**Population Information:** The population information panel contains a brief description of the sub-population currently highlighted.

**OK:** The OK button, located on every window in the ACQUIRES program, is used to execute commands just selected into the current window. Within the Population panel, the OK button extracts the population that has been highlighted from the database.

**Cancel:** The Cancel button is also located on every window of the ACQUIRES program. Pressing on the Cancel button causes the dialog box to close without any action being taken.



**Edit:** The Edit button is used to modify the highlighted population. The population that is in use can not be edited.

**Add:** The Add button is used to create a new population.

**Delete:** The Delete button erases the population highlighted in the "Population" list.

**Help:** The Help button, located on every window in the ACQUIRES program, is used to get on-line help on the current dialog box.

### Creating and Editing a Population Macro

The "Add Macro" dialog box (Figure 4.2) appears when the Add button in the population dialog box is pressed. If the Edit button is pressed, the same dialog box will appear except that it will be labeled "Edit Macro" and it will contain the previous definition of the population (also referred to as a population macro).

The image shows a screenshot of a software dialog box titled "Add Macro". The dialog box is rectangular with a standard window border. At the top, there is a title bar with the text "Add Macro". Below the title bar, there are several sections. The first section has two text input fields: "Name:" and "Description:". Below these is a section titled "New Condition". This section contains several input fields: "Variable:" (with a small "2" in a box next to it), "In Year:" (with a small "2" in a box next to it), "Operator:" (with a small "2" in a box next to it), and "Value:" (with a small "2" in a box next to it). To the right of these fields are several buttons: "and", "or", "not", "(", and ")". Below these buttons are two more buttons: "Add Condition" and "Add Macro". At the bottom of the dialog box, there is a large text area labeled "New Macro:". To the right of the dialog box, there are three buttons: a checkmark button labeled "OK", a button with an "X" labeled "Cancel", and a button with a "?" labeled "Help".

Figure 4.2 - Add Macro Dialog Box

The first step for creating a population macro is to give the macro a name. Activate the name edit box control by moving the mouse over the box and pressing the mouse button. When the window is active, a flashing cursor will appear in the box. You can then type with the keyboard. A macro name can be up to 32 characters long and cannot contain spaces. If spaces are used in the name, ACQUIRES will automatically convert them to underscores. When finished typing, do not hit the enter key. Pressing the enter key is the keyboard equivalent of pressing the OK button with the mouse. Next, input the optional description in the same manner in the edit box labeled "Description."

After entering the name and description for a macro, the next step is to type or select the macro text in the "New Macro" edit box. The first part of the macro text is called a condition. A condition is a variable name, an equality test, and a value. Some examples of conditions are "grade = 9," "pay\_plan not\_equal 9s," and "grade less\_than 14." The valid equality tests are "equal," "not\_equal," "less\_than," "less\_than\_or\_equal," "greater\_than\_or\_equal," and "greater\_than." These may be abbreviated using the math symbols on the keyboard. For example, "less\_than\_or\_equal" is abbreviated "<=" and "not\_equal" is abbreviated "<>." The valid variable names and values are database dependent. Since the variable and value names are often long and abbreviated, the "Add Macro" dialog box has a facility to aid in the creation of a

condition. Instead of typing in a condition, each part of the condition can be selected from a list. First choose a variable from the drop down list labeled "Variable." To do this, move the cursor over the down arrow button on the right side of the "Variable" box and press the mouse button. A list of variable names will appear below the box (see Figure 4.3). Select a name from the list with the mouse as with a normal list box. After making a selection, the list box will automatically disappear. Variables with unique values such as name or social security number are illegal.

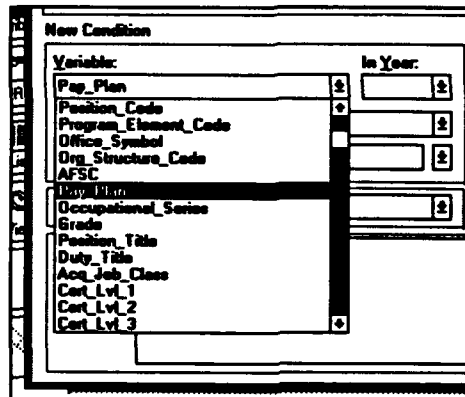


Figure 4.3 - Variable Drop-Down List

Next, select the equality test in the same manner as the variable using the "Operator" list. The "Value" list is a little different from the other two lists. If a variable has a numeric value, you will have to type the value in the "Value" box the same way that you typed in the macro name. Otherwise select the value from the drop-down list as with "Variable" and "Operator." Do not use the "In Year" list box at this time. It will be explained along with simulation queries. Finally, after selecting a "Variable," "Operator," and "Value," press the Add Condition button, and the condition will automatically be printed in the "New Macro" edit box (Figure 4.4).

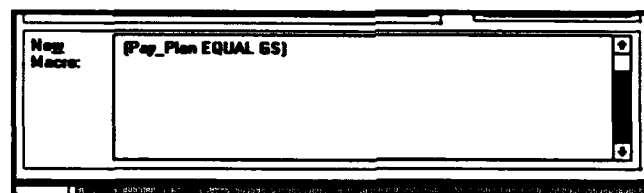


Figure 4.4 - A New Condition

The first two values in the "Value" list are always "ND" and "NR." These stand for "no data" and "no record." "ND" is used to test for fields that were left blank in the original data. A record in ACQUIRES is often spread across several files. The records in each file are matched when the database is encoded. Sometimes a record does not have a match. "NR" is used to test for non-matches. For example, the condition "installation\_loc\_name\_pos = NR" tests for people who are not matched to any job.

Although a macro could contain only a single condition, the user will frequently need to use more than one condition in a macro. Conditions are joined by using "and" and "or." The user can type them in manually, or press the And or Or button to have ACQUIRES type them in. Use "and" to join two conditions that must be satisfied at the same time. Use "or" to join two conditions when the expression should be true if either condition is true. The population macro "pay\_plan=gs and grade=12," for example, selects all records with both grade equal to 12 and pay plan equal to GS. If

a record has grade 12, but not pay plan GS, then the record will not be in the population. The macro "pay\_plan=gs or grade=12" finds a different set of people. In addition to the records that satisfy both conditions, the "or" population will also include people that only meet one of the conditions. So if a record has pay plan GS, but not grade 12, the record will still be included in the population.

When more than two conditions are used in a macro, it is important to know that "and" is evaluated before "or." For example, in the population "pay\_plan=gs and grade=12 or grade=13," the result of "pay\_plan=gs and grade=12" will be computed first. This means that a record with grade 13 will always be in this population regardless of pay plan. You can control what order conditions are evaluated by using parentheses. Any expressions in parentheses are always evaluated first. In the population "pay\_plan=gs and (grade=12 or grade=13)," the result of "grade=12 or grade=13" will be computed first because of the parentheses. This causes a record with grade 13 to be in the population only if its pay plan is GS. If several layers of parentheses are used, the innermost parentheses are evaluated first. By using parentheses, it is possible to generate populations of great complexity.

When using complex populations, it can be difficult to find the negation of a population. To solve this problem, use the "not" operator. Since "not" is evaluated before "and" and "or," you will need to place parentheses around the expression you want negated. For example, the negation of "grade=12 or grade=13" is "not(grade=12 or grade=13)," not "not grade=12 or grade=13."

A fast way of building complex populations is by using the Add Macro facility. This button copies the text of another population into the new macro. The macro is automatically surrounded by parenthesis. To use this facility, choose the macro you want to insert from the "Macro" drop-down list box and then press the Add Macro button. If you build a good set of basic population macros, this feature can be very useful.

### Summary of Add Macro Dialog Box

**Name:** The Name bar located at the top of the Add Macro window is used to name the macro.

**Description:** The Description bar is used to add optional descriptive information of the sub-population.

**Variable:** A drop-down list of variables used to build a condition. To see the list, click on the down arrow at the right of the Variable bar.

**Operator:** The Operator drop-down list contains functions used to test a chosen variable against a value.

**Value:** The Value drop-down list contains a list of valid values for a selected variable. If the values for a variable are numeric the value will need to be typed in.

**Connector buttons:** Connector buttons, And, Or, Not, (, and ), link together conditions.

**Add Condition:** The Add Condition button builds a new condition based on the selections in the "Variable," "Value," and "Operator" lists and places it in the "New Macro" box.

**Macro:** The Macro drop-down list contains a list of existing population macros.

**Add Macro:** The Add Macro button takes a selected population from the Macro drop-down and writes its expression into the New Macro window.

**New Macro:** The macro that is currently being developed appears in the New Macro window.

## Distributions

After the user has selected a population, the contents of the population can be examined by using the distribution feature in ACQUIRES. Specifically, this feature shows the number of records for each value of a variable. For example, a distribution by grade will show the number of people in each grade. Distributions can be displayed in three forms: a table, a bar chart, and a pie chart. To use this feature, press the Distribution command button, or select "Distribution" from the "Query" menu.

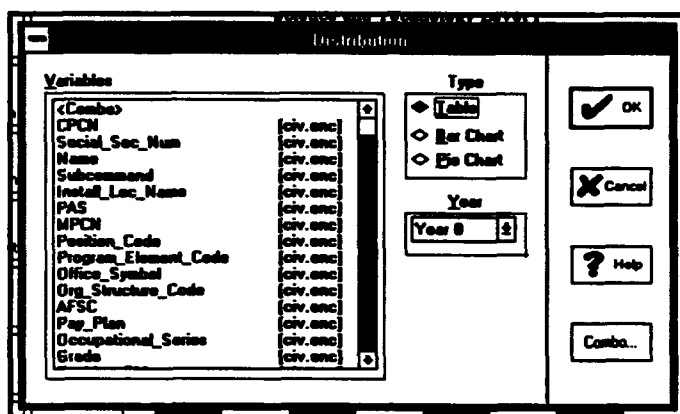


Figure 4.5 - The Distribution Dialog Box

Figure 4.5 shows the Distribution Dialog Box. This window is used to choose the variables for a distribution, as well as the form in which the distribution will be displayed. First choose the type of distribution by moving the cursor over the desired distribution type (Table, Pie Chart, or Bar Chart), and then press the mouse button. Next select the distribution variable(s) in the "Variable" list box. The user can select one or two variables from the list. If a third variable is selected, the first variable chosen will automatically be de-selected. In addition, a variable can be manually de-selected by selecting it a second time with the mouse. If the user chooses two variables, a table is the only valid output type. The row variable is the first variable selected, and the column variable is the second variable selected. After the output type and variable(s) are chosen, press the OK button to create the distribution.

Figure 4.6 gives an example of a table distribution on the population of people in pay plan GS by grade and location. Since the user chose the "Install\_Loc\_Name" variable first, it is the row variable. Note that a scroll bar appears at the bottom of the window due to the table being too large to fit on the screen. The user must use the scroll bar to view the rest of the table. Also note the row and column totals. The totals are always the totals for the entire table, not just the visible part on the screen. Sometimes a row or column labeled "ND" or "NR" will appear in the table. These stand for "No Data" and "No Record." "No Data" is used for fields that were left blank in the database. "No Record" is used for when a person is missing part of their record. For example, if a person is not matched to a position, the value of all position data fields is "NR."

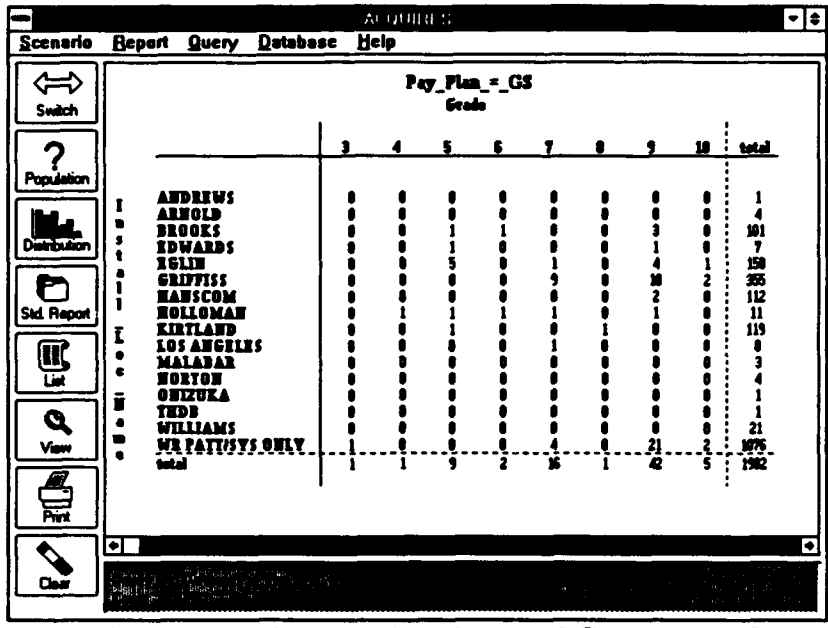


Figure 4.6 - Installation Location Name and Grade Table Graph

Figure 4.7 shows an example of a bar chart using the "Install\_Loc\_Name" variable. Notice that the bar height is printed at the top of each bar. Bar charts can only display distributions with a small number of values. Otherwise, the bar labels will run together. If this occurs, use a pie chart or table instead. Note that small groups are combined into an "Other" group.

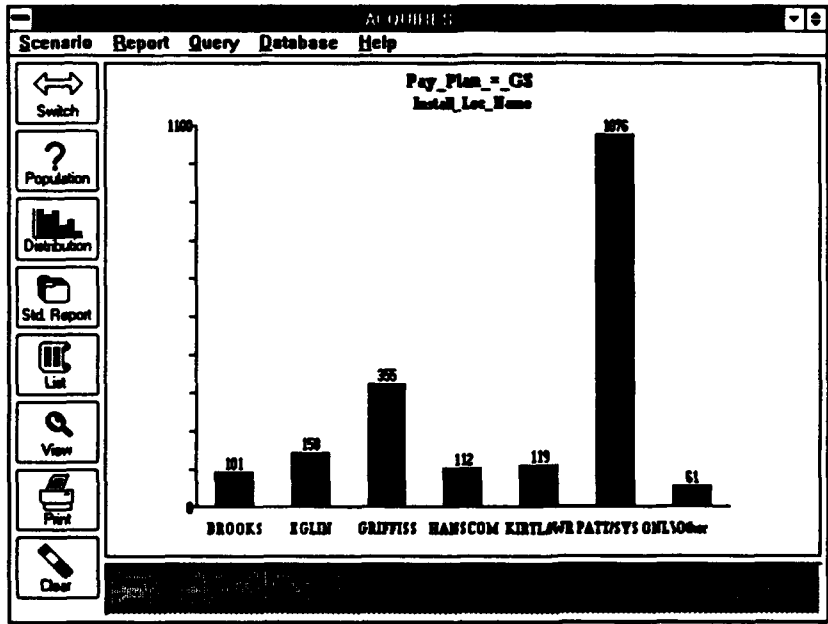


Figure 4.7 - GS Pay Plan Bar Graph by Base

Figure 4.8 shows a pie chart on the location variable. The label for each segment of the pie has the following form- value: count (percentage). Although a pie chart can usually display more values than a bar chart, at times the labels on a pie chart may crowd into one another. If this occurs, use a table instead of a pie chart. Note that small slices are combined into an "Other" slice.

