HEWLETT PACKARD

Professional Communications
Owner's Manual

Series 80

September 1983

PC/85 was developed by Curt Adams and is also sold under the name 'Networking'' by GAIA Communications.

PC/86-87 was developed by Curt Adams and is based on a program sold under the name "Networking" by GAIA Communications.

Contents

Introduction to Professional Communications

What is Professional Communications?

Note: Professional Communications (abbreviated PC) consists of two separate software pacs—PC/85 and PC/86. PC/85 is designed to be run on the HP-85A, HP-85B, and HP-83 Personal Computers. The pac utilizes the HP-85 internal printer and the 32-column display. PC/86 is designed to be run on the HP-86A, HP-86B, HP-87A, and HP-87XM Personal Computers. The pac takes advantage of the 80-column display, increased memory, and greater number of softkeys in these models.

The operation of PC/85 and PC/86 are very similar. This manual refers to both pacs collectively as PC. Where is is necessary to differentiate between products, they are referred to by their specific names— PC/85 and PC/86.

PC is a powerful software pac that combines data communications, text editing, and file management, allowing you to quickly enter the world of computer "networking." Networking involves using your computer to communicate with other computers for the purpose of exchanging information. It includes applications such as sending and receiving mail, uploading and downloading files, and maintaining an electronic "bulletin board" that callers can read.

PC allows you to use your computer to communicate both with large mainframe hosts and with small personal systems and workstations. Using PC, your Series 80 computer can exchange information not only with other Series 80 computers, but also with any other systems configured with an auto-answer modem and compatible data communications protocols.

The beauty of PC is that it allows you to create information packages, file them, retrieve them, and share them with others—all in one, integrated software environment. Included in the pac are:

- A text editor that allows you to type information into files, edit that information, and combine information from various files. In situations where security is a factor, you can create encrypted files that can't be read without the correct security key.

- A file management system that creates an "electronic index." Each of your files can be cross-referenced five different ways—by To, From, Date, and Subject criteria, and by type of file.

- A communication system that allows your computer to place outgoing calls using the HP 82950A Modem at 300 baud, or using the HP 82939A Serial Interface at 300 or 1,200 baud. Your system can place calls in your presence, or in your absence (delayed calls) using "control" files to automate your communications procedures. Once your computer has established communication with another system, you can send files to that system, receive files, or obtain particular information from that system's database.

- The ability to receive incoming calls using the auto-answer feature of the HP 82950A Modem. Callers can log on to your PC system, send you mail, and read files that you designate as part of your system public "bulletin board." You can protect all or portions of your bulletin board by requiring a password.

- Automatic record-keeping during your communications sessions. PC automatically maintains records of your incoming and outgoing sessions. When you return to your computer after leaving it unattended, you can find out whom you contacted in a delayed call, who called you, and the information that was exchanged.

- Automated data extraction from large data bases. PC allows you to query the host for specific information, and stores the host response.

- The ability to obtain a printed copy of your PC files. PC/85 provides formatted and unformatted printing on the HP-85 internal printer or on a peripheral printer. PC/86 outputs files to a peripheral printer exactly as they appear on the display.

System Requirements

The hardware needed in order for your system to use PC depends on which Series 80 Computer you are using. The following tables list the system requirememt of each of computer. An X indicates that an item must be included in your system in order to run PC:

Note: PC/85 cannot be run using the HP-85 internal tape unit.

Table 1-1. System Requirements for PC/85

Accessory Device	HP-83 and HP-85A	HP-85B
HP 82936A ROM Drawer	X	X
HP-83/85 Mass Storage ROM	X	
HP-83/85 I/O ROM*	X	X
HP-83/85 Advanced Programming ROM	X	X
HP 82903A 16K Memory Module	X	
HP 82950A Modem, or some other compatible 300- or 1,200-baud modem plus an HP 82939A Serial Interface (Option 001)	X	X
HP 82937A HP-IB Interface	X	X
Compatible single or dual disc drive	X	X

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* On the HP-85B, the I/O ROM may be installed in the ROM Drawer, or it may be built into the HP-85B mainframe. If your HP-85B includes a built-in I/O ROM, **do not** install an additional I/O ROM into the ROM Drawer.

If you want to run PC/85 using the HP-85B electronic disc, you will need a minimum of one HP 82909A 128K Memory Module.

Table 1-2.   System Requirements for PC/86

Accessory Device	HP-86A	HP-86B	HP-87A	HP-87XM
An HP 82936A ROM Drawer	X	X	X	X
HP-87 I/O ROM	X	X	X	X
HP 82950A Modem, or some or some other compatible 300- or 1,200- baud modem plus an HP 82939A Serial Interface (Option 001).	X	X	X	X
Compatible single or dual disc drive.	X	X	X	X

PC/86 requires that your system be configured with at least 128K bytes of random access memory. Any combination of built-in RAM and RAM provided by memory modules that adds up to 128K bytes is acceptable.

PC can direct output to a peripheral printer; no HP-83/85 Plotter/Printer ROM is necessary. The printer may be connected via an HP-IB, serial, or parallel interface.

Your PC Discs

Your PC pac was shipped to you with two discs. The disc labeled "Professional Communications Program Disc" contains the BASIC and binary program files needed to run the pac. The disc labeled "Professional Communications Data Disc" contains all the data files required by the PC program. (These files are described in section 2). The data disc also contains some sample control files and several text files. You'll use these text files as you do the examples in sections 2 and 3 of this manual. Appendix E contains listings of each control file on your data disc.

How to Use This Manual

PC is organized into functions connected to one another by the Home Screen (see figure 1-1 or 1-2). Each function is described in a separate section of this manual.

Section 2 covers the procedures for getting PC running on your system and some general features of the program. Section 2 also covers how to make backup discs. You should read section 2 before you use your PC discs, since you should make backup copies of both PC discs before you run the program. Sections 3 through 10 describe the PC functions.

Appendix A contains additional information about backing up discs. Appendix A also explains how to maintain a "master" data disc for your PC system.

Appendix B covers running PC using a single-disc drive. If you are using an HP-85B and you want to take advantage of the increased speed of the electronic disc, read appendix C. Appendix D describes how to use PC with a Winchester hard disc.

Appendices E through G contain additional reference information.

Where differences between PC/85 and PC/86 exist, the features and operation of each pac are discussed separately. "Screen" illustrations showing the computer display were obtained using PC/86-87. The corresponding PC/85 screen contains the same information displayed in a different, 32-column format.

The HP-83/85 keyboards and HP-86/87 keyboards differ slightly from one another. These differences are pointed out where they affect operation of PC.

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Figure 1-1.   Organization of PC/85.

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Figure 1-2.   Organization of PC/86.

Getting Started

Configuring Your PC System

All the required hardware listed in section 1 must be installed before PC can be run. Follow the instructions provided with the devices for installing ROMs into the ROM drawer and for installing the ROM drawer into the computer. If it is necessary to change the select code of an interface, follow the instructions in the interface owner's manual.

There are several guidelines you must follow regarding the select codes of the interface(s) and/or modem:

• If you are using the HP 82950A Modem, its select code must be set to 9 or 10. The select code is factory preset to 10.

• If you are using an HP 82939A Serial Interface and a "smart" modem that supports autodial and autoanswer, the interface select code must be set to 9 or 10.

• If you are using an HP 82939A Serial Interface to connect a modem that has no autodial and autoanswer capabilities, the interface select code must be less than 9. Since the select code is factory preset to 10, you must change the select code using instructions in the interface owner's manual.

• The HP-IB interface or HP-86A integrated printer/disc interface must have a select code lower than the select code of the modem or serial interface. This manual assumes that this select code is set to 7.