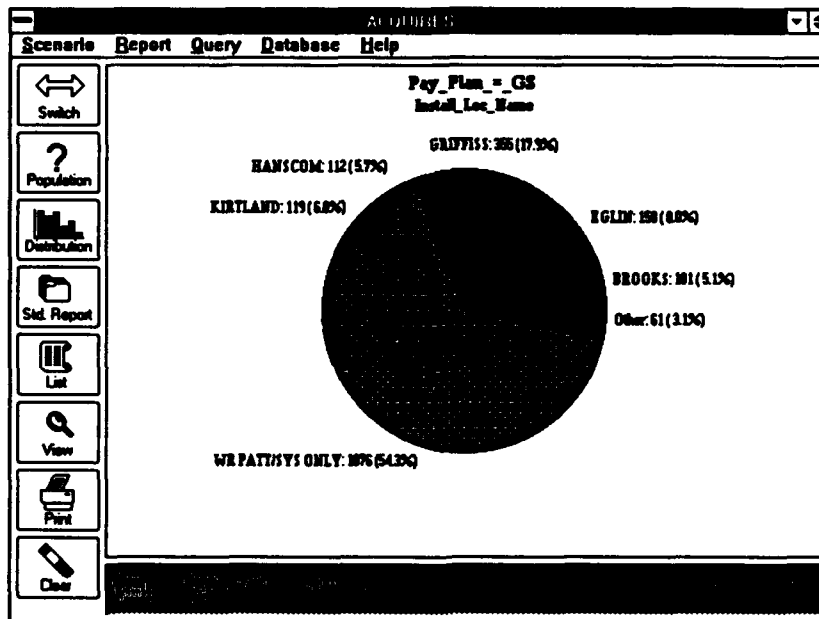


Figure 4.8 - Pie Graph of GS Pay Plan by Base

### Composite Variables

A composite variable is a variable that can have many values at once. For example, a variable for a training course title is a composite variable since one person can have several training course titles. These variables behave differently in distributions than regular variables. With a regular variable, every person appears only once in the distribution. With a composite variable, people are counted once for every composite value that they have. For example, in a training course distribution, a person having ten courses will contribute ten items to the distribution. Consequently, the total of a distribution on a composite variable will be equal to the total number of composite values rather than the total number of people.

### Combo Variables

ACQUIRES has a special variable called the combo variable which can be used in distributions. The combo variable is used to display several variables with similar values in one distribution. For example, in the APDP datasets, certification level is contained in five variables. This allows an individual to be certified in more than one stall. By using a combo variable, the values of all five certification variables can be shown in one table. To choose what variables to combine, press the Combo... button in the distribution dialog box. The dialog box in Figure 4.9 will appear. Select the variables you want to combine from the "Variable" list box. To add a variable to the selection, move the cursor over an un-highlighted variable name and press the mouse button. The name will be highlighted to indicate it is selected. To remove a variable from the selection, move the cursor over a highlighted variable and press the mouse button. You must select at least two variables. When finished, press the OK button. To include the combo variable in a table or bar chart, choose the variable name "< combo >" from the top of the variable list.

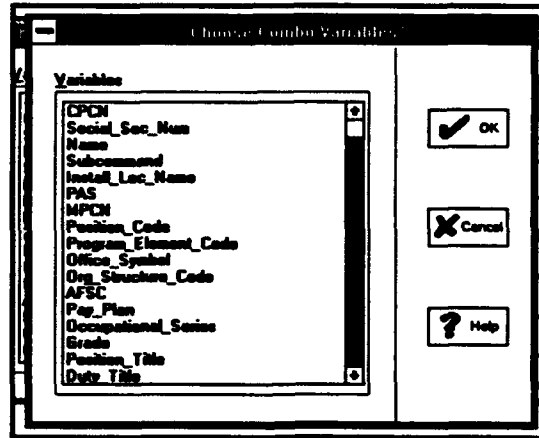


Figure 4.9 - Combo Variable Dialog Box

Figure 4.10 shows an example of a table on a combo variable. The values of the variables Certification1 through Certification5 are all shown in the table. The table shows certifications at the end of a five year simulation. Note that the totals in a distribution on a combo variable will be several times the total populations size. Because five variables are in the combo, the totals are five times the actual population size. However, as the 9352 count in the ND column of Figure 4.10 indicates, most of the certification fields contain no data.

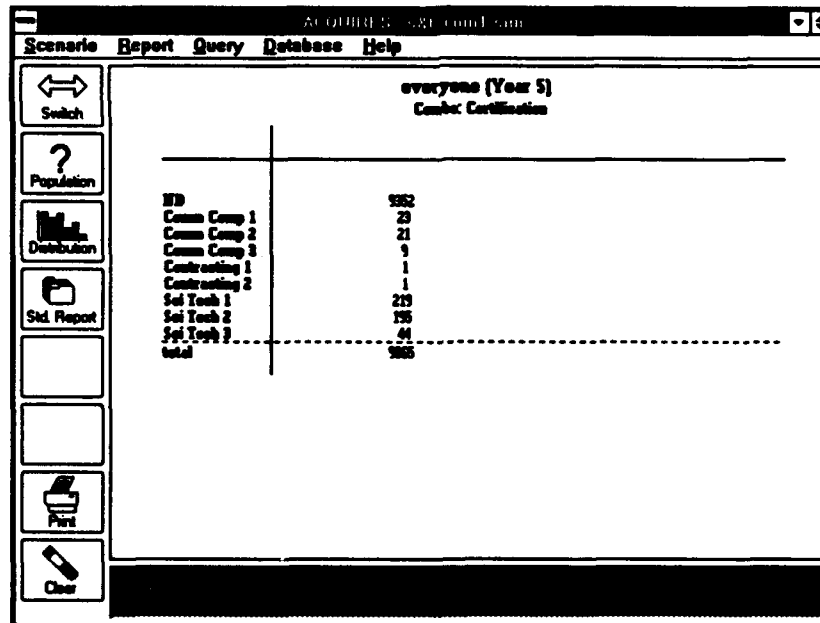


Figure 4.10 A Combo Variable Distribution

### Lists

The list feature is used to create a list of records in a population. To create a list, press the List command button. The dialog box in Figure 4.11 will appear on the screen. A list of all the variables in the database appears in the "Variable" list box. Notice that two items appear next to the variable name in the list box. The first item is the variable's abbreviated name. The second item is the name of the file that contains the variable. In the "Variable" list box, choose the variables to

appear in the list. Composite variables cannot be used in a list. If a variable is accidentally chosen which is not desired, click on the variable name a second time to de-select it. The number of columns that the list requires is printed at the upper right corner of the screen. It is updated each time a variable is selected or deselected. After the variables have been selected, press the OK button. The list is then displayed in the report window. Figure 4.12 shows a list with variables "Name," "Pay\_Plan," "Subcommand," "Location," and "Grade." Note that the list is labeled with abbreviated variable names.

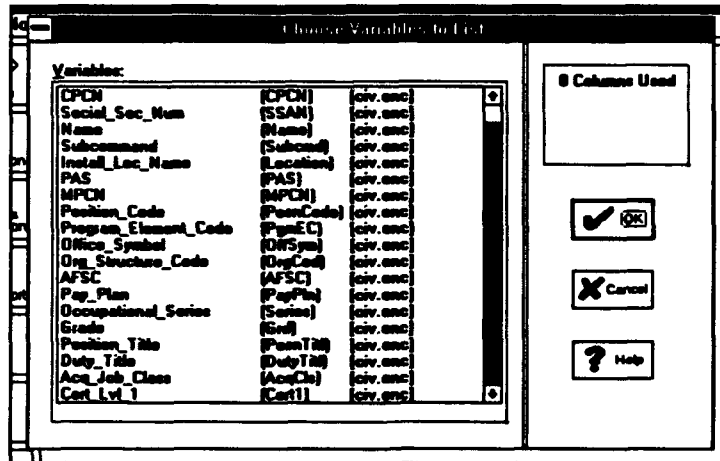


Figure 4.11 - List Dialog Box

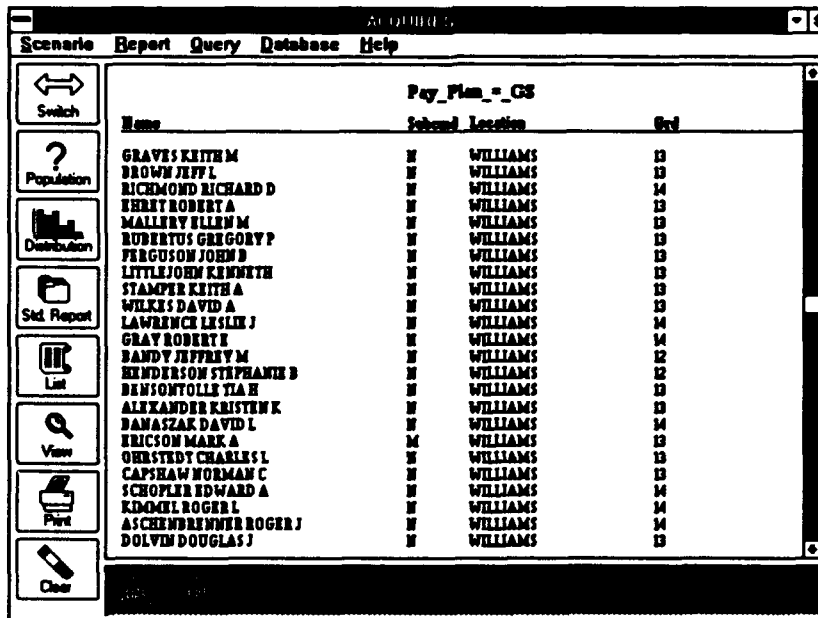


Figure 4.12 - A List Report



## View

View report is used to examine an individual record in the database. To generate a view, press the View command button or select "View" from the "Query" menu. If the size of current population is less than 500, the dialog in Figure 4.13 will appear. If the population contains more than 500 records, the "Records" list box will be missing from the dialog box. The first step for examining an individual record in ACQUIRES is to decide which variable ACQUIRES will use to search for the record. Pick the desired variable from the "Key Type" drop-down list. Next type in the value for ACQUIRES to look for in the "Key Value" edit box. If the dialog has a "Records" list, ACQUIRES will automatically search the list based on the information that has been typed so far. For example, if a user types "BE," ACQUIRES will select the first list item that begins with "BE." The value may also be chosen from the "Records" list box. By default, a view will include all variables in the database. Figure 4.15 shows the results of a view.

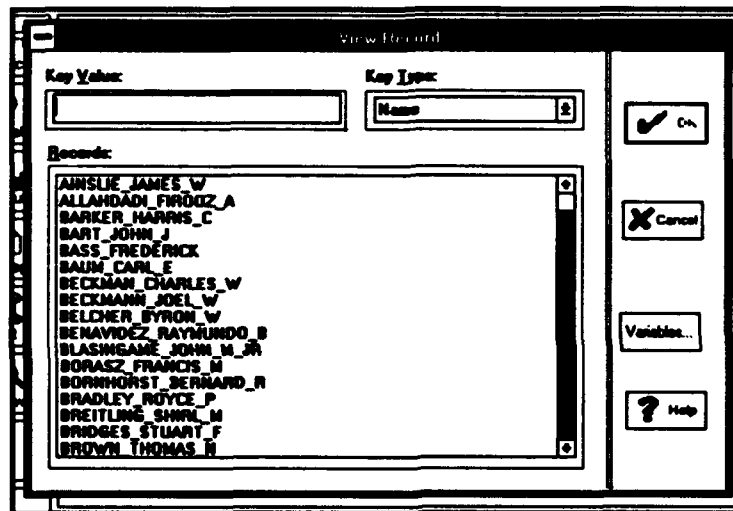


Figure 4.13 - The View Record Dialog Box

### Selecting View Variables

The variables displayed by the view function in ACQUIRES can be set by choosing the Variables... button in the "View Record" dialog box. Figure 4.14 shows the dialog box used to select the view variables. All of the variables in the current database are listed in the "Select Variables to View" list box. Only highlighted variables will appear in the view. If a highlighted variable is selected with the mouse, the highlighting is removed. If a non-highlighted variable is selected with the mouse, the highlighting is turned on. Pressing the Clear button will cause the highlighting to be removed from all variables. Pressing the Select All button will highlight all variables. When finished making selections, press the OK button. The Cancel is used to close the dialog box without changing the view variables.

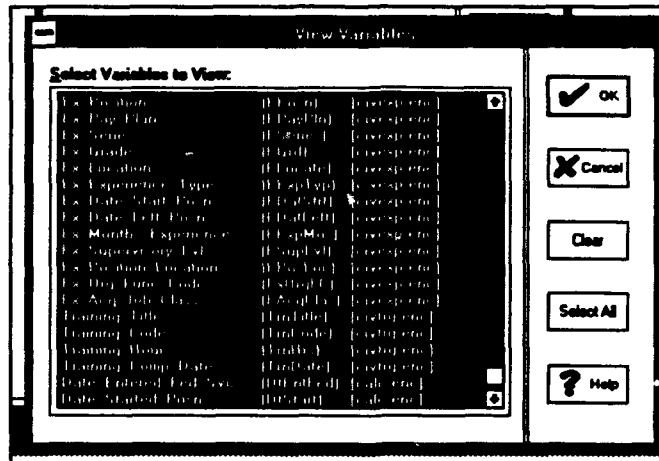


Figure 4.14 - Selecting Variables to View

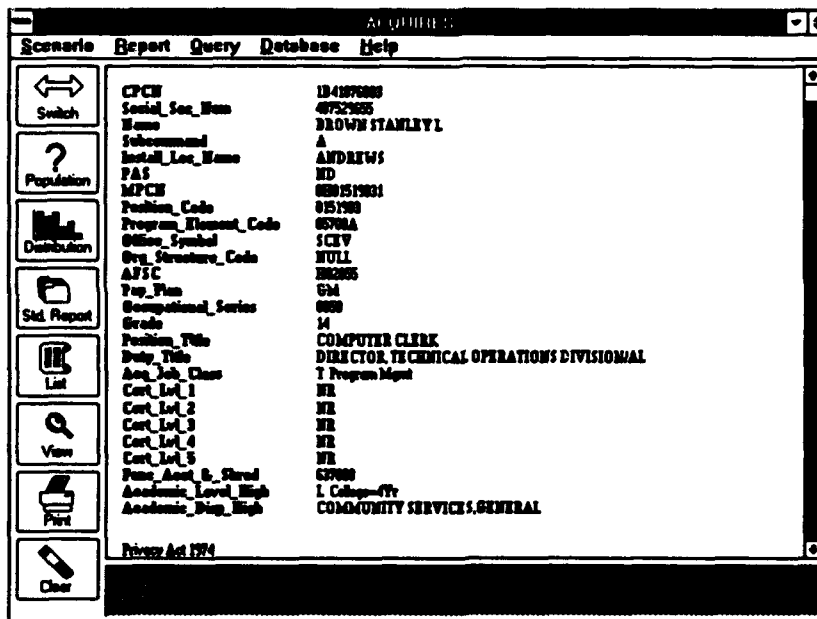


Figure 4.15 - View of a Personnel Record

### Printing Reports

Any distribution, list, or view can be printed by pressing the Print command button or by selecting "Print" from the "Report" menu.

### Exporting Reports

Any distribution, list, or view can be exported to a text file by selecting the "Export to Text File" command in the "Report" menu. The dialog box in Figure 4.16 will appear when this command is selected. The current directory is printed beside the "Path:" label. To choose a new directory, double click on a directory in the directory list. Once the desired directory has been chosen, type the file name in the "File Name" edit box. This option is normally used to export data to other software packages such as spreadsheets, databases, or presentation graph packages. The export file will be comma separated.

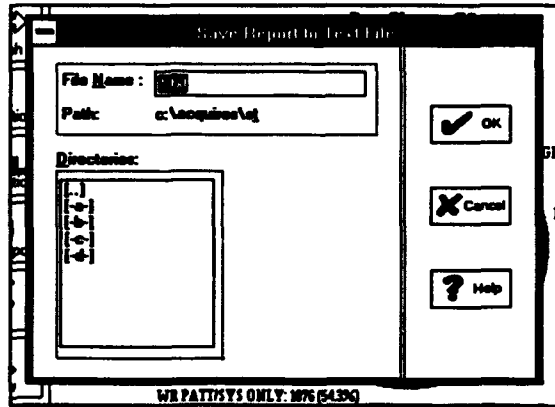


Figure 4.16 - Exporting a Report

## CHAPTER 5. STANDARD REPORTS

The purpose of the Standard Report feature is to allow the user to 'standardize' routinely used graphs or lists, so that they may be produced quickly. To use standard reports, press the **Std. Report** command button. The dialog box in Figure 5.1 will appear. To produce a report, select a report from the "Reports" list; choose "Screen," "Printer," or "File" as the output type; and press the OK button (if no reports have been created, the report list will be empty, as seen in Figure 5.1). The Add button is used to create new reports. The Delete button deletes the reports highlighted in the "Report" list. If the output type is "Printer," the user may choose more than one report from the report list. In this way, an entire sequence of reports can be produced unattended. If the output type is "File," ACQUIRES will prompt the user for a file name.

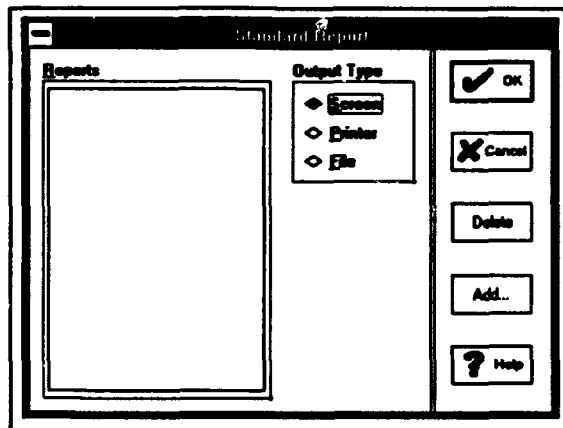
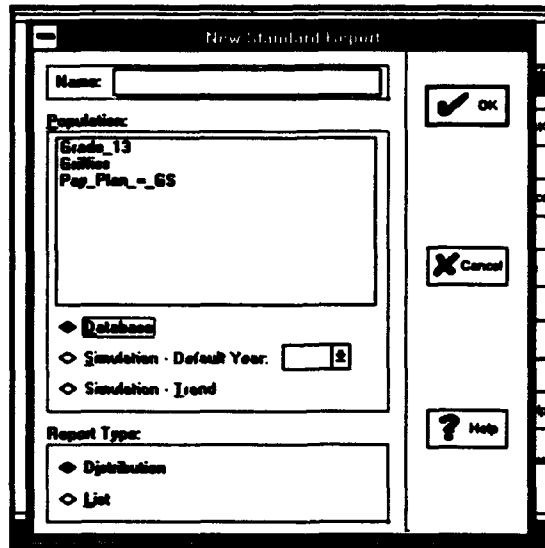


Figure 5.1 - The Standard Report Dialog Box

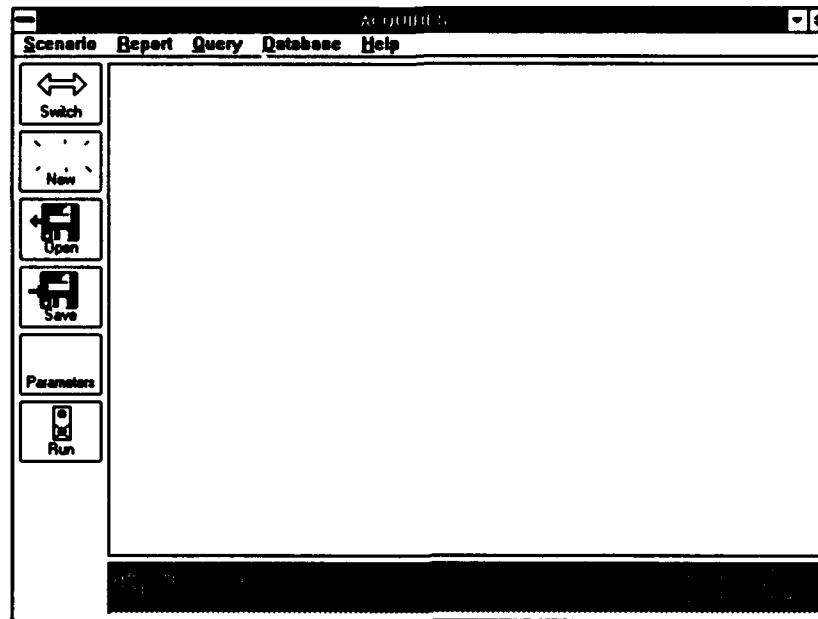


**Figure 5.2 - Creating a New Standard Report**

To create a new standard report, click on the Add button in the Standard Report window. The dialog box in Figure 5.2 will appear. First, give the standard report a name in the "Name" edit box. Be sure to give the report a descriptive name so you will not forget what the report does. Next choose a population from the population list box (the populations are the same populations available under the population button). Under the population list, choose the population type. The "Database" option is for reports on databases. The "Simulation - Trend" and "Simulation - Default Year" options are for simulation reports. For an explanation of these options, see Chapter 7. Finally, choose either "Distribution" or "List" as the report type. When finished, press OK. If "List" was chosen as the report type, the list dialog box will appear next. If "Distribution" was chosen, the distribution dialog box will appear. Refer to Chapter 3 for additional help on these dialog boxes. Once a list or distribution has been designed, the new standard report will appear in the reports list.

## **CHAPTER 6. SCENARIOS AND SIMULATIONS**

The simulation facilities allow the user to build a simulation scenario describing Air Force policy and other factors affecting civilian personnel. An emphasis is placed on allowing the user to create detailed training policies which affect the ability of civilians to obtain the training necessary to advance their acquisition certification. Available seats may be specified for each training course, and arbitrary groups of civilians can be designated as target groups which have special allotments of course seats. Likewise, special education programs can be represented by targeting educational attainment to user defined groups. Provisions have also been provided to allow for overall changes to such force level variables as separation rates, hiring freezes, and time in grade requirements. The following screen illustrates the buttons associated with a simulation. Descriptions of the actions of each button are listed below.



**Figure 6.1 - Buttons Associated with a Simulation**

**New:** The New button is used to create a new simulation. Selecting this button will clear the existing simulation, and any changes to parameters will be lost unless they have already been saved as a scenario. Clicking on New accesses four parameter dialog boxes which contain default values for the scenario: Simulation Information, Education, Training, and the Force Structure. These dialog boxes can be accessed in order by clicking on the Next button in the current dialog box parameter windows. To skip to the previous parameter screen, click on the Previous button in the current dialog box window. In addition, each of the dialog boxes can be accessed directly by selecting the appropriate menu item under the Scenario menu at the top of the screen.

**Open:** The Open button allows the user to load an existing scenario from disk into ACQUIRES. This scenario can be loaded from any drive or directory.

**Save:** The Save button is used to save a simulation. The dialog box asks for a directory and file name under which to save the simulation.

**Parameters:** The Parameters button is used to view and modify existing Simulation Information, Education, Training, or Force Structure simulation parameters. It provides the same access to a scenario as new, but does not clear the current scenario. It can be used to access a simulation loaded with Open or change some of the parameters in a New scenario which has not been completed.

### **Simulation Information**

The first screen to appear after clicking on the New button or the Parameter button is the Simulation Information screen, as seen below. This screen prompts the user for the description of the scenario. The description can be used to describe an initial scenario or edited in the case of an existing scenario (a description is optional). The information box also allows the user to specify the number of years to simulate and the start date. There is a maximum length of five years for the simulation, and

the start date must be input using the format YR-MO-DD. ACQUIRES uses a default date of 92-1-1. In general, this date should be the date the database was downloaded.

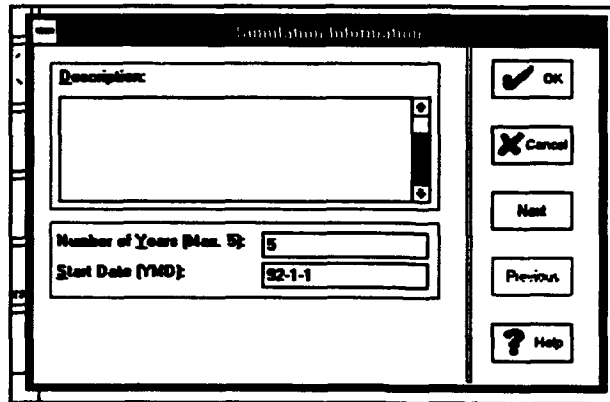


Figure 6.2 - The Simulation Information Screen

After data for the Simulation Information dialog box has been input, click on the Next button to move to the Education parameter screen.

### Education

The Education parameter screen allows the user to specify the results of any special educational programs which would affect the ability of civilians to obtain college degrees. In addition to allowing the user to access and change the overall rate at which degrees are obtained, target groups of civilians can be identified and the rate of educational attainment modified. This option provides extreme flexibility in specifying the results of any educational program. Default aggregate educational attainment rates are provided for the three possible degrees: Bachelors, Masters, and Doctorate. ACQUIRES assumes that all graduating candidates must have already received the degree preceding the degree to be obtained. For example, to be eligible to obtain a master's degree, the individual must have already completed a bachelor's degree. The following screen gives an example of using the Education dialog box.

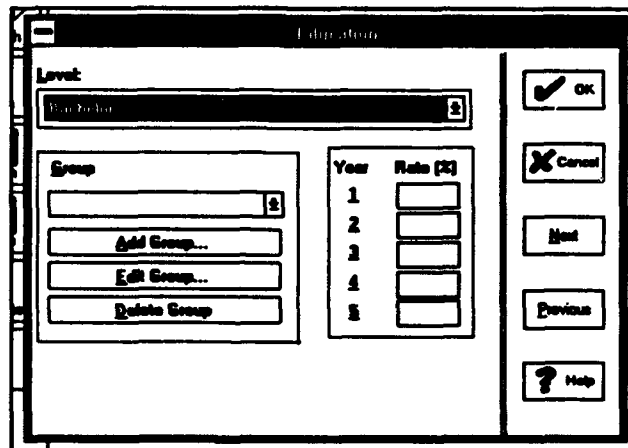


Figure 6.3 - An Education Dialog Box

## Specifying Target Groups

In the education dialog box, rates may be designated for specific target groups or for the simulation population as a whole. Any number of target groups may be defined and assigned different rates of educational attainment for any or all of the degrees. For example, a target group entitled Griffiss (including all individuals from that base) may be designated to receive an additional percentage of bachelor degree graduates per year than the total population. The following example illustrates this concept.

To create a new target group, begin by clicking on the Add Group button located in the Education window. The Add Macro screen, identical to the one previously discussed under the section on creating sub-populations, will appear.

Enter the name Griffiss in the Name space to create the condition [Installation Location Name Position equals Griffiss]. Refer to the section on Creating a Sub-population for detailed explanations on using the Add Macro dialog box. When finished the screen will appear as:

The screenshot shows the 'Add Macro' dialog box with the following fields and values:

- Name:** Griffiss
- Description:** (empty)
- Condition:**
  - Variable:** Installation\_Loc\_Name\_Pos
  - In Year:** (empty)
  - Operator:** EQUAL
  - Value:** GRIFFISS
- Macro:** (empty)
- Neg Macro:** (Installation\_Loc\_Name\_Pos EQUAL GRIFFISS)

Buttons on the right: OK, Cancel, Help.

Figure 6.4 - Using the Add Group Button to Create a New Target Group

Click on the OK button to return to the Education parameter window. The Griffiss target group has been added to the groups available under education and can now be used as a target group for any of the degree levels.

To access the target group just created, click on the down arrow to the right of the Group bar, and then click on the Griffiss target group.

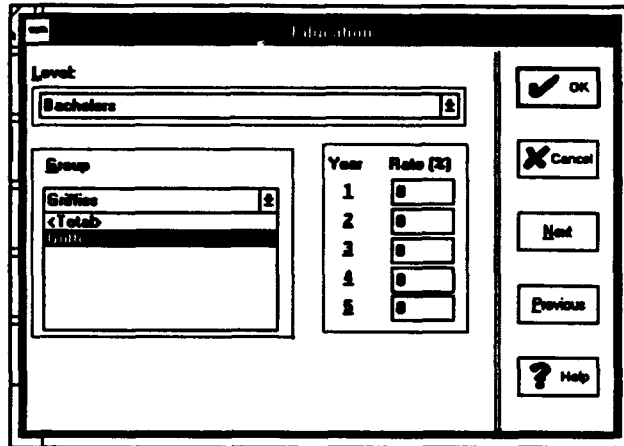


Figure 6.5 - Choosing the New Target Group

The rates by year will all become zero, because no special attainment rates have been set for the new target group.

### Assigning Graduation Rates and Education Levels

Additional education attainment rates can now be set for the Griffiss target group. To select an education level (bachelor's degree, master's degree, and Ph.D.), click on the down arrow of the Level bar followed by clicking on an education level. Set graduation rates for Master's students located at Griffiss to be an additional 2% above the group total by selecting the Master's level from the level option as just described. Any of the rates may now be modified by clicking in the box and replacing the 0 with the new rate (2 in this case). It is possible to jump directly to the next box by typing a TAB key or by clicking on the next box. The example is complete, and the screen should appear as follows:

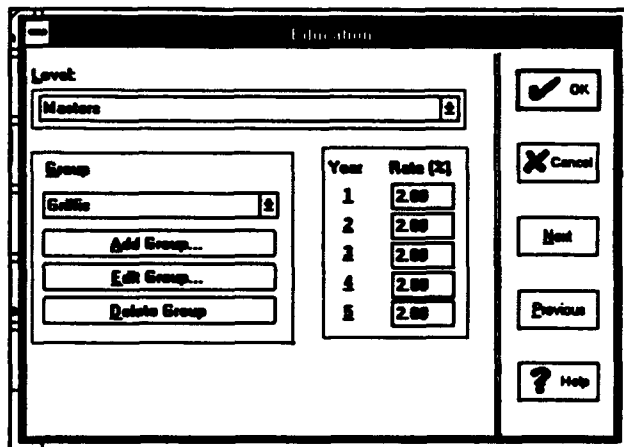


Figure 6.6 - Setting Graduation Rates for Masters Degree at Griffiss

It should be noted that the 2% rate just specified is an additional rate over and above the default rate (which may be changed) for the entire population. In addition, it is entirely possible for a person to be eligible for more than one target group rate. If target groups are specified for both Griffiss and persons of grade 13, there will certainly be grade 13 civilians at Griffiss who are in both groups. In this case, the person receives both rates (in addition to the default) when determining the probability that the person will attain the degree. If desired, the user could now specify a rate for



Bachelors or Doctorate attainment for the same target group (Griffiss). For example, simply select Bachelors from the level option and type the additional rates for bachelors candidates in the rate boxes. As many groups as necessary may be created by repeating this process, and each target group may be assigned any combination of rates for the three degrees by simulation year.

The <Total> group which appears with Griffiss under the Group option is always available. When first selected, the default rates for the currently selected level will be displayed (unless these defaults have already been changed). These defaults may be changed by the user and will be saved with a scenario when it is run or saved. In fact, if a complicated educational program is to be specified with many target groups, it may be best to set the default rates to 0 so that the target rates themselves better reflect a group's actual probability of attaining educations.

Note that not all variables can be used to create target groups from the Macro dialog box. Only those variables which are actually included in the simulation may be accessed. If a variable which is not in the simulation is selected, a warning will be given when attempting to exit the Macro dialog box. For details see Appendix F.

### Training

The Training dialog box operates in almost precisely the same manner as the Education dialog box and allows extreme flexibility in targeting training programs to specific groups of civilians. The training courses available under this option are those required to meet the certification requirements of the various stalls (see Appendix D for a further explanation). The following screen shows the Training parameter window.