Note: If you are using the HP 82950A Modem and your peripheral printer is connected using a serial interface, you cannot use the PC PRINT function while the modem is installed. To print a file, you must turn off power, replace the modem with the serial interface and printer, and then rerun PC. Conversely, PC will cease to operate properly if you attempt to perform any COMM activities without the modem installed.

Making Backup Discs

You should always maintain a backup copy of important discs to avoid loss of valuable information due to disc wear or damage. Right now, you should make copies of the two discs supplied in your PC Pac. Use the following procedure if your system has two drives (DRIVE 0 and DRIVE 1):

1. Put away both PC discs. Do not take them out again until you've completed step #3.

2. Turn on your disc drive (not necessary for the HP-86A used with the HP 9130 Disc Drives). Turn on your computer. Place the disc you'll be using as your backup program disc into DRIVE 0. Make sure it doesn't have any necessary information on it. Then, prepare (*initialize*) it by typing:

```
INITIALIZE "1",":D700",13,6 (END LINE)
```

The procedure takes several minutes, and is completed when the drive light goes off. Label this disc **PC Program Backup.**

3. Now, initialize the disc you'll be using as your backup data disc by placing the empty disc into DRIVE 0 and executing:

    INITIALIZE "*AAAAAA*", ":D700",13,6 (END LINE)

    The quoted characters *AAAAAA* can be any sequence of letters and numbers. Label this disc **PC Data Backup.**

4. Place the PC program disc into DRIVE 0. Place the initialized PC Program Backup into drive 1 and type:

    COPY ":D700" TO ":D701"

5. Copy the PC data disc to the PC Data Backup disc using the same COPY statement.

6. Place your original discs in a place where they will be safe and use the backup program and data discs.

Using Typewriter Mode

Ordinarily, the computer keyboard operates in BASIC mode—unshifted letters are uppercase, shifted letters are lowercase. If you want to operate PC in *typewriter mode*, execute the FLIP statement by typing:

FLIP (END LINE)

before running PC.

Once PC is running in either BASIC or typewriter mode, you can switch to the other mode by depressing the (CAPS LOCK) key.

Loading PC

To load PC into computer memory, turn on the disc drive. If you will be using a peripheral printer, turn it on.

Caution

Turning on a peripheral printer while PC/85 is performing a chaining operation can cause the computer to lock up. If you intend to use a peripheral printer during a session, turn it on at the beginning of the session or when the Home Screen is displayed. Never turn on the printer when PC/85 is displaying the message Chaining....

Insert the PC Program Backup disc into DRIVE 1; insert the PC Data Backup disc into DRIVE 0. Turn on the computer.

To load and run PC, type:

```
CHAIN "PC.1"
```

When the program starts running, your screen will look like this:

```
                        DATE: ▮MDDYY




              Professional Communications Pac
                     Copyright 1983
          by Gaia Communications and Hewlett-Packard Company


                                        October 1983
```

Protected Fields and Typing Aids

Before you start to fill in information, you need to know how to use PC's *protected fields*. When the program displays a protected field, it is requesting, or *prompting*, you for information. Protected fields and their accompanying messages are often called program *prompts*.

You can move the cursor within a protected field using the (BACK SPACE), (→), and (←) keys. You can insert and delete characters using the (INS RPL), (-CHAR), and (-LINE) keys. However, you can't move the cursor out of the protected field using the (↑), (↓), and (↘) keys. If you type too many characters, the cursor will remain at the last position in the field and you'll overwrite the last character. In some places in PC, the insert/replace key ((I/R) on the HP-86/87, (INS RPL) on the HP-83/85) works differently than the normal screen editing feature. Pressing (I/R) or (INS RPL) inserts a space at the current cursor position and moves each character to the right of the cursor one place to the right. You can then type a character to replace the space.

Protected fields faciliate operation of PC in several ways. Within a protected field, the computer knows the kind of input expected from you. If it is waiting for numbers, only the number keys will be active. If the computer needs a sequence of exactly six numbers, it won't allow you to input only five. Protected fields also use certain typing aids to speed input. For instance, typing a D when the computer is requesting a file name will type DAY-FILE when you press (END LINE). In certain cases, the protected field has a *default*; pressing only (END LINE) inserts a specified set of characters.

The requirements and allowed responses for each of the protected fields you'll encounter while using PC are discussed throughout this manual. Sometimes, a protected field requires that you press (END LINE) to enter the contents of the field. At other times, typing the correct response causes the information to be entered automatically. The best way to tell the difference is to see what happens. If typing a response doesn't cause any visible computer or disc drive activity, try pressing (END LINE).

The (PAUSE) key is active whenever a protected field is displayed. Pausing PC is covered on page 21.

Filling Out the Introductory Screen

The introductory screen initially has one protected field. Enter the date in the form MMDDYY. For example, April 14, 1983 is entered as:

DATE: 041483 (END LINE)

The computer will not accept an impossible date (for example, month 99). If the date you've typed is not accepted, the computer beeps and clears the field to accept a new date. When the date is properly entered, the computer displays the time field. Enter the time in HHMMSS notation using 24-hour time. For example, 3:08:35 p.m. is entered as:

TIME: 150835 (END LINE)

PC/86 also displays the printer address field:

```
PRINTER IS: ▒▒▒
```

for entering the address of the peripheral printer. Enter the appropriate one- or three-digit printer address. If necessary, refer to your printer documentation for additional information about printer addresses. Press only (END LINE) if your HP-86/87 system does not include a system printer.

When you've completed the introductory screen, the computer displays the *Home Screen:*

```
              Professional
              Communications
          This is the Home Screen.
       Press [K4] to return here from
       anywhere else in the program.

             Press a softkey...


  8  EXIT      9  USER2   10  PHONE   11  CONTROL   HOME   14      COPY
  1  FIND      2  EDIT     3  PRINT    4   COMM                7  PAPER ADV.
```
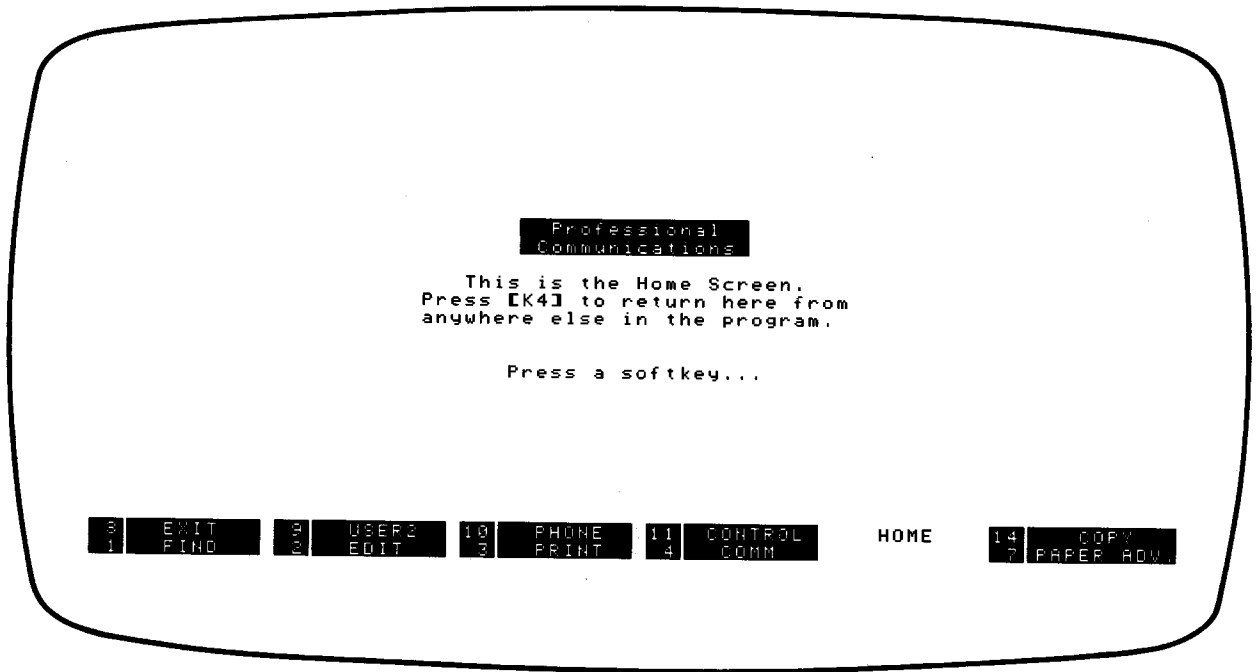
The Home Screen

The Home Screen is central to the operation of PC. Each of the *key labels* on the screen represents a particular function built into PC. Pressing (k1), for example, accesses the FIND function; pressing (k3) obtains the PRINT function. When you are viewing the Home Screen, the only keys that are active are the assigned softkeys.