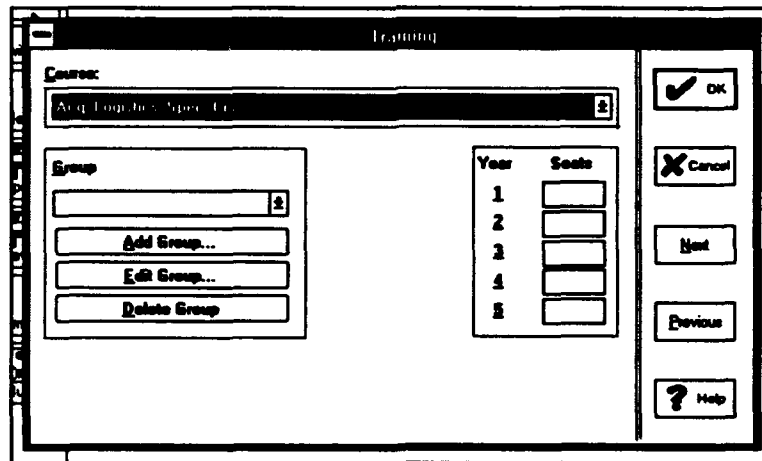


Figure 6.7 - The Training Parameter Window

The only difference between the Training dialog and the Education dialog is that the Course bar now replaces the level bar from the Education dialog. Opening the Course bar produces a complete list of all available training courses. An example of a screen with the Course bar open is given below. To select a specific course, click on the course title.

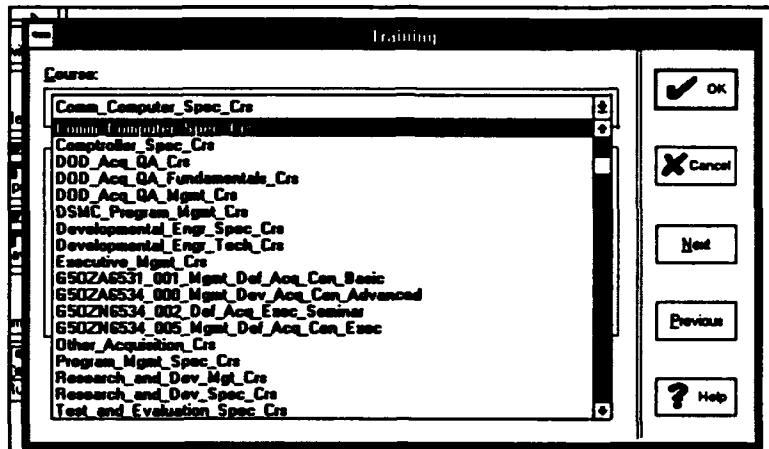


Figure 6.8 - Using the Course Bar

### Specifying Target Groups

Target groups for Training are specified in the same manner as target groups for Education. Generate a target group by clicking on the Add Group button in the Training window. After creating the condition for the new target group in the Add Macro dialog, click on the OK button to return to the Training parameter dialog. The new group will be available in the Groups bar.

### Allocating Total Seats

Instead of specifying rates as in the Education dialog, a specific number of seats are allocated to training courses. First, select a course from the Courses bar (if necessary use the scroll bar to access the entire list of courses). The total number of seats for a course is allocated by selecting the <Total> group from the Group bar and typing the number of seats per year into the column of seats (click on a box to allow editing, tab to jump to the next box). The total of all target group seats in a year for a specific course must always be less than this total. (If it is exceeded, a warning will be given.) This prevents absurdly high totals of seats among the target groups by requiring that the total number of seats be pre-specified.

For example, select the course entitled WSYS-200 by clicking on the down arrow of the Course bar and then using the scroll bar to locate the course and clicking on the course title. Proceed by opening the Group bar and clicking on the group <Total>. Input 400 into the Seats boxes for years one through five. The window should appear as follows.

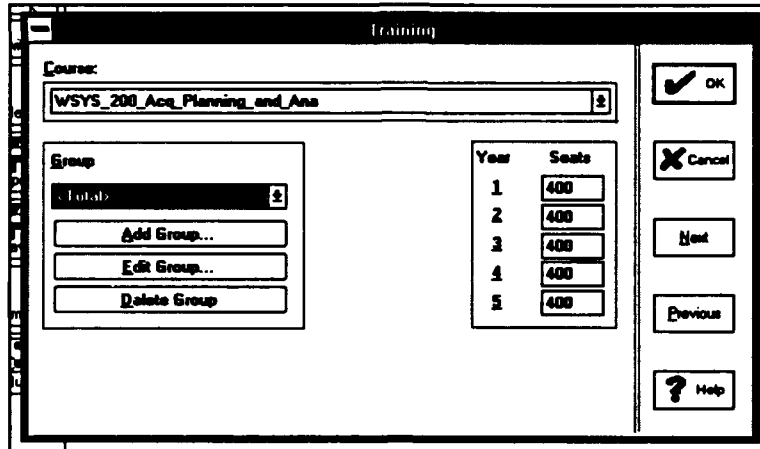


Figure 6.9 - Setting the Total Number of Seats for a Course

### Allocating Target Seats

Allocating seats to a target group follows the same procedure as allocating seats to the entire population. Remember, seats must first be allocated to the <Total> before seats can be allocated to a target group. Continue the above example by leaving WSYS-200 selected. Click on the Group bar and select the Griffiss target group. Input 50 into the Seats boxes for each of the five years. The window should appear as follows.

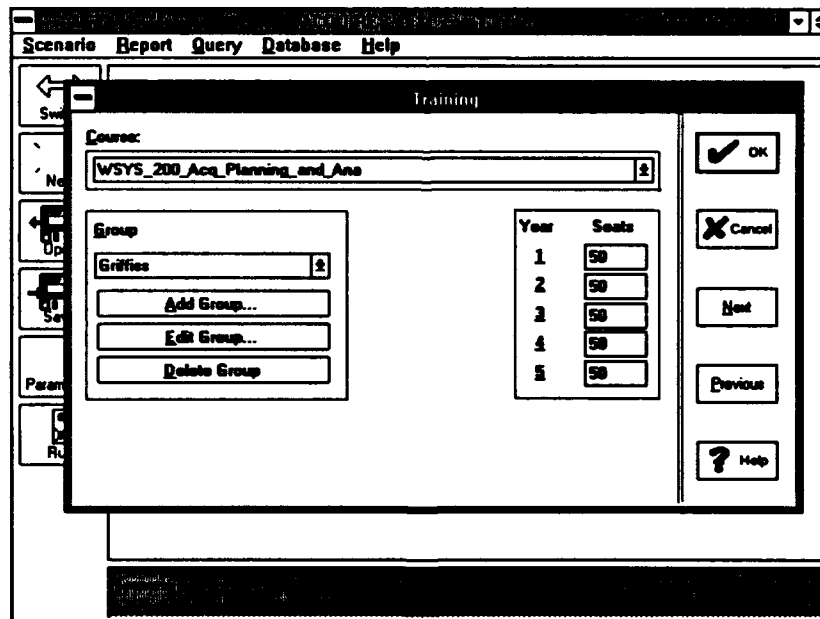


Figure 6.10 - Allocation of Seats to a Target Group

Highly detailed and specific training programs can be developed by specifying target populations and targeting specific training courses. The examples considered have been very simple, but it is possible to target such groups as GM-13s at Wright Patterson with at least a bachelors degree for a particular number of seats WSYS-400. This same group can be targeted for a specialty course in R&D. Likewise, many other groups may be targeted to the WSYS-400 course (as long as the total

number of seats is not exceeded). As with education, note that it is possible for an individual to be in more than one target group (a GM at Brooks would be in both a Brooks group and a GM group). In such cases, the person has access to both sets of target seats.

Again, note that not all variables can be used to create target groups from the Macro dialog box; for details see Appendix F.

### Force Structure Parameters

The Force Structure parameter window addresses scenario designs dealing primarily with overall rates and global policy levers. In general, these options will probably be used less than the Education and particularly the Training options. Areas addressed under Force Structure include: annual separation rates, new hire or promotion freezes, minimum years to promotion, and the maximum number of training courses a person may take in a year. All options except time in grade for promotion can be changed on an annual basis. The Force Structure screen appears as follows.

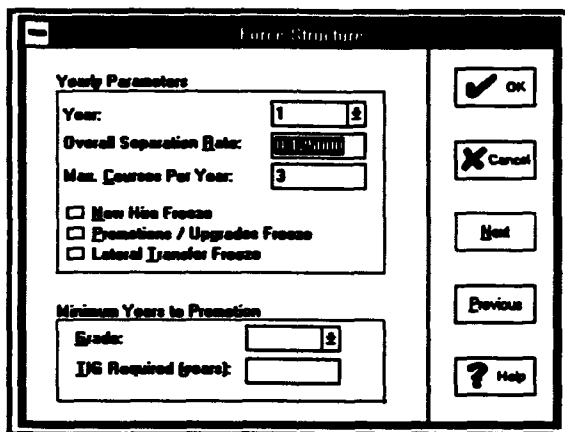


Figure 6.11 - The Force Structure Screen

The various panels to the Force Structure window are described below.

**Yearly Parameters:** The yearly parameters panel contains all variables that can be adjusted on an annual basis for the each year of the simulation. These parameters must be adjusted for each year in which a change from the default is desired.

**Year:** The Year bar selects which simulation year the user is examining in the Yearly Parameters panel. Selecting a different simulation year will cause the courses per year, the separation rate, and the freeze buttons to change to those for the selected year. Changing any of these parameters will affect only the current year.

**Maximum Courses Per Year:** The Maximum Courses Per Year box designates the maximum number of courses an individual is allowed to take in a given simulation year.

**Overall Separation Rate:** The Overall Separation Rate allows the user to adjust the overall separation rate for each year the simulation is run. The default rate is the measured rate from 1984 to 1987 of .125. The actual rates used by the simulation are actually broken down by occupational group, grade, and year of service cohorts. Changes to this global rate cause

commensurate linear shifts in each of the cohort rates for the current year, with the cohort rates limited to remain between 0 and 1. See Appendix E for more detail on the cohort separation rates.

**New Hire Freeze:** Selecting the New Hire Freeze box by clicking on the box places a freeze on hiring anyone from outside AFSC for the given year. To deselect the box, click on the box again.

**Promotions/Upgrades Freezes:** Selecting the Promotions/Upgrades Freeze box by clicking on the box places a hold on all new promotions or upgrades for the given year.

**Lateral Transfer Freeze:** Selecting the Lateral Transfer Freeze box places a temporary freeze on all lateral transfers for the given year. A lateral transfer is used here to designate a move to a new position of the same grade as the civilian's current position.

**Minimum Years to Promotion:** The Minimum Years to Promotion panel designates the number of years an individual must remain in a current grade before being eligible for promotion. Minimum time in grade requirements are applied to all simulation years.

**Grade:** The Grade bar allows the user to select a specific grade to set the Time in Grade (TIG) requirement for promotion eligibility. Note that the grades start at 1 while most AFSC positions are at least grade 7.

**TIG Required (years):** The Time in Grade Required box allows the user to input the number of years required in the selected grade before a person is eligible for promotions. By default all grades require a 1 year TIG.

### **Saving a Scenario**

After a scenario has been developed by interacting with the parameter dialog boxes, it may be saved to a scenario file. This file may then be run on any database created with the same support files as the database on which the scenario was built (this will in general be true; see Appendices D, F, and G for exceptions). To save a scenario, simply click on the Save button at the left of the screen. The standard file dialog box (discussed earlier) will appear to allow the scenario to be saved. Scenarios should always end with the .SCN extension as shown in the box. The user may create and maintain as many scenarios as desired.

### **Starting the Simulation**

Starting a simulation requires that the user has loaded a database which was created by the condition and encode facilities. In addition, any scenario (or the default scenario) may be used. To initiate the simulation, simply click on the Run button on the left of the screen. At this point the standard file dialog box appears and allows the user to name the simulation result file. When the OK button is clicked, the simulation will begin. A status box will appear to report the progress of the simulation and will disappear when the simulation is complete. At any point, the simulation can be terminated by selecting Cancel (in some cases there may be a delay). If a simulation is canceled, no results will be available.

To access the completed simulation results, pull down the file menu from the main menu bar and select "Load." The file dialog box discussed in Chapter 4 will appear (see this section for further documentation). Select the Simulation button, and then pick the name of the simulation just created. After clicking on OK, the simulation will be available for queries.

## CHAPTER 7. SIMULATION QUERIES

After a simulation has been run and loaded, the user is ready to select a population to query from the simulation results. This process is identical to the process for selecting a population in the database with the exception of one step, selecting the "Simulation - Trend" option instead of the "Database" option in the center of the dialog box (see Figure 7.1). The "Simulation - Default Year" option is also used for simulation populations and will be discussed later. The "Simulation - Trend" option tells ACQUIRES to locate the people in each simulation year that meet the specified condition. For example, assume the user selects the population of people at Griffiss AFB in a five-year simulation. If an individual starts out at Griffiss, moves away in year two, and then moves back again in year four, the individual is only included in the population for years zero (the initial database), one, four, and five. When ACQUIRES selects a trend population, it is actually selecting a separate population for each simulation year.

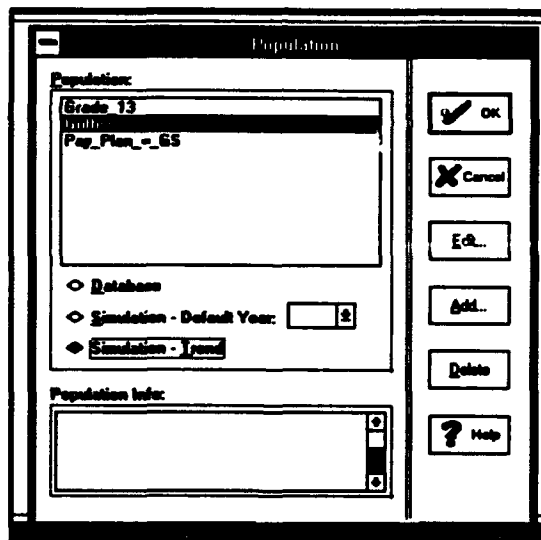


Figure 7.1 - Selecting a Trend Population

Once the user presses the OK button in the population window and the hour glass disappears, the new population count will appear at the bottom of the screen (see Figure 7.2). This count represents the total number of people that are ever in the population, regardless of simulation year. This population includes both new hires and separators. Consequently, the "Count" will be larger than the population in any single year.

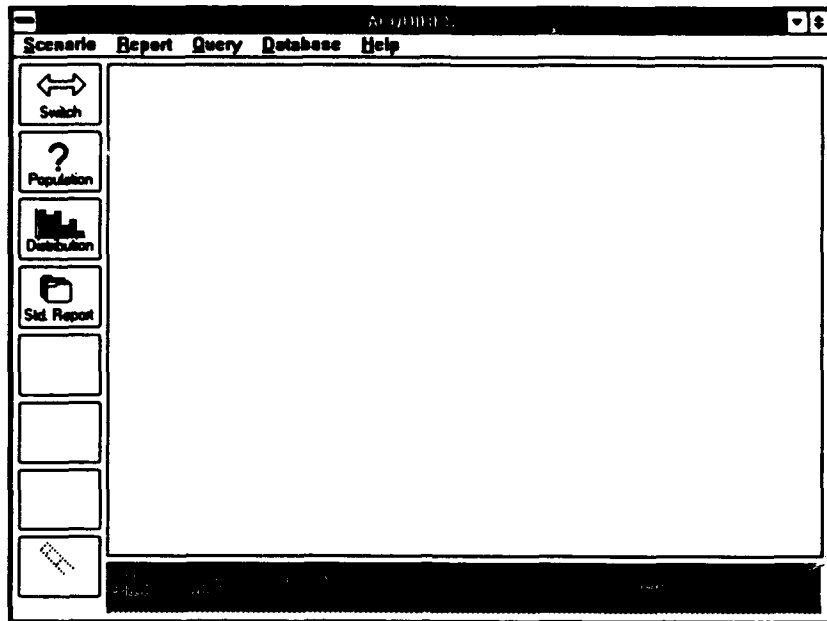


Figure 7.2 - Screen After Trend Population Selection

### Creating Distributions

Because a simulation trend population is actually made up of a separate population for each year, simulation distributions differ from database distributions. In a simulation distribution, the user selects the year that he or she wants a distribution of by using the "Year" drop-down list in the middle of the Distribution dialog box (see Figure 7.3). For example, if the user wants a distribution of the selected population by grade in the third year of a five-year simulation, he or she would select the "Grade" variable and "Year 3" in the year list. The results are shown in Figure 7.4.