Once you've left the Home Screen by pressing a key, the only way to switch to a new function is by returning to the Home Screen and then pressing the key for that function. Each PC function has its own screen, and each of these screens has a [HOME] key to return you to the Home Screen.

PC/85 is designed to load each particular PC function as you need it. This process is called *chaining*. Pressing (RUN) loads the introductory screen and Home Screen. When you switch from one PC function to another, the program displays Chaining... while the function is loaded into computer memory.

PC/86 loads the entire program when you press (RUN). Therefore, the program does not perform a chaining operation when you switch between functions.

PC Softkeys and Key Labels

PC is designed to perform many of its operations with a minimum of keystrokes. The program makes extensive use of the computer's special function keys (*softkeys*). The operations assigned to each softkey change as you switch between the various program functions. Each softkey has a *key label* to describe the operation performed when you press the key.

PC/85 uses all eight softkeys, (k1) through (k8). PC/86 assigns the same operations to the softkeys in analogous positions on the HP-86/87 keyboard—keys (k1) through (k4) and (k8) through (k11) (see figure 2-1). PC/86 also uses keys (k7) and (k14) to control printer operation. Softkey (k7) is used to perform one or more line feeds on the peripheral printer. Softkey (k14) copies the contents of the display to the printer.
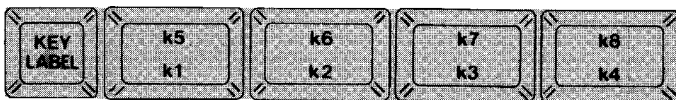
HP-83/85 Softkeys
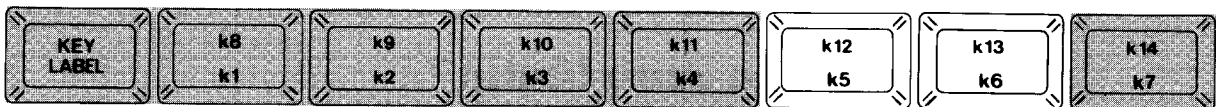
HP-86/87 Softkeys

Figure 2-1.   Series 80 Softkeys. Keys used by PC are shaded.

The Home Screen has eight softkeys and key labels used to switch to the various PC functions. Each PC function has its own screen and its own set of key labels. As you perform operations within a function, there are times when the key labels are erased from the screen to allow you to use the entire screen for viewing information.

If the key labels are not currently displayed, you can view them by pressing (KEY LABEL). The key labels are displayed at the bottom of the screen for two seconds; then, the bottom two lines of information are restored. PC/86 displays the name of the PC function along with the key labels for that function on the bottom two lines of the display.

Pressing (KEY LABEL) has no effect if the special function keys are not active. The softkeys are deactivated during certain PC activities and when the program is paused.

This manual refers to a softkey by printing the key label in dot matrix type enclosed in square brackets—for example, [HOME].

PC Files

PC is designed to help you acquire, organize, retrieve, and share information. For it to do this efficiently, the information must be divided in some logical fashion into units you can easily locate and use. The electronic equivalent of a file cabinet is a set of data discs. Each manila folder in your file cabinet is analogous to a disc-based file. Just as each folder can contain many sheets of paper, a file can have many pages.

You probably use some scheme for sorting your folders—alphebetically, by geographic location, etc. Every PC file you create is assigned a unique file number when it is stored on the data disc. That number is later used by the program to retrieve the file. PC uses an electronic indexing system that allows you to cross reference your files. As you work with PC, you'll be creating, reading, editing, copying, printing, and deleting files. You will be able to "mail" files to others over the phone and to receive incoming files from others. You may also develop *control* files that automate much of your communication activities.

In addition to your personal portfolio of files, PC uses nine special files for performing its functions. These files are described briefly here and are covered in much greater detail in the descriptions of each of the PC functions. Each of your PC data discs will have the following files:

> The **DAY-FILE** maintains a record of all your outgoing communication. When you use PC to place a call, all the information that is displayed on the screen during your communications session is entered into the DAY-FILE. This includes characters you type, characters sent by control files, and information received from the host. Outgoing communication is covered in section 5.

> The **ACTIVITY-FILE** is the inverse of the DAY-FILE; it maintains a record of all the incoming calls placed to your system. Incoming information is covered in section 6.

> The **EDIT-FILE** is a work file used during editing sessions to change the contents of your files and to move information from one file to another. Editing is covered in section 4.

The **INDEX-FILE** contains all the cross-referencing information for the files on a particular data disc. Each of your files can be indexed by the categories To, From, Date, Type, and Subject. Indexing is covered in section 3.

The **PHONE-FILE** is used to store phone numbers for outgoing communication. This file also stores communications parameters (baud, parity, and word length) for each phone number, so that your system can automatically set these parameters before it dials the number. Using the PHONE-FILE is covered in section 5. Maintaining the phone file is covered in section 7.

Files **001**, **002**, and **003** are "message" files containing information that callers can access when they establish communication with your system. You can adapt each of these files to meet your needs. File **001** contains your personalized welcome message. File **002** contains a list of the commands callers can execute on your system. File **003** stores your "help" file that callers can read to learn additional details about your system. Accessing these files is covered in section 6.

The **XTRACT-FILE** is used to store an XTRACT routine. The XTRACT routine is used during outgoing communications activities to obtain information from databases automatically. XTRACT routines are covered in section 10.

Unlike a filing cabinet, an electronic filing system cannot be locked. Therefore, PC provides the ability to secure files by storing them encrypted in an unreadable form. Once a file has been secured, it can be read only by people who know the *security key* you assigned to the file.

Making Additional Data Discs

As mentioned previously, you should maintain a backup copy of all of your important discs. You should also have available a spare, "empty" data disc for use when the disc you are using becomes full. PC will display a message whenever you attempt to perform an operation that requires more disc space than the amount remaining. There are two ways to make new data discs:

- Copy a *master* data disc to an initialized disc. It will contain all the necessary files to run PC, plus additional control files you've developed to automate your communications activities. Right now, your master data disc is the one included with your pac. Later, you'll probably develop your own master disc.

- You can make a data disc containing all empty files by creating the necessary files on an initialized disc.

Methods for developing a master data disc are covered in appendix A.

As your electronic filing system expands, you may find that you soon have a number of data discs. You should label each disc with a name or number you can use to identify it. You may want to assign a volume label to each data disc at the time you initialize it, or later using the VOLUME IS statement (refer to your computer owner's documentation for information on the VOLUME IS statement.)

Pausing the Program

There may be times when you want to pause PC to perform a computer operation, such as obtaining a disc directory or backing up a disc. You can pause the program during many operations where your system is off-line (not actively communicating with another computer) and the program is prompting for information.