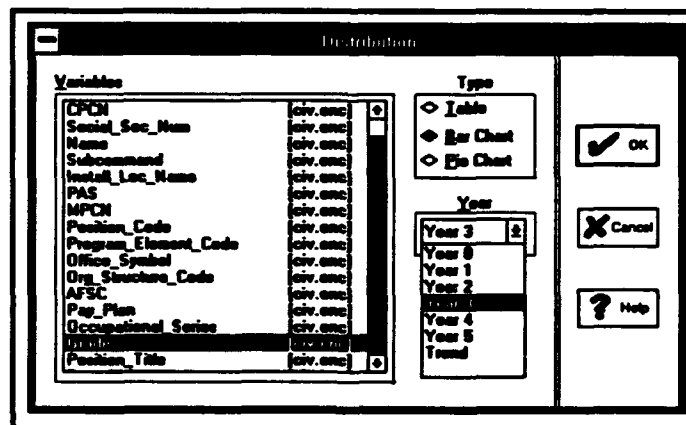


Figure 7.3 - Selecting a Simulation Distribution for Year Three

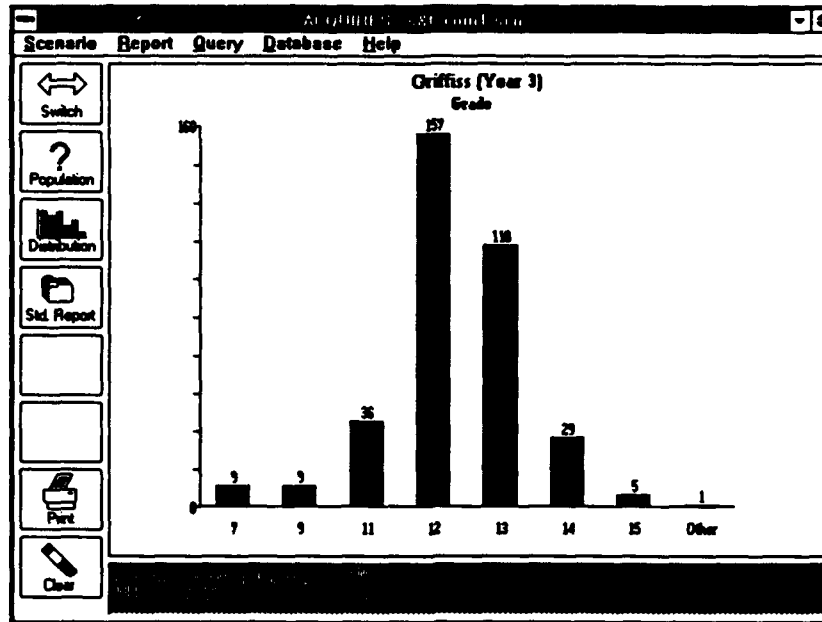


Figure 7.4 - A Simulation Distribution

ACQUIRES can also compute distributions by year for simulations. This is done by selecting the word "Trend" in the year drop-down list in the "Year" list (Figure 7.3). When "Trend" is selected, the user can only select one additional variable (and then only with a table). ACQUIRES returns a distribution of the number of people in the population for each simulation year if no variable is selected with "Trend" (see Figure 7.5). Notice that the bar chart in Figure 7.5 starts with year two. This is because the population in years zero and one had no records in it. If a variable is selected with "Trend," ACQUIRES gives a table of the selected variable across the years. Figure 7.6 shows this with a distribution of a combo variable of Certification1 through Certification5 by year (see Combo Variable section for details on Combo variables).

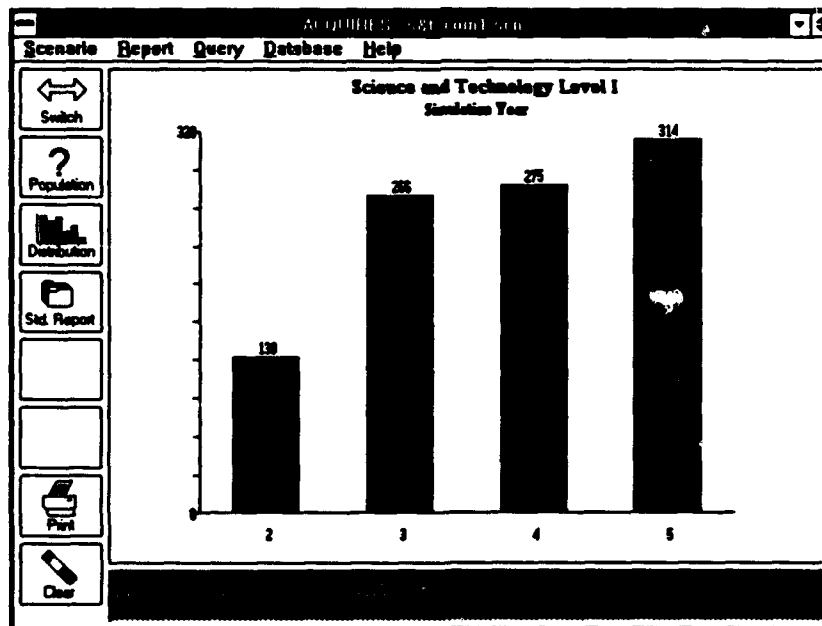


Figure 7.5 - A Distribution by Year



ACQUIRES - 3.21 Cont'd Sim

Scenario Report Query Database Help

Simulators  
Simulation Year

	0	1	2	3	4	5	total
ED	10520	10187	9977	9658	9519	9342	95637
Comm Comp 1	0	6	12	16	22	23	79
Comm Comp 2	0	0	6	9	12	21	48
Comm Comp 3	0	0	2	6	9	9	26
Contracting 1	1	1	1	1	1	1	6
Contracting 2	2	2	1	1	1	1	8
Pgm Mgmt 2	2	2	2	2	2	0	10
Sci Tech 1	0	0	62	216	182	219	679
Sci Tech 2	0	0	0	49	152	195	396
Sci Tech 3	0	0	0	2	25	44	71
total	10525	10200	10185	9970	9925	9655	60980

Figure 7.6 - A Distribution by Year and Certification Level

### Default Year Simulation Populations

In addition to trend populations, ACQUIRES also supports a second type of simulation population. This second type of population is selected by choosing the "Default Year" option in the Population dialog box (see Figure 7.7). Instead of testing an individual every year, the individual is only tested in a single year for "Default Year" populations. On the basis of this test, an individual is either included in the population for all years or for none at all. The year in which an individual is tested is determined by the number selected in the "Default Year" drop-down list (see Figure 7.7) in the population dialog box. The "Default Year" population type has three different uses: retrieving populations faster, tracking populations, and detecting variable changes.

Population

Population:

Grade\_13  
Griffie  
Pop Plan - 65  
WRIGHT PATTERSON

Database

Simulation - Default Year: 3 2

Simulation - Trend: 0 1 2 3 4 5

Population Info:  
Wright-Patterson Grade 13

OK  
Cancel  
Edit...  
Add...  
Delete  
Help

Figure 7.7 Selecting a Default Year Population

The simplest use for a "Default Year" population is to determine information about a single simulation year (usually the last year). If the user is only interested in information about a single year, finding a "Default Year" population for that year is quicker than finding a "Trend" population. For example, assume a user is interested in determining the number of people who are in each grade at Griffiss AFB at the end of the simulation. The user could select the macro for location Griffiss with the "Trend" Population option, followed by performing a grade distribution in year 5. However, it is faster to select the "Default Year" five population. Both methods give the same result in the default year.

Another common use for "Default Year" populations is to track a population. For example, assume that a user is interested in how the people who started in grade 13 at Wright-Patterson AFB advanced in grade. The macro for this group is:

(Installation\_Loc\_Name\_Pos equal WR/PATT) and (Grade equal 13)

The user selects the default year as zero and performs a distribution on grade with "Trend" for the year. Figure 7.8 gives the results. Thirty-one people who started in grade 13 at Wright-Patterson were promoted to grade 14 by the end of the simulation. Note that the column totals diminish as the years pass to reflect people separating. By setting the default population year to year five and performing the same distribution, a user can determine how many people were promoted into grade 13 at Wright-Patterson by the end of the simulation.

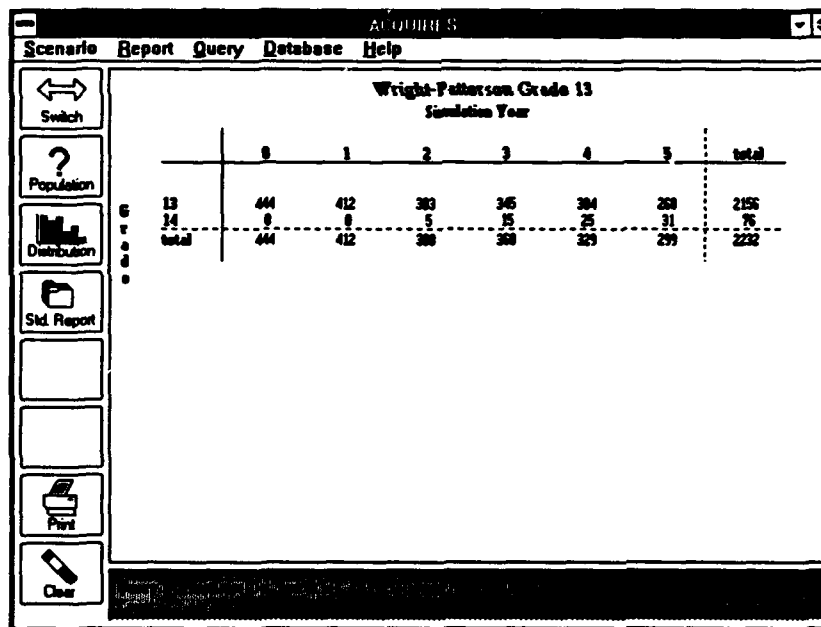


Figure 7.8 - A Distribution on a Default Year Zero Population

The last use for the "Default Year" population option is to detect changes in variables during the simulation. A user may want to select the population of people who started the simulation in grade 12 and finished the simulation in grade 13. These populations are selected by using the "In Year" operator in the macro dialog box. The "In Year" operator is selected from the pull down list next to the variable list (Figure 7.9). The Add Condition button is then pressed. Alternatively, the user can type "in\_year\_\*, " with the last letter being the year number. The "In Year" operator overrides the default year as the year in which a test is performed. For example, if a macro contains

"(Grade in\_year\_0 equals 12)," the test is performed on a person's grade in year zero regardless of the default year. The "In Year" operator also allows an individual to be tested in several years at once. For example, a macro might contain "(Grade in\_year\_0 = 12) and (Grade in\_year\_5 = 13)." This macro would select people who began the simulation in grade 12 and finished in grade 13. Macros can also mix conditions that have the year specified with those that do not have the year specified. An example of this is mixing "(Grade in\_year\_0 = 12) and (Grade = 13)." In this macro, the test for grade 12 is performed in year zero, while the test for grade 13 is performed in the default year. "In Year" specifications are only used when the "Simulation - Default Year" option is selected in the "Population" dialog box. They are ignored in database and trend populations. For example, "(Grade = 13)" and "(Grade in\_year\_3 = 13)" are synonymous in trend populations and database populations but not in default year populations.

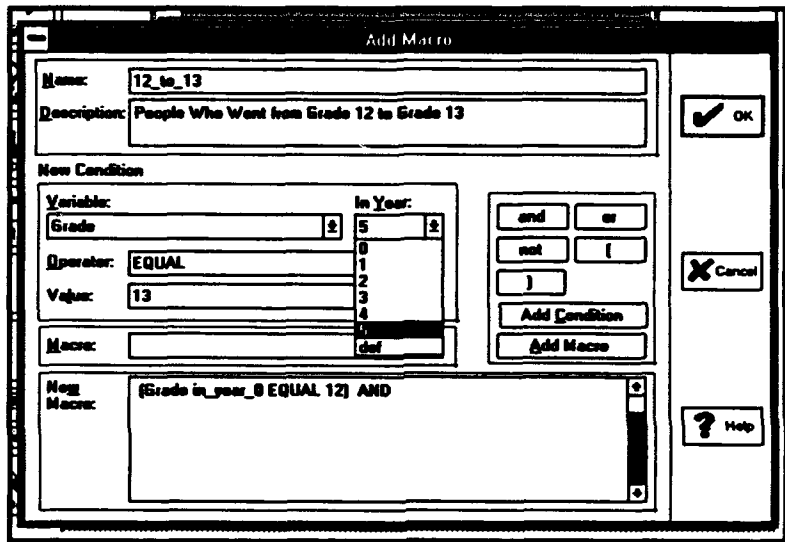


Figure 7.9 - Using the "In Year" Operator

## APPENDIX A

### SYSTEM REQUIREMENTS

In order to run ACQUIRES, a user needs an IBM-PC compatible with an 80386 or higher CPU, at least 4Mb RAM, and at least 15Mb of free disk space, DOS version 3.3 or higher, Microsoft Windows version 3.0 or higher, and a mouse. The actual amount of disk space and memory needed by ACQUIRES depends on the size of the data sets being used. For large data sets ACQUIRES may need as much as 8Mb of memory. The approximate disk usage of ACQUIRES with the current database is listed below.

#### Approximate ACQUIRES Disk Usage (per 1000 records)

Raw Data (temporary)-	3Mb
Encoded Database-	600Kb
Running Simulation (temporary)-	600Kb
Simulation Results-	60Kb

ACQUIRES is written using the Borland C++ compiler version 2.0.

## APPENDIX B

### USING THE ON-LINE HELP SYSTEM

The on-line help for ACQUIRES is a *Windows Help* document. *Windows Help* is a program that comes with *MS-Windows*. The screen for *Windows Help* appears in Figure B1. The help window displays one topic at a time. At the top of the window, there is a row of buttons. The **Index** button brings up the table of contents; the **Back** button goes to the last topic viewed; the **Browse >>** and **Browse <<** buttons go to next and previous topics in a sequence of topics; and the **Search** button is used for keyword searches. Cross-references to related topics are displayed as underlined words. By clicking on a cross-referenced word, the user can jump to that topic. Definitions are displayed as dotted underlined text. Clicking on a definition and holding the mouse button down causes the definition to appear. For more information on *Windows Help*, select the "Using Help" item in the ACQUIRES help menu.

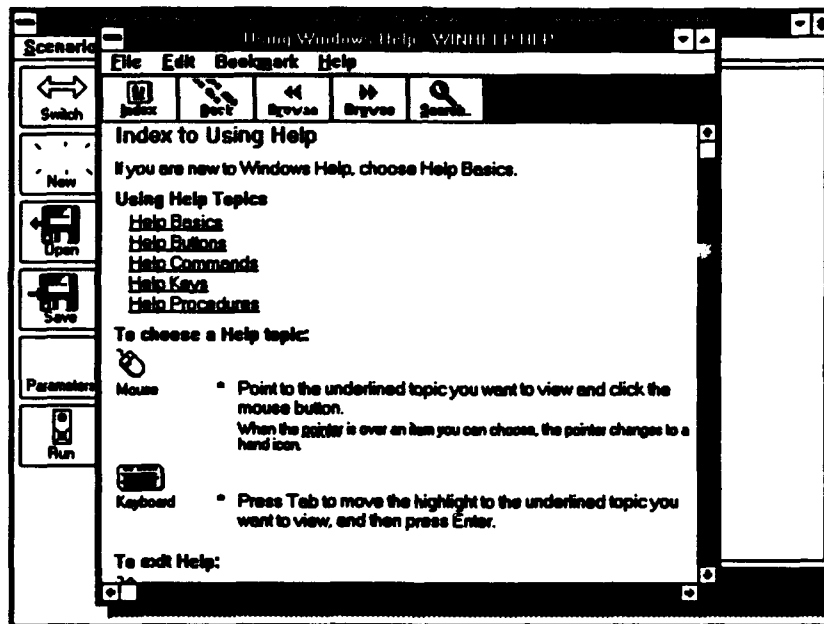


Figure B1 - Using Windows Help

There are four ways to get on-line help in ACQUIRES. The first way is to press F1, second is by pressing the **Help** button in any ACQUIRES dialog box, and third is by pressing Shift+F1, followed by clicking on a screen region to get help on that item. Finally, the user can select one of the items in the help menu at the top of the screen. The help menu is used for general access to the on-line help. The subject of each of the items under the help menu is as follows:

- |                     |  |
|---------------------|--|
| 1. Index -          | The table of contents for ACQUIRES help. |
| 2. Command-         | ACQUIRES commands.                       |
| 3. Keyboard-        | Keyboard commands in ACQUIRES.           |
| 3. Using Help-      | How to use the Microsoft Help program.   |
| 4. MS-Windows Help- | How to use Microsoft windows.            |

## APPENDIX C

### SIMULATION MECHANICS

This appendix provides an overview of the methods which implement the ACQUIRES simulation component. The simulation component is implemented using next event methods on an entity database. Each entity in the database represents a civilian in Air Force Systems Command (AFSC). The variables in the entity represent the person's characteristics. A set of entities are maintained to represent the civilian positions in AFSC. By changing individual characteristics through time, the simulation projects the composition of the force in future time periods.

The simulation operates by maintaining an event queue on which events can be placed or removed and executed. The queue is kept ordered by date such that the top event is always the one with the smallest date. For example, an event can be placed on the queue to separate a particular person at a specified date. When that event rises to the top of the event queue (by other, earlier events being removed), the simulation has implicitly arrived at the date for the separation event to be executed. At that time, the event is removed from the event queue, and the person is separated from the force.

#### Annual Events

At the beginning of the simulation a set of "annual events" are placed on the event queue. When one of these events is removed from the queue and completes its execution, it is placed back on the queue to be executed 365 days in the future. These events initiate all of the activity which occurs in the simulation. The annual events are:

**Schedule separations:** Tests all civilians for possible separation from AFSC. The probability of separation is determined by a person's general occupational group, grade, and years of service (see the rates table in Appendix E). Individual separators are selected at random in accordance with the person's separation probability. If it is determined that a person is to separate, a separation event is scheduled at a random date in the upcoming year.

**Education:** Allows each person to obtain advanced degrees (bachelors, masters, doctorates) in accordance with the overall rates and target group rates established in the simulation scenario developed by the user. This event is scheduled at mid-year, and all degrees are awarded at that time.

**Training:** Allows civilians to pass through training courses. The seats in each training course are filled according to the target groups designated by the user in the simulation scenario. The remainder of the seats (and any left over by target groups smaller than their seat specifications) are assigned at random to anyone in the database. In all cases, those persons for which a training course would provide advancement toward the next certification level in the stall of their current position are given preference for the available seats. That is, the seats are filled first with these persons and others are then selected to fill the remaining seats. Aside from these conditions, all seat assignments are random. Again, this event is scheduled at mid-year, and all training is assigned at that time.

**Certification:** This event is actually scheduled to occur three times per year. All individuals are checked to see if they have attained the requirements for certification at any level (where the lower level must always be attained first) in any stall. If so, the person is assigned the certification. This is primarily a check for attaining experience requirements, as anyone who obtains education or training is immediately checked for possible certification. The requirements for certification are specified in the file: certify (see Appendix D).

**End of year:** When the end of a simulation year is reached, the current state of the civilian inventory is written to disk as a file. At the completion of the simulation, each of the yearly files is examined and condensed into a single simulation result file. This is the file which is available to query and contains all of the information on individuals for each of the simulation years.

### **Other Events**

While the annual events initiate the operations performed in the simulation, the schedule separations event submits individual separate events to be acted on at specific dates. This separation event can implement a cascade of other events to fill the vacated position. When an individual is separated, one of several events will be scheduled to fill the vacant position: local transfer (from the same base), local promotion, general transfer (from any base), and general promotion. The type of fill event is selected at random, based on probabilities, and is subject to the hiring, promotion, or transfer freezes specified by the user. Most initial attempts to fill are through local transfer or local promotion. However, if these fail (no one is available who meets the positions requirements), a cascade will be initiated where the position is filled from outside the base. If all attempts to fill the position fail, a person will be hired from outside AFSC. These outside hires are not allowed for positions requiring acquisition certification. In this case, one of the original four fill events is re-tried, and the cascade of events to fill the position continues until a suitable candidate can be found. Note that any promotion or transfer event itself opens a position which itself must be filled in the same manner as a separation.

## APPENDIX D

### CERTIFICATION REQUIREMENTS

This is an advanced discussion for those who want to add or change certification requirements. The format of this file is quite specific and must be followed precisely. Each ACQUIRES sub-directory which contains databases or simulation results will have a `certify` file. This file may be modified with any ASCII text editor (this includes word processors such as WordPerfect, but the file must be read and written using the Text In/Out mode). The file designates all of the education, experience, and training requirements for each of the 10 stalls at each of the 3 levels. Blank spaces, tabs, or blank lines may appear anywhere in the file to improve readability; however, all spellings must be exact including case and the trailing colon on several keywords. The stall names must match those in the `stall10.cod` file documented in Appendix E. Again spelling must be exact. (It is best to use the stall names provided in the original `certify` file).

It is critical that any changes be made to the `certify` file before the condition and encode steps of building a database are performed. Optionally, the database can be re-conditioned and re-encoded after a change to `certify` (this requires that the DAT files from the downloaded database are still available). However, be aware that all simulations based off the database will be invalidated by changing `certify`. To retain old simulations, it will be necessary to create a new ACQUIRES sub-directory and begin to condition and encode operations from scratch there. Scenario files are also invalidated by changes to `certify` because they may affect the number and order of the training courses which are available.

#### File Format

The first line of `certify` simply declares the maximum number of unique course names among all of the training requirements which follow. It need not be exact, but must be larger than the number of unique names, or the condition option in ACQUIRES will fail and notify the user that the maximum has been exceeded. The format for this line is:

```
MaxUniqueCourses #
```

Where # is the maximum number of unique course names which appear in the file (such as 100).

Following this line are a series of blocks which describe the certification for each stall/level. A stall and level are first identified, and the requirements for that stall/level combination follow. A stall is specified in the following manner:

```
stall: stall_name
```

Where *stall\_name* is the name of a stall as designated in the file `stall10.cod` (see Appendix E). This name can contain no spaces, and spelling (including capitalization) is critical and must match a name in `stall10.cod`.

Following the stall, the certification level is declared:



**Level: #**

Where # is the certification level which must be between 1 and 3. Again spelling, capitalization, and the colon are considered part of the **Level:** keyword and must be precise.

These two statements indicate a requirements block for the specified stall and level. The requirements statements which follow will all be applied to the specified stall and level. These requirements specifications may appear in any order. Any or all of the requirement statements may appear. Those which are not needed do not have to appear in the block.

One possible requirement is stall experience in years:

**StallExperience: #**

Where # is the number of years experience the person has in positions which are coded for the current stall.

Likewise, overall federal service experience can be designated:

**Experience: #**

It is, of course, possible to specify both requirements for the same stall.

Educational level requirements are specified by the following statement:

**Education: level**

Where level can be chosen from one of the following three words:

**Bachelors**

**Masters**

**Doctorate**

Finally, training requirements can be specified for the current stall/level. The method of specifying these requirements accounts for the possibility that several courses may be used as equivalent or alternate courses in meeting a specific requirement (these will be referred to as course clusters). It also allows for generic courses to be specified which may be repeated to attain the required training. For example, a generic R&D specialty course may be designated which meets one of the Science and Technology stalls requirements for level 2 certification. If more than one course of this type is required for certification and the course is declared as repeatable, it may be taken multiple times to meet that portion of the training certification. The method also allows for courses that apply to more than one stall or stall/level to be taken.

A cluster of courses represents those courses which can be used to meet a single training requirement. For example, if Science and Technology required three specialty courses and any of four courses could be used to meet the requirement, it would be specified in the certify file as:

**3 course1, course2, course3, course4 ;**

Where the leading 3 indicates the number of courses which must be taken from the cluster to meet the specific requirement. Each course name must consist of only one string (with no spaces). Each course name must be separated by a comma and the cluster must end with a semi-colon. Otherwise additional spaces, tabs, or even additional lines may be used to clarify the format. Note that any combination of the four courses which total to three courses taken will meet the cluster requirement.

A second way of approaching this same cluster using a combination of generic and non-generic courses would be:

```
3   course1, generic_course:R ;
```

In this case, the course *generic\_course* can be repeated, and each time it is taken, it counts toward the clusters requirements. In fact, it is impossible to meet the requirements without taking the generic course twice. Note the *:R* which is appended to the end of the course name. This designates that the course can be repeated. The *:R* must immediately follow the course name with no space between the name and the colon. Note that the requirements for this cluster can be met with 1 *course1* and 2 *generic\_courses*; or it can be met with 3 *generic\_courses*.

Any number of clusters can be used in specifying the requirements for a stall/level. For example:

```
3   course1, generic_course:R ;
1   WSYS-100 ;
```

A stall/level requirements block must end with the keyword:

*EndLevel*

This designates that all requirements for the stall/level combination have been completed. A new level can simply be specified with the *Level: #* sequence if it applies to the current stall. Alternately, the *Stall: stall\_name* combination can always be repeated.

It is important that the file contain requirements for all stall/level combinations. If no requirements are provided, it is assumed that none are needed, and everyone will be immediately certified. If the certify file is to be used with a single stall and the other requirements are considered superfluous, it is possible to simply set an impossible requirement for all of the other stall/level combinations (such as Experience: 100). The other stall/level requirements can then be deleted to reduce the size and complexity of the file.

### Default Requirements

The current set of certification requirements were derived from preliminary civilian requirements for the stalls: *Acq\_Log*, *Comm\_Comp*, *Dev\_Eng*, *Sci\_Tech*, and *Test*. In general, these requirements are specified in terms of generic training courses which apply only to the specific stall (aside from the Systems-100 through Systems-400 sequence). Specific alternate courses have not yet been specified in most cases. Requirements for the other stalls were taken from the preliminary Officer requirements published in AF Regulation 36-27.

The current contents of the certify file are listed below to document the requirements currently implemented and to provide an example of the format of the file. Note the extensive use of blank lines and tabs to clarify the meaning of the file.

MaxUniqueCourses 300

Stall: Acq\_Log

Level: 1  
Education: Bachelors  
StallExperience: 2  
1 WSYS\_200\_Acq\_Planning\_and\_Ana;  
1 Acq\_Logistics\_Spec\_Crs:R;

EndLevel

Level: 2  
StallExperience: 5  
1 WSYS\_400\_Advanced\_Pgm\_Mgmt;  
4 Acq\_Logistics\_Spec\_Crs:R;

EndLevel

Level: 3  
StallExperience: 7  
1 WSYS\_400\_Advanced\_Pgm\_Mgmt;  
4 Acq\_Logistics\_Spec\_Crs:R;  
2 Executive\_Mgmt\_Crs:R;

EndLevel

Stall: Comm\_Comp

Level: 1  
Education: Bachelors  
StallExperience: 2  
1 WSYS\_200\_Acq\_Planning\_and\_Ana;  
1 Comm\_Computer\_Spec\_Crs:R;

EndLevel

Level: 2  
StallExperience: 4  
1 WSYS\_200\_Acq\_Planning\_and\_Ana;  
3 Comm\_Computer\_Spec\_Crs:R;

EndLevel

Level: 3  
StallExperience: 8  
1 WSYS\_200\_Acq\_Planning\_and\_Ana;  
4 Comm\_Computer\_Spec\_Crs:R;  
1 Executive\_Mgmt\_Crs:R;

EndLevel

Stall: Comptroller

Level: 1  
Education: Bachelors  
StallExperience: 4  
1 WSYS\_200\_Acq\_Planning\_and\_Ana;  
1 Comptroller\_Spec\_Crs:R;

EndLevel

Level: 2  
Education: Masters  
StallExperience: 6  
1 WSYS\_400\_Advanced\_Pgm\_Mgmt;  
EndLevel

Level: 3  
StallExperience: 8  
EndLevel

Stall: Contracting

Level: 1  
Education: Bachelors  
StallExperience: 1  
1 G5OZA6531\_001\_Mgmt\_Def\_Acq\_Con\_Basic;  
1 WQMT\_170\_Principles\_Contract\_Pricing;  
EndLevel

Level: 2  
Education: Masters  
StallExperience: 4  
1 G5OZA6534\_000\_Mgmt\_Dev\_Acq\_Con\_Advanced;  
1 WPPM\_302\_Govt\_Contract\_Law;  
1 WPPM\_304\_Advanced\_Contract\_Admin;  
1 WQMT\_345\_Quant\_Tech\_Cost\_Price\_Ana;  
EndLevel

Level: 3  
StallExperience: 7  
1 G5OZN6534\_002\_Def\_Acq\_Exec\_Seminar;  
1 G5OZN6534\_005\_Mgmt\_Def\_Acq\_Con\_Exec;  
EndLevel

Stall: Dev\_Eng

Level: 1  
Education: Bachelors  
StallExperience: 2  
1 WSYS\_200\_Acq\_Planning\_and\_Ana;  
2 Developmental\_Engr\_Spec\_Crs:R;  
1 Developmental\_Engr\_Tech\_Crs:R;  
EndLevel

Level: 2  
StallExperience: 5  
1 WSYS\_400\_Advanced\_Pgm\_Mgmt;  
4 Developmental\_Engr\_Spec\_Crs:R;  
2 Developmental\_Engr\_Tech\_Crs:R;  
EndLevel

Level: 3  
StallExperience: 10  
5 Developmental\_Engr\_Spec\_Crs:R;  
2 Developmental\_Engr\_Tech\_Crs:R;  
1 Executive\_Mgmt\_Crs:R;  
EndLevel

Stall: Mfg\_QA

Level: 1  
Education: Bachelors  
StallExperience: 1  
1 WSYS\_100\_Intro\_Acq\_Mgmt;  
1 WPPM\_153\_Production\_Mgmt;  
1 G5OZA6531\_001\_Mgmt\_Def\_Acq\_Con\_Basic;  
EndLevel

Level: 2  
StallExperience: 4  
1 WSYS\_200\_Acq\_Planning\_and\_Ana;  
1 WPPM\_302\_Govt\_Contract\_Law;  
1 WPPM\_305\_Production\_Mgmt;  
1 WPPM\_304\_Advanced\_Contract\_Admin,  
G5OZA6534\_000\_Mgmt\_Dev\_Acq\_Con\_Advanced;  
EndLevel

Level: 3  
StallExperience: 7  
Education: Masters  
1 WSYS\_400\_Advanced\_Pgm\_Mgmt;  
EndLevel

Stall: Pgm\_Mgmt

Level: 1  
Education: Bachelors  
StallExperience: 2  
1 WSYS\_100\_Intro\_Acq\_Mgmt;  
1 WSYS\_200\_Acq\_Planning\_and\_Ana;  
1 Program\_Mgmt\_Spec\_Crs:R;  
EndLevel

Level: 2  
Education: Masters  
Experience: 6  
StallExperience: 2  
2 Program\_Mgmt\_Spec\_Crs:R;  
EndLevel

Level: 3  
Experience: 8  
StallExperience: 2  
1 DSMC\_Program\_Mgmt\_Crs;  
2 Program\_Mgmt\_Spec\_Crs:R;  
EndLevel