To pause the program, press the (PAUSE) key. To resume program execution, press (CONT). The program displays the same prompt.

Example: From the home screen, press [F I ND]. When the FIND function is loaded into the computer, press [READ#]. Press (PAUSE) in response to the message F I LE? ░░░░. The program is now halted. Execute the CAT statement to get a disc directory. Then, press (CONT) to view the F I LE? ░░░░ prompt once again. Pressing [HOME] returns the program to the home screen.

Printing With PC

PC/86 requests a printer address at the beginning of the session when you fill out the introductory screen. That printer is used for all printing operations performed by PC.

PC/85 uses the printer specified in the PRINT function for printing files. All other PC/85 printing operations are done on the HP-85 internal printer.

Copying the Display

The HP-85 (COPY) key and the PC/86 [COPY] and [PAPER ADV] softkeys are active at the following times:

- When you are viewing the contents of a PC file in FIND, EDIT, or CONTROL.

- When you are viewing the index form of a file in FIND.

- When you are changing a listing in the PHONE-FILE.

- When you are on-line during an outgoing call in COMM.

- Any time a prompt is displayed.

Stopping the Program

To exit from PC/85, pause the program (refer to Pausing the Program, above). Pressing (RUN) runs the program again and displays the screen of the current function. Press [HOME] to return to the Home Screen.

The [EXIT] key on the PC/86 Home Screen stops program execution and returns control of the computer to the BASIC operating system. Pressing [EXIT] displays the prompt?

OK to exit? ░ (Y/N)

Pressing Y halts the program. To run PC again, press (RUN) and fill out the introductory screen.

The FIND Function

Introduction

For stored information to be useful, it has to be accessible. A document or letter you stored away six months ago is useless unless you can find it when you need to read its contents. A paper filing system uses file cabinets and folders organized in some logical manner that enables you to find materials without shuffling through all the papers you've accumulated. PC uses an indexing system. The system operates much like a library card catalog, except that it is more powerful and the computer handles most of the work.

The FIND function maintains the index for your data disc in the INDEX-FILE. Every file in your electronic file cabinet can be cross-referenced five different ways. FIND provides the procedures for searching that index to quickly locate particular files you need. Then, when you've found the file, FIND gives you the opportunity to examine its contents. FIND also provides you with the *file number* that was assigned to the file when it was created on the data disc. If you want to make changes in the file or copy portions of it to another file, you use that file number to access the file within the EDIT function.

The FIND function is also used to change the index entries of a file or to delete a file from the disc.

Entering FIND

FIND is entered from the Home Screen by pressing the [F I ND] softkey (PC/85 displays Chaining . . . when you press ⟨k1⟩ while the FIND function is read into computer memory) to view the FIND screen:
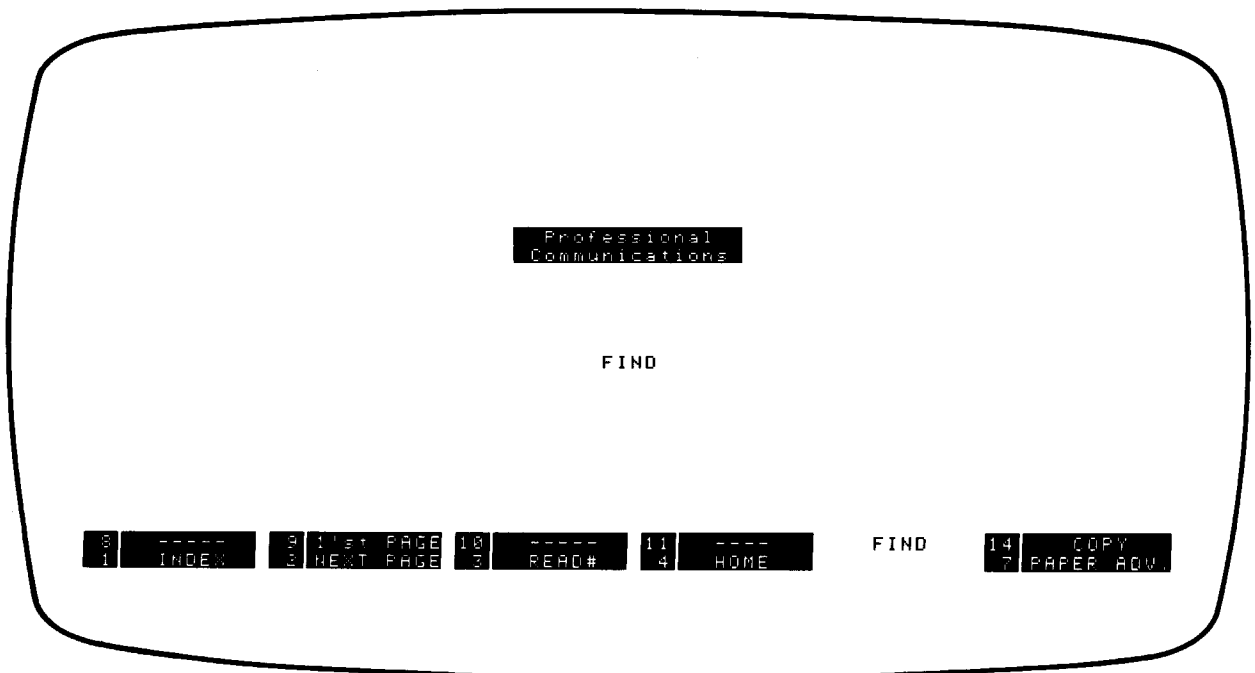
The key labels at the bottom of the screen are the FIND key assignments. Three of these ([INDEX], [READ#], and [HOME]) are active whenever the program is in FIND, except when you are scanning a file. The other two ([1'st PAGE] and [NEXT PAGE]) are active only while you are reading a file.

FIND Key Assignments

One way to understand the uses of a particular PC function, such as FIND, is to have some idea of what the softkeys do. Each of the softkeys will be described in greater detail later in this section.

[INDEX]   Pressing (k1) checks to see if the INDEX-FILE is in computer memory. If it is not there, it is read into memory from the data disc. Then, the program displays the *search criteria form*, which you use to search the INDEX-FILE for a particular file or set of files.

[NEXT PAGE]   This key is active when you are reading a file in FIND, and is used to display the next page of the file. If you are not currently reading a file, pressing (k2) causes the system to beep. If you are reading the last page of the file, pressing [NEXT PAGE] displays the first page.

[1'st PAGE]   This key is active any time you are reading or have already read a file during a FIND session. It displays the first page of the file most recently read.

[READ#]   When you know the file number assigned to a particular file, you can use this key to access that file by number. Pressing the key displays the prompt FILE? ▓▓▓▓. You can read the DAY-FILE, ACTIVITY-FILE, or EDIT-FILE by entering the typing aids D, A, or E.

[HOME]   Pressing (k4) returns the program to the home screen.

[COPY] and [PAPER ADVANCE]   (PC/86 only) Operation of these keys is covered on page 21.

All the alphanumeric keys are active when you are viewing the search criteria form.

PC Indexing

When you save a new file onto a data disc, the program assigns that file a unique *file number*. The program distinguishes one file from another by its file number. If you pause PC and obtain a directory listing using the CAT statement, you'll see the file numbers listed in the disc directory.

PC doesn't expect you to remember those file numbers. The program maintains an index of all the files on the data disc. The index is cross-referenced five different ways to provide a great deal of flexibility and functionality in accessing files.

The basis of the indexing system is the INDEX-FILE. Each data disc in your system must have its own INDEX-FILE. An INDEX-FILE can store cataloging information for up to 90 data files. When the INDEX-FILE becomes full, you must change data discs; the program does not allow you to create a file on the disc without indexing it.