Stall: Sci\_Tech

Level: 1  
Education: Bachelors  
StallExperience: 2  
1 WSYS\_200\_Acq\_Planning\_and\_Ana;  
3 Research\_and\_Dev\_Spec\_Crs:R;  
EndLevel

Level: 2  
StallExperience: 5  
1 WSYS\_400\_Advanced\_Pgm\_Mgmt;  
4 Research\_and\_Dev\_Spec\_Crs:R;  
2 Research\_and\_Dev\_Mgt\_Crs:R;  
EndLevel

Level: 3  
StallExperience: 10  
5 Research\_and\_Dev\_Spec\_Crs:R;  
2 Research\_and\_Dev\_Mgt\_Crs:R;  
EndLevel

Stall: Test

Level: 1  
Education: Bachelors  
StallExperience: 2  
1 WSYS\_200\_Acq\_Planning\_and\_Ana;  
1 Test\_and\_Evaluation\_Spec\_Crs:R;  
2 Test\_and\_Evaluation\_Tech\_Crs:R;  
EndLevel

Level: 2  
StallExperience: 5  
2 Test\_and\_Evaluation\_Spec\_Crs:R;  
4 Test\_and\_Evaluation\_Tech\_Crs:R;  
1 Other\_Acquisition\_Crs:R;  
EndLevel

Level: 3  
StallExperience: 10  
1 WSYS\_400\_Advanced\_Pgm\_Mgmt;  
1 WSYS229\_Test\_and\_Eval\_Mgmt;  
3 Test\_and\_Evaluation\_Spec\_Crs:R;  
4 Test\_and\_Evaluation\_Tech\_Crs:R;  
1 Other\_Acquisition\_Crs:R;  
EndLevel

Stall: Z\_Other

Level: 1  
Experience: 100  
EndLevel

Level: 2  
StallExperience: 100  
EndLevel

Level: 3  
StallExperience: 100  
EndLevel

## APPENDIX E

### OTHER FILES

ACQUIRES uses several sets of files for conditioning databases, encoding databases, and simulation. In general these files should not be modified by the user. However, in some cases, modifications can be made to affect the simulation defaults or change the way variables are displayed in ACQUIRES. ACQUIRES uses three different types of support files: tables, map files, and code files. Often modifications to one file will require that another file (perhaps a different type of file) be modified to maintain consistency. Great care must be taken when modifying these files. Almost any change to a file requires that the database be re-conditioned and re-encoded from within ACQUIRES. As with the certify file, most changes also invalidate any existing simulation files in the same sub-directory. With these considerations in mind, ACQUIRES support files will be surveyed in this appendix.

The three types of files typically serve different purposes, although some overlap may exist. Table files contain rates or probabilities used by the simulation. Code files designate fixed encoding between string and numeric values. They are used by both the query and simulation facilities. Map files designate mappings from one numeric code to another. They are used primarily by the simulation facilities although some are used for encoding databases. Each of these files is discussed in more detail below.

#### Tables

Table files contain ancillary rates or proportions used by the simulation to determine the probability of a simulation event or the time until an event occurs. These rates are not expected to be changed often by the user, and are consequently not accessible from the ACQUIRES interface. In general, the table files are the most accessible files to the user, and in many cases may be modified without affecting any other files. All table files have the extension .tbl. There is a single set of table files which are installed with ACQUIRES in the program directory. All simulations use these tables. Three table files are used by ACQUIRES.

The Fill Delay Table (disk file `filldela.tbl`) is used to determine the number of days between a separation and the first attempt to fill the vacated position. It is a relatively small file, and its default contents are reproduced below.

15	
0	.0
1	.1
7	.2
15	.3
30	.3
60	.1
90	.0
120	.0

The first line (16) merely designates the number of lines which follow in the file. It must always be twice the number of lines following in the file. After that each line contains the number of days delay followed by the proportion of vacated position which have their first fill attempt at that number of days. For example, 30% (proportion 0.3) of all positions will be attempted to be filled 15 days from when the incumbent leaves.

The number of lines in this file and any of the values can be changed at any time without invalidating either the existing database or simulations. However, all future simulation will utilize the new delay pattern. The number of days to fill must proceed from smallest to largest, and negative numbers are not allowed. In addition, the sum of the proportions must always equal one. Otherwise, any changes to this file are acceptable.

The Fill Type Table file (`filltype.tbl`) determines the probability of each method of filling a position when it is first vacated. This probability applies only to the initial fill attempt. If this initial type of fill is impossible, a cascade to another type of fill is produced. The fill cascades are as follows:

```

local_transfer    ->    local_promotion
local_promotion   ->    general_promotion
general_transfer  ->    general_promotion
general_promotion ->    new_hire

```

As discussed in Appendix C, local fill types attempt to fill only from the installation location of the vacancy while general fill types allow fill from any location in AFSC. New hires are never performed without attempting one of the other options, except for positions at or below grade 7. In addition, there are restrictions on which positions are eligible for new hires as outlined in Appendix C.

The fill type table (disk file `filltype.tbl`) has a similar format to the fill delay table, and is reproduced below:

```

8
0 .40
1 .47
2 .05
3 .08

```

Again the 8 indicates twice the number of lines to follow in the file. The numbers in the first column are codes for the types of position fills and the proportions in the second column designate the proportion of newly opened positions which will attempt their first fill using the associated fill type. Again, the sum of the numbers in the second column must always equal one. In this case, it is illegal to change the number of lines in the file or the first column because the code numbers are fixed. This table may also be modified without re-conditioning and re-encoding the database. Existing simulation results are still valid but reflect the original proportions in the file. The codes for the fill types are as follows:

```

0    local_transfer

```



- 1 local\_promotion
- 2 general\_transfer
- 3 general\_promotion

The Retention Rates Table does not have the same format as the prior tables. Each line in the table represents a particular group of civilians and the probability that anyone in that group will remain in Systems Command from one year to the next. The first three columns designate the group while the fourth and fifth columns are unused. (They contain interim data used to compute column six. The columns are required, but their values are ignored). The sixth column is the actual probability of continuing in AFSC. These probabilities are broken out across three civilian characteristics as represented by the first three columns: occupational group (5 large clusters of job series), grade, and years of federal service. A small portion of the file is reproduced below for demonstration.

2	13	7	102	112	.9107143
2	13	8	144	166	.8674699
2	13	9	179	200	.895
2	13	10	222	241	.9211618
2	13	11	255	284	.8978873
2	13	12	265	291	.9106529
2	13	13	289	316	.914557
2	13	14	327	352	.9289773
2	13	15	348	379	.9182058

For example, persons with occupation code 2, grade 13, and 12 years of service have a continuation probability of .9107. The grade and years of service are self explanatory, and a general classification of the occupational groups is:

- 1 Professional, science and engineering
- 2 Management
- 3 Technicians
- 4 Office, clerical
- 5 Mechanical and services

The continuation probabilities in this file can be modified by the user without the need to re-condition or re-encode the database. Again, existing simulations are still valid. Adding new occupation group/grade/length of service combinations to the file has no effect. They are simply ignored. Deleting lines from the file causes the default probability of .875 to be used. However, it is valid to change any of the individual probabilities in the file.

### Code Files

Code files are used to designate specific encoding of the values found in a field (or variable) when ACQUIRES is conditioning and encoding a database. To increase speed and save space, ACQUIRES stores all fields as integer values internally and maps these values back to character strings for display to the user. Some inconsistencies in the way fields with similar meanings have been

assigned values in the download database has required that fixed encoding be provided for these fields. These fixed encodings also allow the values of a field to be consistently mapped to a specific integer value so that its meaning can be interpreted by ACQUIRES during simulations. As will be discussed in Appendix G, most code files are associated with specific fields or variables in the download database. In this way a fixed integer code can be assigned to the values found in that field. The code files reside in the same directory as the initial database download file. The supplied MKACQDIR utility will automatically copy the code files for the civilian database into the new directory.

The code files have many interdependencies among themselves and the map files. The effect of these interdependencies must be maintained when any of the files is changed. In general, it is potentially dangerous to change any of these files as failure to maintain the interdependencies will produce unpredictable simulation results. Adding new code numbers will typically not cause problems. Changes to the meaning of a code number, however, will often require changes to other files.

The code files have a fixed format. The first two lines are used for commenting and documenting the code file and are not used otherwise. Following these lines, each record in the file must be composed of three columns with a tab character separating the columns. The first column is an integer code used internally by ACQUIRES to store the data in a field. The second column is the string (or character) representation of values which are found in the associated field of the downloaded database. (It is not necessary to include all possible values in the database; those not in the encoding will simply be assigned other integer values. However, for these values, their numeric code will not be known). The third column contains an expanded string value which is used for display and reporting in ACQUIRES. If a more detailed or self explanatory value is not required, the string value in the second column may simply be duplicated in the third column. **Important:** each code file must be sorted in alphabetical ascending order on the second field. The numeric code column need not be sorted (see the stall\_mo.cod file on disk for an example of this).

The Position academic education level file (acad\_pos.cod) designates the codes for the values found in the Acad\_Ed\_Level\_Pos variable. The numeric codes in this file must match those with the same meaning in the ac1v1.cod file discussed below. Currently, only masters and doctorate degrees are designated as requirements for acquisition position. (They are not stall educational requirements, they are part of the position specific requirements.) This very short code file is reproduced below.

code	acadp	acadpl
----	-----	-----
17	P	P_Masters
21	R	R_PhD

The Academic Discipline file (acdisp.cod) designates the codes for the Academic\_Disp\_High, Academic\_Disp\_1, Academic\_Disp\_2, and Academic\_Disp\_3 variables. Because the codes in this file represent academic disciplines, consistency must be maintained with the map file ser\_maj.map which maps occupational series to academic disciplines codes. A change in the meaning of the codes in acdisp.cod requires a change of the mapped codes in ser\_maj.map.

The Academic Level file (ac1v1.cod) designates the codes and expanded values for the Academic\_Level\_High, Academic\_Level\_1, Academic\_Level\_2, and Academic\_Level\_3 variables. The numeric codes in this file must be consistent with those in the code file acad\_pos.cod. The codes

which are currently in this file must not be changed; the codes and their current meanings are required by the simulation.

The Acquisition Level Code file (`level.cod`) designates the three acquisition certification level (1-3) for each stall. As with the `aclvl.cod`, it should not be changed by the user.

The Certification Codes (`cert.cod`) file designates the codes generated by the condition process. It must contain 30 records (in addition to the two documentation lines). The first column of numeric code must contain the integers 1 - 30. The first three integers represent the level 1, level 2, and level 3 certification for the stall with code 1 in the `stall10.cod` file. Likewise, code 4,5, and 6 designate the names for the level 1,2, and 3 certification in the stall with code 2 in `stall10.cod`. The same pattern holds for the remaining stalls. Names can be changed (along with their requirements in the `certify` file); however, consistency must be maintained among the `cert.cod`, `stall10.cod`, and `certcert.map` (discussed later) files.

The Training Course Codes file (`course.cod`) designates codes and expanded values for the training courses specified in the `certify` file. The condition facility in ACQUIRES actually creates this file from the information in the `certify` file, and this file should never be changed by the user.

The Acquisition Job Classification Codes file (`jobclas.cod`) designates the codes for the `Acq_Job_Class` variable which contains a persons acquisition job class. These classifications are parallel with the `APDP_Stall_Crk` variable which classifies positions in the manpower data file. (Like `Acq_Job_Class`, `APDP_Stall_Crk` has more than the 10 standard stall breakouts.) These two variables can also be considered sub-classifications of the 10 standard acquisition stalls. Changes can be made to the `jobclass.cod` file; however, consistency must be maintained with the meanings of the codes in the `stall_mo.cod` file. In addition, the `classtal.map` file must still map these codes to the appropriate stall as designated in the `stall10.cod` file. The contents of the `jobclass.cod` file are shown below.

<code>ccode</code>	<code>cname</code>	<code>slong</code>
1	A	A_Program Manager
2	B	B_Deputy_Prog_Mngr
3	C	C_Contracting
4	D	D_Indust_Prop_Mgmt
5	E	E_Purchasing
6	F	F_Procurement
7	G	G_Manufacturing
8	H	H_Quality Assur
9	J	J_Qlty_Engr/Sci
10	K	K_CompTroller
11	L	L_Acq_Logistics
12	M	M_Acq_Log_Mgmt/Stf
13	N	N_Pgm_Exec Officer
14	P	P_Test/Evaluation
15	Q	Q_Development_Engr
16	R	R_Scientist
17	S	S_Science_Mgr
18	T	T_Program_Mgmt
19	U	U_Comm Computer Sys
20	W	W_Ed/Trng_Career_Dev
21	X	X_Construction
22	Z	Z_Other

The Pay Plan Codes (`pay_plan.cod`) file designates the primary codes which are important to the simulation for the variable `Pay_Plan`. This file may be changed; however, the numeric codes in the initial file must continue to map to the same pay plans. That is, additions can be made, but no changes.

The Occupational Series Codes file (`series.cod`) designates the numeric codes for the `Occupational_Series` variable. The numeric codes are used by `ser_maj.map` to map from job series to academic discipline. Any change to `series.cod` which changes the meaning of a code must be reflected by a similar change in `ser_maj.map`.

The Stall Codes file (`stall10.cod`) designates the numeric and string codes for the 10 acquisition stalls. It represents the `stall10` variable produced when a database is conditioned. The stall names in this file must exactly agree with those used in the certify file. In addition, the mapping of codes from the `jobclass.cod` and `stall_mo.cod` into these 10 stall codes is controlled through `classtal.map`. The names in this file are also used in `certcert.map`. All of these files must maintain a consistency such that the stall breakouts represented in `jobclass.cod` and `stall_mo.cod` map to the appropriate standard stall (as represented in `stall10.cod`). For comparison with the `stall_mo.cod` and `jobclass.cod` files, the `stall10.cod` file is reproduced below.

s10code	s10name	s10long
-----	-----	-----
1	01	Acq_Log
2	02	Comm_Comp
3	03	Comptroller
4	04	Contracting
5	05	Dev_Eng
6	06	Mfg_QA
7	07	Pgm_Mgmt
8	08	Sci_Tech
9	09	Test
10	10	Z_Other

The Manpower Stall file (`stall_mo.cod`) designates the codes for the variable `APDP_Stall_Crk` from the manpower file. These codes must maintain a consistent meaning with those in the `jobclass.cod` file. All other requirements are detailed above under `stall10.cod`. The file is reproduced below:

scode	sname	slong
-----	-----	-----
1	A	A_Program_Manager
2	B	B_Deputy_Prog_Mgr
3	C	C_Contracting
4	D	D_Indust_Prop_Mgmt
5	E	E_Purchasing
6	F	F_Procurement_Clerk
7	G	G_Manufacturing
8	H	H_Quality_Assur
9	J	J_Qlty_Engr/Sci
10	K	K_Business_Finance
11	L	L_Acq_Logistics
12	M	M_Acq_Log_Mgmt
18	P	P_Program_Mgmt
15	Q	Q_Development_Engr
19	R	R_Comm_Computer

16	S	S_Scientist
14	T	T_Test/Evaluation
23	U	U_Auditing
24	W	W_Production_Mgmt
20	X	X_Ed/Trng_Career_Dev
17	Y	Y_Scientific_Mgr
22	Z	Z_Other

## Map Files

Map files provide a method of designating a mapping from one set of codes to another. Combined with code files, these mappings can address the problem of variables which should have codes with similar meanings. It also allows a highly specific code to be mapped to a more general one. As with the code files, the map files reside in the directory with the downloaded data. The MKACQDIR utility also copies these files into newly created ACQUIRES directories.

The Certification Mapping file (`certcert.map`) is used to map the original certification codes (`Cert_Lvl_1`, etc.) into new certification codes (`Certification1` through `Certification5`). The original certification codes (`Cert_Lvl_1`, etc.) can in some cases represent a level of certification in different stalls with different certification requirements. Specifically, the AS1, AS2, and AS3 certification codes (representing level 1, 2, and 3) are used for three different stalls (science and technology, developmental engineering, and test and evaluation). This is in conflict with the three differing requirements for certification in the stalls. To resolve this ambiguity, a separate set of certification codes (`Certification1` through `Certification5`) are created during the condition process. These codes map directly to each stall's certification requirements at each of the three levels. In order to retain the current certification, a mapping is required from the original certification codes to the new certification codes.