Unlike most of the other files you'll be using in PC, you do not read the INDEX-FILE directly. Instead, you access it, or portions of it, using the *search criteria form*.

The Search Criteria Form

The *search criteria form* is used to describe the file(s) you wish to locate. For example, you can direct PC to locate all files sent to George Moore from Sandy Dunn during March that dealt with inventory costs.

To view the search criteria form from the FIND screen, press [INDEX]. The program determines whether or not the INDEX-FILE has already been read into computer memory. It it is not already there, you will see the drive light come on while the INDEX-FILE is read into the computer. When the drive light goes off, the program displays:

```
         SEARCH CRITERIA
To: ▓▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒
```

To: is the first entry of the search criteria form.

When you enter information into the search criteria form, you are constructing a detailed profile of the file you wish to find in the index. When the form is completed, the program will initiate a search through the index for any files that meet all the criteria you've specified. When it finds a match, the program displays that file's *index form*. You then have several *index commands* available to you. These commands are discussed later in this section.

Each of the search criteria on the search criteria form has its own set of allowable entries. The following rules apply to all entries.

- The ⊕, ⊙, (-CHAR), (-LINE), (INS RPL) (HP-83/85), (I/R) (HP-86/87), and (BACK SPACE) keys can be used for editing entries. Once an entry is entered by pressing (END LINE), however, it cannot be changed on that form. To obtain a new form, press [INDEX].

- Pressing only (END LINE) for any entry writes the characters D/C (don't care) into that field. This entry becomes a "wild card." A wild card entry is ignored during the search. Pressing (END LINE) in response to all five search criteria allows you to view the index entry for every file stored on the disc.

"Substring" Searching

The To:, From:, Type:, and Subject Keywords: entries in the search criteria form all implement *substring searching*. A *string* is a sequence of characters—for example, ABCDE. A *substring* is a portion of a string—for example, BCD.

Substring searching regards your entry as a substring and looks for the same entry in the index entry. For example, if you were to specify the characters CAR as the To: criterion in the search criteria form, the following index entries would match.

<pre>
          To: CARL   To: CARPET CLEANERS
          To: 209DAYCARE   To: CITY CAR WASH
</pre>

The program distinguishes between uppercase and lowercase letters. For example, an index entry Carl does not match the search criterion CAR. You may find it easier to use entirely uppercase or lowercase letters in your disc index.

Substring searching is a powerful way to broaden the criteria of a search. By shortening the substring in the search criteria form, you can make your search more general.

The To: Criterion

You can enter any sequence of 20 characters or less into the To: field. Control characters are not allowed. You may use both uppercase and lowercase letters.

The From: Criterion

Entries in the From: criterion follow the same rules as those in the To: criterion.

The Date: Criterion

The Date: criterion allows you to find files that were indexed with a specific date (ON). You can also find files indexed with dates within a certain period of time (BEFORE or AFTER a specified date, or BETWEEN two dates.

The Date: criterion has a seven-character field into which you can place one of the four options.

<pre>
Date: ▓▓▓▓▓▓▓ MMDDYY and MMDDYY
     (ON,BEFORE,AFTER,or BETWEEN)
</pre>

The field recognizes typing aids. Typing the indicated dot matrix character(s) displays the entire word in the field and moves the cursor to the first position for the date. If you type O (on), F (before), or A (after), the second date field is erased.

Once the option has been filled in, the dates are typed in using the MMDDYY format. If you've specified the BETWEEN option (T), use the ⟨→⟩ key to move to the second date MMDDYY field.

The Type: Criterion

You can type any string of characters into the six-character field. As with To: and From:, the program performs a substring search.

When you create a data file on disc, you can index its type using any sequence of characters (except control characters). However, PC uses several special types:

MAIL—Files indexed type MAIL can be read by anyone who phones your system. These files can be used to create a "bulletin board" for exchanging information.

MAILP—These files contain "protected" mail. They can be read by anyone phoning your system who knows his/her personal password. Establishing a password is covered in section 7.

MAILIN—Files sent to your system by callers are automatically indexed type MAILIN. Reserving this name for incoming files allows you to quickly access your mail.

CTRL—PC allows you to write control files for automating your outgoing communication. When you save a file you've written in the CONTROL function, the file is automatically indexed type CTRL.

TEXT—Files saved while you are working in the EDIT function are automatically indexed type TEXT unless you specify some other type.

The Subject Keywords: Criterion

When a file is saved onto a data disc, it can be indexed by a subject up to 64 characters long. The Subject Keywords: criterion on the search criteria form allows you to search the index for files indexed by particular subjects. As with the To:, From:, and Type: criteria, the search looks for a matching sequence of characters. The Subject Keywords: search has an additional feature that enhances its usefullness—it allows you to use Boolean logic (AND, OR, NOT) to narrow or broaden your search as needed.

Example: The following table illustrates using Boolean logic to locate three files indexed `SMITH PAPER CO.`, `DR. SMITH`, and `PAPER PRODUCTS`. An **X** in a column indicates that the file meets the search criterion.

Subject Keywords	Files		
	`SMITH PAPER CO.`	`DR. SMITH`	`PAPER PRODUCTS`
`SMITH AND PAPER`	X		
`SMITH OR PAPER`	X	X	X
`SMITH NOT PAPER`		X	
`MIT AND APE`	X		

To specify the `Subject Keywords:` search criterion, type up to 20 characters into the field. When you press (END LINE), the program displays the Boolean field:

`▓▓▓ (AND, NOT or OR)`

The Boolean field accepts the typing aids `A` (and), `N` (not), and `O` (or). Pressing (END LINE) causes the program to skip the Boolean operator and immediately begin searching the index. If you specify an acceptable Boolean operator, the program displays a second 20-character subject field. When you've entered the desired sequence of characters, press (END LINE) to begin the search.

The following illustration shows a nearly completed search criteria form:

Example: Fill out the search criteria form with the following information. Remember that pressing (END LINE) for a criterion places D/C (don't care) in the field.

```
To: CUSTOMER
From: HEWLETT-PACKARD
Date: D/C
Type: D/C
Subject Keywords: FIND
```

The Index Search

The index search is based on the information you type into the search criteria form. The search begins immediately when you've completed the form. When the program finds a file that meets the search criterion, it displays the *index form* for that file. You can then use one or more index commands, discussed next, to view the file or continue the search. If no matching file is found or if the search is completed, the program displays ***SEARCH COMPLETE***.

Example: If you completed the search criteria form in the previous example, the display should now contain the index form for file #562:

```
File# 562

To: CUSTOMER
From: HEWLETT-PACKARD
Date: 082583
Type: TEXT
INTRODUCTION TO FIND


Next, Read, Back, Scan,
     Change, or Delete?
```

The bottom two lines list the index commands available to you.

Index Commands

There are six commands (with typing aids) you can use during an index search—Next (N), Back (B), Scan (S), Change (C), Delete (D), and Read (R). These commands are active whenever you are viewing the index form of a file located during the index search. To execute a command, press the letter key of its typing aid.

The "Next" Command (N)

The Next command displays the index form for the next file that meets your search criteria. If no other files are found, the program displays ✱✱✱SEARCH COMPLETE✱✱✱.

Example: Execute the Next command. Since no other files on the data disc meet the search criteria, the program displays ✱✱✱SEARCH COMPLETE✱✱✱.

The "Back" Command (B)

The Back command returns the search to the first file that met the search criteria, allowing you to review the results of your search.

Example: Execute the Back command to redisplay the index form for file #562.

The "Change" Command (C)

The Change command allows you to change the index form you are currently viewing. When you've completed the change procedure, those new entries become associated with that file in the INDEX-FILE. When you press C, the program displays a version of the index form that you can edit—the *index change form*. The cursor is positioned at the beginning of the To: field. You can type over the current entry and use the (→) and (←) keys to move the cursor to the character to be changed. The (-CHAR), (-LINE) and (INS RPL) keys are also active. (BACK SPACE) has the same effect as the (←) key. To leave an entry unchanged, press (END LINE). To erase an entry, position the cursor at the first character and press (-LINE).
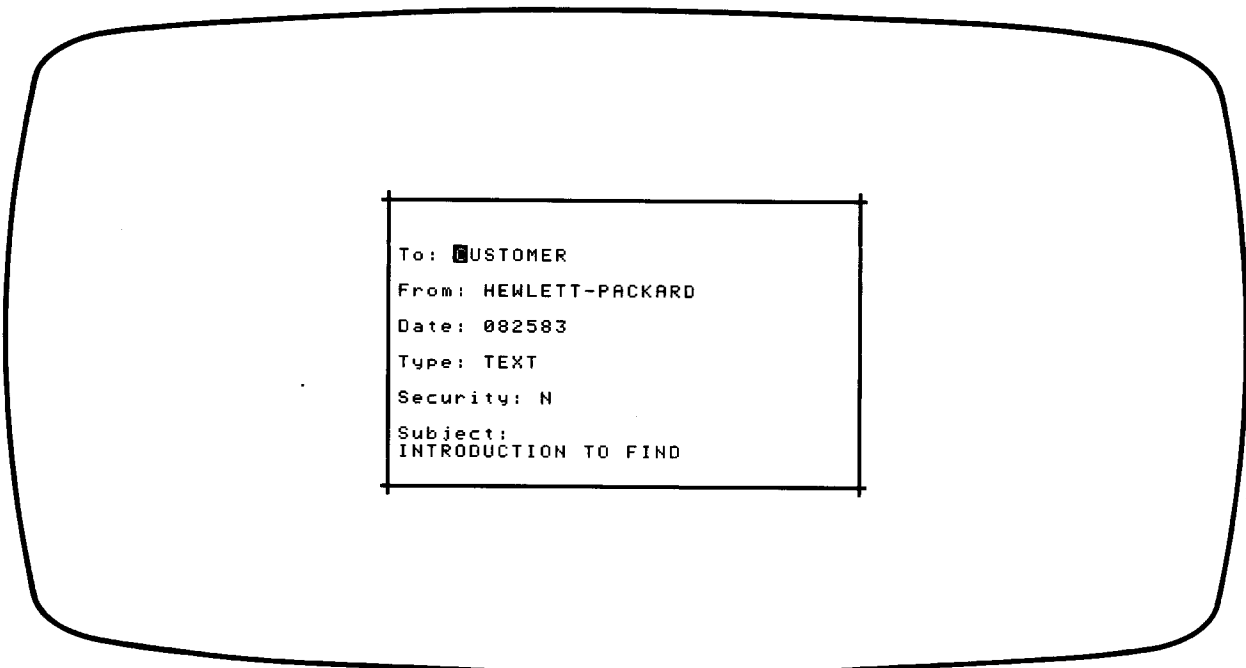
When you've completed the change form, the new entries are written into the INDEX-FILE. Then, the index search continues, displaying the index form of the next file, if any, that meets the search criteria.

The change form allows you to change the security status recorded in the index. This is useful if you've received a secured file during an incoming call. All incoming files are indexed as unsecured (N), regardless of whether or not they are received in encrypted form. Changing the index security status from N to Y has no effect on the file itself. However, when a file is indexed as secured, executing the Read command causes the program to prompt for a security key. File security is discussed further in section 4.

> **Note:** The Subject: field in the index contains 64 characters, including trailing spaces after the last character in the subject entry. If you insert characters into the subject entry on the index change form, you must delete any extra trailing spaces by moving the cursor past the last character in the subject entry and pressing (-LINE).

Example: If you performed the previous example, you should now have the index form for file #562 on the screen. To change the index entry, press C.

The screen will display the index change form:

```
To: █USTOMER
From: HEWLETT-PACKARD
Date: 082583
Type: TEXT
Security: N
Subject:
INTRODUCTION TO FIND
```

The cursor is positioned under the first character of the To: entry. To change CUSTOMER to CUSTOMERS, use the ⊕ key to move the cursor past the R and type S (END LINE). Press (END LINE) four more times to move the cursor to the Subject: field. The program displays a question mark beside the word Subject: and moves the cursor to the first character. Use the ⊕ key to move the cursor under the F in FIND. Insert the word THE by typing (INS RPL) (HP-85) or (I/R) (HP-86/87) THE (SPACEBAR) (I/R). (The insert/replace key operates here just as it does when the program is not running.) Now, move the cursor past the word FIND and use the space bar (PC/85) or (END LINE) (PC/86) to move the cursor to the next line. Then, type FUNCTION (-LINE) (END LINE) on the next line to enter the new subject and complete the index change form.

When you've finished with the change form, the program continues to search for files that meet the search criteria. Since no other files on this disc meet the criteria, the program displays ✳✳✳SEARCH COMPLETE✳✳✳.

The "Scan" Command (S)
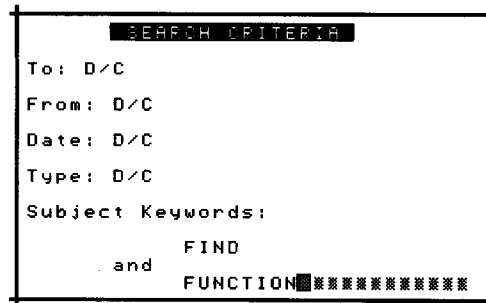
The Scan command allows you to perform a substring search of the contents of the file whose index form you are viewing. When you press S, the program requests a sequence of characters by displaying:

Look for what ?

You can enter up to 31 characters. When you press (END LINE), the program displays each entire line on which the specified sequence of characters occurs. Scanning differentiates between uppercase and lowercase letters. For example, scanning for the word FORM will not return the word form. The word or phrase you are looking for must be on one line. Therefore, scanning for the phrase search criteria will not find an occurrence in which search is at the end of one line and criteria is at the beginning of another.

When a scan is completed, you can read the file by pressing R. You can also execute the other index commands.

Example: Press (KEY LABEL) to view the FIND key labels and then press the [INDEX] key to display another search criteria form. Fill out the form with D/C's at each criterion except Subject:. For Subject:, type FIND (END LINE). The program displays the Boolean field; type A to display the Boolean operator and. Then, type the word FUNCTION into the second subject field. Your search criteria form should look like this:

```
          ▄SEARCH CRITERIA▄

    To:  D/C

    From:  D/C

    Date:  D/C

    Type:  D/C

    Subject Keywords:
                   FIND
            .and
                   FUNCTION█████████████
```

Now, press (END LINE) to view the index form for file #562. To scan the file for the word index, press S. The program displays:

Look for what ?

Type the word index and press (END LINE). The program scans the entire file and displays each line on which the word index was found. When the program displays SCAN Complete, you can use the (ROLL) key to view the results of the scan, or you can execute another index command. Executing Read allows you to read the file you just scanned.

The "Delete" Command (D)

The Delete command deletes the file whose index form you are currently viewing. When you press D, the program displays:

Delete# *file number* ? (Y/N)

Typing Y deletes the file and continues the index search. Typing N continues the index search without deleting the file.

> **Note:** You should periodically pack your data disc to remove null files created when you execute the PC Delete command. To pack the data disc, pause PC and type PACK (END LINE).

The "Read" Command (R)

The Read command displays the first "page" of the file whose index form you are currently viewing. (PC/85 displays the first 16 lines of the page. You can use (ROLL) and (SHIFT) (ROLL) to scroll through the rest of the page.) The [NEXT PAGE] key allows you to view other pages. You can also use the [1'st PAGE] key to view the first page of the file. When you are viewing the last page of a file, pressing [NEXT PAGE] displays the first page and causes the computer to beep.