The `certcert.map` file has three tab-separated columns with the top two lines reserved for documentation. The first column is the new numeric code for the certification level, as defined in the `cert.cod` file. The second column is the original 3 character certification code. The third column is a stall name (as designated in `stall.cod`). The second and third columns are matched against a previous certification and acquisition job class to determine a unique new certification code. The third column can also be an asterisk (\*) which means the stall is unnecessary to complete the match. This is appropriate when the initial certification code is unambiguous. The first column of the file must be consistent with the meanings of the code in the `cert.cod` file and the stall names in the `stall110.cod` file. The file is used strictly during the condition process. The file is reproduced below.

<u>code</u>	<u>orig_cert</u>	<u>stall_name</u>
7	AB1	*
8	AB2	*
9	AB3	*
10	ACA	*
11	ACD	*
11	ACE	*
11	ACF	*
11	ACG	*
12	ACH	*
11	ACI	*
12	ACJ	*
12	ACK	*
12	ACL	*
12	ACM	*

10	AD1	*
11	AD2	*
12	AD3	*
10	AFA	*
11	AFB	*
10	AFC	*
11	AFD	*
12	AFE	*
4	AI1	*
5	AI2	*
6	AI3	*
1	AL1	*
2	AL2	*
3	AL3	*
19	AM1	*
20	AM2	*
21	AM3	*
16	AP1	*
17	AP2	*
18	AP3	*
17	AP5	*
17	AP6	*
16	AQ1	*
17	AQ2	*
18	AQ3	*
13	AS1	Dev_Eng
22	AS1	Sci_Tech
25	AS1	Test
14	AS2	Dev_Eng
23	AS2	Sci_Tech
26	AS2	Test
15	AS3	Dev_Eng
24	AS3	Sci_Tech
27	AS3	Test

The Job Class to Stall Mapping file (classtal.map) maps the Acq\_Job\_Class and the APDP\_Stall\_Crk numeric codes (as designated in the jobclass.cod and stall\_mo.cod files respectively) into the 10 standard acquisition stalls (designated in stall10.cod). Note that it assumes the codes from jobclass.cod and stall\_mo.cod agree in meaning where the same "sub-stall" is represented in both variables. This map file is used during encoding and simulation.

class	stall
-----	-----
1	7
2	7
3	4
4	4
5	4
6	4
7	6
8	6
9	6
10	3
11	1
12	1
13	7
14	9
15	5
16	8
17	8
18	7
19	2

20	10
21	10
22	10
23	10
24	10

The **Series to Occupational Group Map** file (`occ.map`) is used strictly during the ACQUIRES condition facility to map occupational series codes to the 5 aggregate occupational groups discussed earlier in the appendix. It does not allow for two documentation lines at the top of the file.

The **Series to Academic Discipline Map** file (`ser_maj.map`) maps the numeric occupational series code (as designated in `series.cod`) to the predominant academic discipline of those in the job series. It must always be consistent with the meaning of the codes in `series.cod` and `acdisp.cod`. This file is used exclusively in the simulation.

## APPENDIX F

### VARIABLES IN THE SIMULATION

Due to the relatively small memory available on the PCs on which ACQUIRES will be run, it is necessary to limit the variables available in the simulation. In many cases, variables which duplicated information between the civilian and manpower data sets were consolidated by using only the manpower variable in the simulation. All variables required for simulation are available in the simulation, and several are also included which may be of use in designating training or education target groups. The following variables are included in the simulation and are the only variables which may be used in designating training or education target groups.

#### Personnel Variables (civ.dat file)

Pay\_Plan  
Grade  
Occupational\_Series  
PAS  
Office\_Symbol  
Acq\_Job\_Class  
Academic\_Disp\_High  
Academic\_Disp\_1  
Academic\_Disp\_2  
Academic\_Disp\_3  
Academic\_Level\_High  
Academic\_Level\_1  
Academic\_Level\_2  
Academic\_Level\_3  
Cert\_Lvl\_1  
Cert\_Lvl\_2  
Cert\_Lvl\_3  
Cert\_Lvl\_4  
Cert\_Lvl\_5

#### Manpower Position Variables (mo.dat)

Critical\_Posn\_Crk  
APDP\_Stall\_Crk  
ADPD\_Level\_Crk  
Installation\_Loc\_Name\_Pos  
Acad\_Ed\_level\_Pos

#### Variables Generated by Condition (calc.dat)

Occupation\_Groups  
Date\_Entered\_Fed\_Svc  
Date\_Promoted  
Date\_Started\_Posn  
Acq\_Log\_Mos\_1  
Comm\_Comp\_Mos\_2  
Comptroller\_Mos\_3



**Manpower Position Variables (mo.dat)**  
Position\_Code  
Personnel\_Acct\_Sym  
Org\_Struct\_Code\_Pos  
AFSC\_Posn  
AF\_Spec\_Prefix  
Special\_Exp\_ID  
Grade\_Seq\_Code  
Authorized\_Grade  
Shared\_Leader\_Posn  
Tail\_Number\_Crk  
Critical\_Posn\_Crk  
APDP\_Stall\_Crk  
APDP\_Level\_Crk  
Flying\_Posn\_Ind  
Acad\_Ed\_Level\_Pos  
Acad\_Spec\_Code\_Pos  
Duty\_Title\_Pos  
Org\_Struct\_Title  
Mpwr\_Auth\_1  
Mpwr\_Auth\_2  
Mpwr\_Auth\_3  
Mpwr\_Auth\_4  
Mpwr\_Auth\_5  
Mpwr\_Auth\_6  
Mpwr\_Auth\_7  
Mpwr\_Auth\_8  
Mpwr\_Auth\_9  
Mpwr\_Auth\_10  
Mpwr\_Auth\_11  
Mpwr\_Auth\_12  
Mpwr\_Auth\_13  
Mpwr\_Auth\_14  
Mpwr\_Auth\_15  
Mpwr\_Auth\_16  
Mpwr\_Auth\_17  
Mpwr\_Auth\_18  
Mpwr\_Auth\_19  
Mpwr\_Auth\_20  
Mpwr\_Auth\_21  
Mpwr\_Auth\_22  
Secur\_Access\_Regmt  
Organization\_Num  
Organization\_Kind  
Organization\_Type  
Detachment\_Unit\_ID  
Operating\_Location  
Subcommand\_ID  
Installation\_Loc\_Name\_Pos

Install\_Loc\_Kind  
InstallStateCnty  
Poed  
CPCN  
Date\_Entered\_Fed\_Svc  
Date\_Started\_Posn  
Occupation\_Groups  
CPCN  
Training\_ID

**Variables Generated by Condition (calc.dat)**

Occupation\_Groups  
Date\_Entered\_Fed\_Svc  
Date\_Promoted  
Date\_Started\_Posn  
Acq\_Log\_Mos\_1  
Comm\_Comp\_Mos\_2  
Comptroller\_Mos\_3  
Contracting\_Mos\_4  
Dev\_Eng\_Mos\_5  
Mfg\_QA\_Mos\_6  
Pgm\_Mgmt\_Mos\_7  
Sci\_Tech\_Mos\_8  
Test\_Mos\_9  
Z\_Other\_Mos\_10  
Certification1  
Certification2  
Certification3  
Certification4  
Certification5  
Stall10

**Variables Generated by Condition (cert.dat)**

Training\_ID

## APPENDIX G

### CHANGES TO THE DOWNLOADED DATA FORMAT AND USING FOREIGN DATABASES

As mentioned in the introduction, the query component of ACQUIRES is general and can be used to analyze any database which can be encoded. This requires that format files be prepared for any such "foreign" database which is to be put into ACQUIRES. These format files have already been prepared for the downloaded databases and are installed with the ACQUIRES package. The mkacqdir.exe program described in Appendix H copies these format files (along with others) into the appropriate directories so that multiple AFSC databases can be maintained on a PC.

Because the AFSC databases are described by format files, changes can be made to the downloaded files (variables added, variables deleted, or field locations changed), and ACQUIRES will still be able to use the downloaded files. However, in order to accommodate these changes in the file, the format files which describe the downloaded data must be changed. The discussion of the format files and database description files below applies to both new databases or changes in the format of the downloaded databases.

#### The Database Description File

Any raw database to be encoded into an ACQUIRES database must have an overall database description file. This file describes each of the component files of the database and the relationship of the files to each other. ACQUIRES allows multiple component files to be joined together into a single database. The downloaded database will be used as an example to demonstrate the database description and format files required to load a database into ACQUIRES.

The joining of component files is clearly required for the acquisition database as the download process creates four files related to civilian data: a civilian file (`civ.dat`), a manpower file (`mo.dat`), a training file (`civtrg.dat`), and a job experience file (`civexp.dat`). Each of these files has a different relation to the overall database, and this requires that each be treated differently during encoding. ACQUIRES requires that a single file be used as a base file and that all other files in the database be linked to the base file through common fields (keys). This linkage may consist of many linked records to a single base record, many base records to a single link record, or one-to-one matching. The names of the component files and their relation to the base file are described by the database description file.

By convention, these database description files use a `.DB` extension. These are the files that appear in the dialogue box when a user selects the encode option under the database menu on the main menu bar of ACQUIRES. The format of a database description files is as follows:

The first line of the file is a single integer which designates the maximum number of records in the base file. For example:

```
5000
```

This number may exceed the actual number of records in the base file but may not be smaller. However, too large of a number should not be specified, as this affects the amount of memory required to run the encode program.

Each of the following lines in the description file specifies a file to be encoded into the database. The first file should be the base file to which the other files will be linked. Each ensuing line describes one of the other component files. Note: on a simple database, the base file may be the only file to be encoded, and the description file would contain only two lines (including the maximum number of base records). Each line requires the same four fields as shown below:

*BaseFileName FileType KeyField KeepNonMatch*

Each of these fields consists of the following:

**BaseFileName:** This field should contain the filename for the component file without the extension. The extension for the component data file is expected to be .DAT. In addition, a format file is required for each data file with the extension .FMT (so the full name would be BaseFileName.FMT).

**FileType:** This field should contain a single character indicating the type of the file.

- B = base
- C = composite (single to many)
- D = composite (many to many)
- S = single to single
- M = many to single

For example: single to many--each record in the base file can have many matches in the other data file

**KeyField:** This field indicates the variable from this file used to match its records to the records in the base file. A variable with this name must appear in the format files for both the base file and the composite file. This should be the field's full name, not the abbreviated one. Note: this field has no meaning for the base file itself but must be in its record.

**KeepNonMatch:** This is a one character field indicating whether or not records not matching any record from the base file are kept. Again, it is ignored for the base file, but a code must be on the record.

- K = keep non-matches
- P = do not keep non\_matches

Note: Non-matches will not be kept for composite files.

Note: All four fields are expected for each file, and the single character fields must be uppercase.

Example: the base.db file currently used for encoding the downloaded databases.

```
30000
civ B CPCN K
mo M Position_Code P
civexp C CPCN P
civtrg C CPCN P
```

Note that the records in the mo.dat file which do not match a Position\_Code in the civ.dat file are currently not retained. This can be changed; however, all civilian and military position would then be encoded into the database.

The base file names (first column in example) are used by the program to find the format and data files. For example, when the program reads the first line in the above example file, it will expect to be able to find the files *civ.fmt* and *civ.dat*. The format file is discussed later. The data file is the ASCII database file. If any one of the format or data files is missing, the program will stop and list the missing file.

### Format Files

The format files are used to describe the contents of the component database files to be encoded. The component data files must be ASCII files and have fixed field records. Each field (or variable) in the data file is described on a separate line of the format file as described below. Each file in the database description file must have a format file.

All lines have the following format:

*VariableName AbbrevVarName FieldType StartCol Length CodeFile*

*VariableName*: This is the full name of the variable field.

*AbbrevVarName*: This is an abbreviated name used for listing some results in ACQUIRES.

*FieldType*: This is a one character field indicating the type of field. Types and descriptions are listed below.

*StartCol*: This is the starting column in each ASCII record for this field.

*Length*: This indicates the number of columns in the record given to this field (i.e., the length of the field in characters).

*CodeFile*: This is an optional field. If on the line, it designates the full name of a code file which provides a constant encoding of the values found in the field (see Appendix E for details and examples).

## Field Types

<u>FieldType</u>	<u>Description</u>
B	indicates an integer field with values ranging from 0 to 255
S	indicates an integer field with values ranging from 0 to 65535
L	indicates an integer field with numbers greater than the ranges for types B and S (for example, a social security number)
U	indicates a field that will always hold a unique value
D	date field
C	indicates a field that is not unique and is not an integer or a date field (a field that does not fit in one of the above descriptions)

Example: the civ.dat format file civ.fmt

```
CPCN CPCN U 1 11
Social_Sec Num SSAN U 13 9
Name Name U 23 27
Subcommand Subcmd C 51 1
Install_Loc Name Location C 53 17
PAS PAS C 71 8
MPCN MPCN U 80 10
Position Code PosnCode U 82 7
Program Element Code PgmEC C 91 6
Office Symbol OffSym C 98 8
Org Structure Code OrgCod C 107 5
AFSC AFSC C 113 7
Pay Plan PayPln C 121 2
Occupational Series Series C 124 4 series.cod
Grade Grd B 129 2
Position Title PosnTitl C 132 54
Duty Title DutyTitl C 187 53
Acq Job Class AcqCls C 241 1 jobclass.cod
Cert_Lvl_1 Cert1 C 243 3 cert.cod
Cert_Lvl_2 Cert2 C 247 3 cert.cod
Cert_Lvl_3 Cert3 C 251 3 cert.cod
Cert_Lvl_4 Cert4 C 255 3 cert.cod
Cert_Lvl_5 Cert5 C 259 3 cert.cod
Func Acct & Shred FAShred C 263 6
Academic_Level High AcLvHi C 270 1 aclvl.cod
Academic_Disp High AcDispHi C 272 29 acdisp.cod
Academic_Level_1 AcLv1 C 302 1 aclvl.cod
Academic_Disp_1 AcDisp1 C 304 29 acdisp.cod
Acad_Yr_Complete_1 AcYr1 C 334 2
Academic_Level_2 AcLv2 C 337 1 aclvl.cod
Academic_Disp_2 AcDisp2 C 339 29 acdisp.cod
Acad_Yr_Complete_2 AcYr2 C 369 2
Academic_Level_3 AcLv3 C 372 1 aclvl.cod
Academic_Disp_3 AcDisp3 C 374 29 acdisp.cod
Acad_Yr_Complete_3 AcYr3 C 404 2
```

Once a database description file has been created, the encode option within ACQUIRES can be used to produce a database compatible with the ACQUIRES query system. The encode process will automatically produce an ACQUIRES file (.ACQ file) which can be loaded and queried. Note that in a given sub-directory a component file with a given name can only be in one database. If it is to be used with more than one base file, this must be done in a separate directory.

## APPENDIX H

### CREATING AND MAINTAINING MULTIPLE DATABASES

The easiest and safest way of using multiple databases with ACQUIRES is by keeping each database in its own directory. Although a database directory can be anywhere on the disk, it is best to keep databases in a sub-directory of ACQUIRES. To make the process of creating these directories simpler, use the program MKACQDIR.EXE. This program automatically creates a new directory and copies all the database files into the directory. The database can then be encoded normally from ACQUIRES. Using MKACQDIR.EXE is similar to using the ACQUIRES install program. Simply type MKACQDIR in the ACQUIRES program directory, and follow the instructions the program gives. MKACQDIR.EXE copies the following files into the new directory: \*.DB, \*.FMT, \*.MAP, \*.COD, and CERTIFY.