You cannot make changes to the file contents. The keyboard letter, number, and editing keys are inactive, except for the typing aids for the index commands. You also cannot move directly to a previous page (unless you are on page 2).

If you attempt to execute the Read command to view a secured file, the program will ask for the security key needed to decode the file by displaying:

Key? ▩▩▩▩▩▩▩▩

If you enter an incorrect security code, the file will be displayed in an encrypted, unreadable form. File security is covered in section 4.

Example: Execute the Read command. Use the [NEXT PAGE] key to read page 2. When you are done, press [1'st PAGE] to view the first page again.

The [READ#] Key

The [READ#] key can be used to read a file when you already know its file number, or when you want to read the ACTIVITY-FILE, DAY-FILE, or EDIT-FILE.
Pressing [READ#] displays:

FILE? ▩▩▩▩

You must enter the correct file number or the typing aids A (ACTIVITY-FILE), D (DAY-FILE), or E (EDIT-FILE) into the protected field. If the file is secured, you must append the letter S to the file number and provide the correct security key in order to see the unencrypted form of the file. The [NEXT PAGE] and [1'st PAGE] keys are used to view the entire file. When the last page is displayed, pressing [NEXT PAGE] displays the first page.

Terminating an Index Search

There are two ways to terminate a search:

- Press [INDEX] to begin a new index search. The program displays the search criteria form.

- Press [HOME] to leave FIND. The program returns to the Home Screen.

Using More Than One Data Disc

As you continue to use PC/85, the number of files in your system will grow. Eventually, you may have files on a number of different data discs. Each data disc has its own INDEX-FILE, DAY-FILE, ACTIVITY-FILE, EDIT-FILE, and PHONE-FILE.

Use the following procedure to search for files located on more than one data disc.

1. With a data disc in place, enter the FIND function. Use the [INDEX] key to display a search criteria form.

2. Fill out the search criteria form and begin the index search. If necessary, use the index commands to scan or read files, or to repeat the search. When you find a file you want to return to (for instance, in EDIT or COMM), write down its file number and disc label.

3. When you want to search another disc, press [HOME]. Change data discs. Press [FIND] and then [INDEX] to read the INDEX-FILE for the new disc into computer memory. When the program displays the search criteria form, fill it out. You must fill out a separate search criteria form for each disc you search.

You can change data discs at any time to perform a [READ#] operation. Pressing [READ#] doesn't use the INDEX-FILE; you use that key when you already know the file number.

The EDIT Function

Introduction

Professional Communications is designed to help you acquire, share, organize, and rearrange information in ways that are most useful to you. You've already seen how the FIND function helps you to organize your information into a cross-referenced electronic filing system. The EDIT function is designed to let you prepare new files, reorganize information contained in your files, and edit information you've gathered from your PC communications operations.

Entering EDIT

The EDIT function is accessed from the Home Screen by pressing the [EDIT] key (PC/85 displays the message Chaining...) to view the EDIT screen:
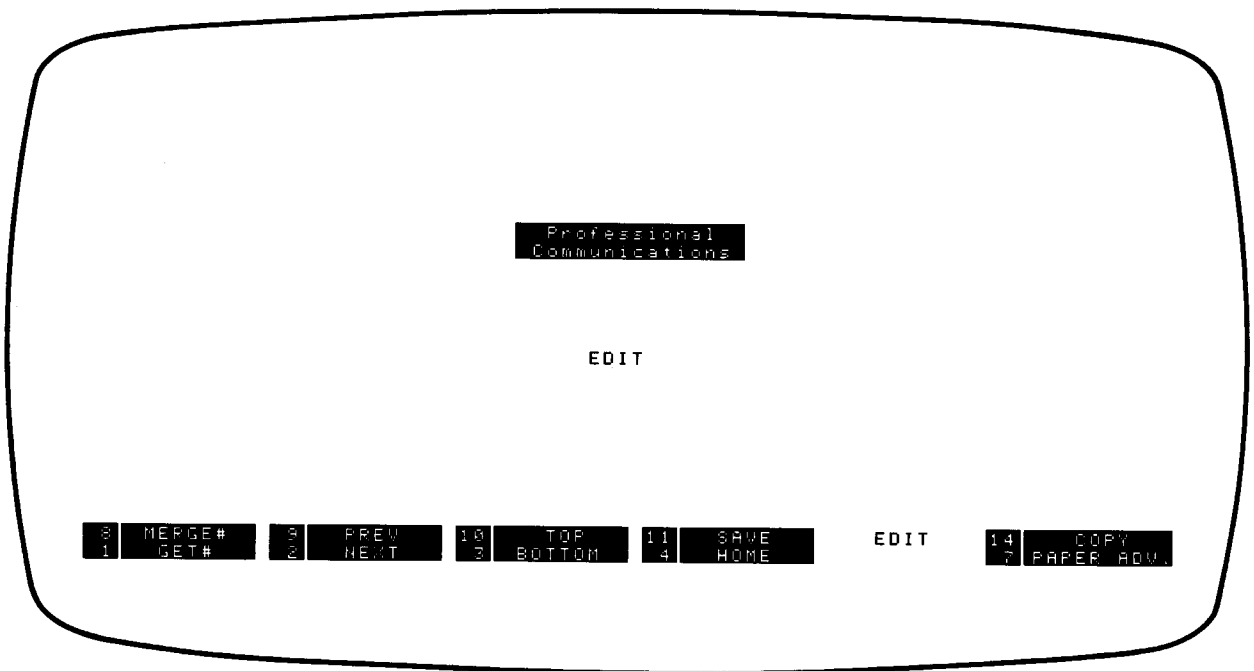
EDIT Key Assignments

The EDIT function assigns operations to all eight softkeys. Each of these operations will be described briefly here. They will be explained in greater detail later in this section after you've become familiar with how EDIT works.

[GET#] The program requests a file number and displays the first page of the file you specify. Pressing only (END LINE) displays an empty page for typing in new material.

[PREV] and [NEXT] The program displays the previous or next page of the file with which you are currently working.

[TOP] and [BOTTOM] These keys are used for selecting the displayed information to be written into the EDIT-FILE.

[HOME] The program returns to the Home Screen.

[MERGE#] The program requests two file numbers and then merges the specified files.

[SAVE] The program copies the contents of the EDIT-FILE to another file. This file may be newly-created, in which case you must then fill out an index form. Or, you can choose to replace the current contents of the file in which you've been working (the one you retrieved using [GET#]) with the contents of the EDIT-FILE.

[COPY] and [PAPER ADVANCE] (PC/86 only) Operation of these keys is covered on page 21.

The following keys retain their usual functions while you are in EDIT.

- The cursor control keys (↑), (↓), (→), (←) and (↖).

- The display editing keys (INS RPL) ((HP-85(or (I/R) (HP-86/87), (-CHAR), (ROLL). The (BACK SPACE) key functions like the (←) key.

- The alphanumeric keys, (SHIFT), and (CAPS LOCK). The (CTRL) key is *not* active.

- (COPY), (ROLL), and (PAPER ADV) (HP-85).

When you are editing text on the screen, the (END LINE) key has the same function as the RETURN key on a typewriter. The cursor moves to the first column of the next line.

How EDIT Works

To understand how the EDIT function helps you reorganize the information in your files, you'll first need an overview of how information is handled by EDIT operations. EDIT allows you to manipulate information at three different levels:

- Editing information on the display using the PC *screen editor*.

- Copying blocks of text from the display to the EDIT-FILE, using the [TOP] and [BOTTOM] keys in an operation called *pasting*.

- Copying the EDIT-FILE to a permanent file in an operation called *saving*.

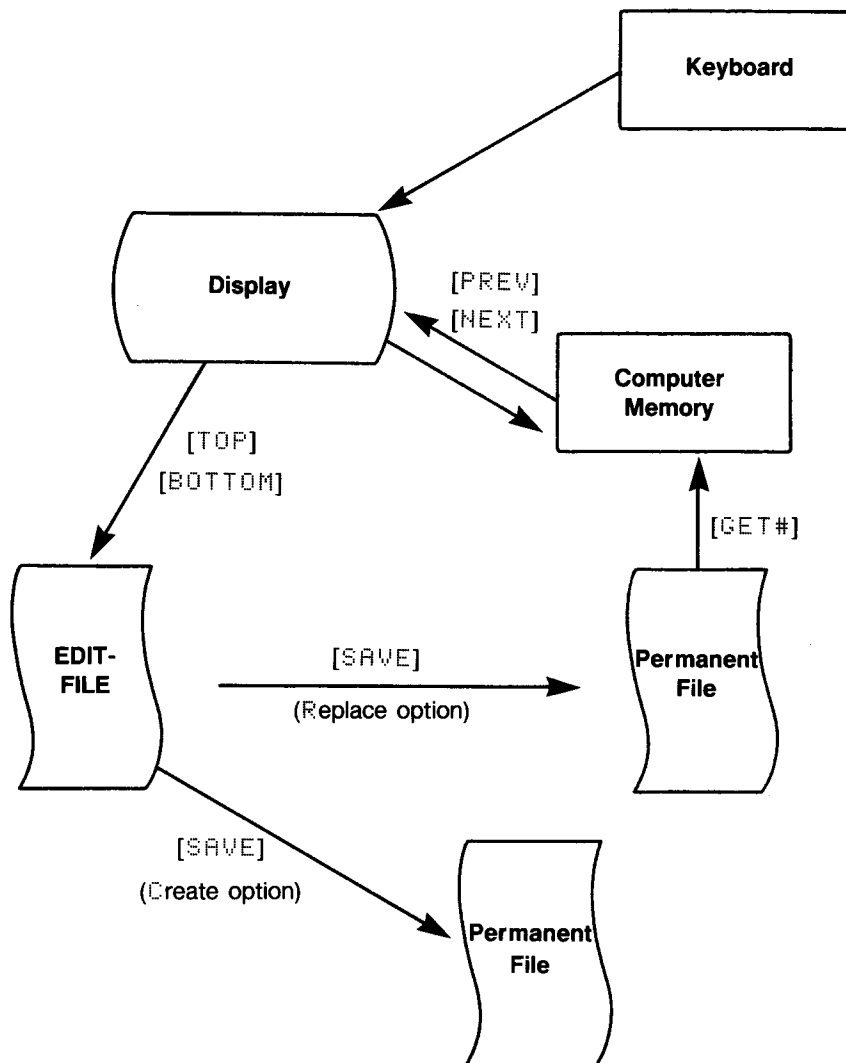Figure 4-1 illustrates the structure of these processes:

Figure 4-1. EDIT Operations

The display and keyboard are your primary means of manipulating information. During an editing session, you place the information you want in your final file onto the screen. Whether you've retrieved a file from the disc (using [GET#]) or simply started typing information into an "empty" page, an editing session involves preparing the information you want in your final file by editing the display, page by page. The screen editing features provided by PC/85 EDIT allow you to type over existing text, to insert and delete characters, and to insert and delete lines. If your file is more than one page long (54 lines for PC/85, 24 lines for PC/86), you can use the [PREV] and [NEXT] keys to change pages.

You generally start an editing session with an empty EDIT-FILE. The EDIT-FILE is one of the essential files that must be present on every data disc. It is a reusable, or *scratch*, file that has a capacity of 13,000 characters.* You can think of the EDIT-FILE as a scrapbook into which you *paste* lines of text. You select the portion of displayed text to be pasted into the EDIT-FILE by marking the top and bottom lines of the segment. Once you've copied the desired material into the EDIT-FILE, you can display another page of information, make editing changes, and copy all or any of that material into the EDIT-FILE. You can combine information from several files by retrieving another file (again, using [GET#]), editing it on the screen if necessary, and pasting portions or all of it into the EDIT-FILE.

You can add a large chunk of new text (material not currently in any file) to the EDIT-FILE by creating an empty page on the screen (this is done with [GET#], too), typing the information, and pasting it.

Since the EDIT-FILE is a scratch file used repeatedly, you must transfer its contents to a numbered file on the data disc to have a permanent copy. This process is called *saving* the EDIT-FILE.

Beginning an EDITing Session

You should always begin an editing session by deciding what to do with any text from the previous editing session that is currently stored in the EDIT-FILE. If you didn't save the contents of the EDIT-FILE during the previous editing session, you still have the chance to do so. What happens during this editing session depends on what you did at the end of the last session, and whether or not you've left the EDIT function:

- If you saved your file at the end of the last editing session, or if you've left the EDIT function (by pressing [HOME]), the current contents of the EDIT-FILE will be erased the first time you press [BOTTOM] during this editing session. If you want to reuse all or portions of the EDIT-FILE in this new editing session, you can do so by accessing the permanent file into which the EDIT-FILE was copied by pressing [GET#] and entering the file number).

- If you did not save the file before exiting EDIT at the end of the previous editing session, you may do so now by pressing the [SAVE] key. (Saving files is covered later in this section.) The EDIT-FILE will be erased the first time you press [BOTTOM] in this editing session, and the new material you are pasting into the file will go to the beginning of the empty EDIT-FILE.

- If you did not save the EDIT-FILE at the end of the previous editing session, and if you have not exited the EDIT function by pressing [HOME], information you type and edit on the display will be "pasted" into the edit file following the information you last pasted in.

---

* The size of the EDIT-FILE and DAY-FILE can vary for PC/86. Refer to appendix A for additional information.

One other option you have is that you can view the EDIT-FILE at the beginning of the editing session before deciding whether or not to save it. To do this, press [GET#] and specify the EDIT-FILE (by typing E). This reads the entire contents of the EDIT-FILE into the computer and displays the first page. However, this procedure also erases the contents of the EDIT-FILE on the disc. If you decide to save the material, you must paste each page into the EDIT-FILE and then save the newly-pasted material using the [SAVE] key.

In summary, the following sequences of operations erase the current contents of the EDIT-FILE and place new material into the beginning of the EDIT-FILE:

- Saving the current contents of the EDIT-FILE (by pressing [SAVE]) and then pasting new material into the EDIT-FILE (by pressing [BOTTOM] or both [TOP] and [BOTTOM]).

- Exiting the EDIT function (by pressing [HOME]), reentering EDIT, and then pasting new material into the EDIT-FILE (by pressing [BOTTOM] or both [TOP] and [BOTTOM]).

- Using the [GET#] key to copy the EDIT-FILE into the computer and then pasting new information into the newly cleared EDIT-FILE.

File Size

A PC/85 file can contain a maximum of 13,000 characters—the size of the EDIT-FILE. That averages to approximately five typed, single-spaced 8½- by 11-inch pages. The actual space required on the disc to store a file created in EDIT is less than the space required to display the information, since PC/85 has an efficient way of storing the data on the disc.

The maximum size of PC/86 files depends of the size of the EDIT-FILE and DAY-FILE on your data disc. The data disc shipped with PC/86 has a capacity of 13,000 characters. Refer to appendix A for instructions on changing the size of the DAY-FILE and EDIT-FILE.

PC automatically saves the EDIT-FILE when it becomes full.

Retrieving a File Using (GET#)

The [GET#] key is used to retrieve a file into computer memory from the data disc. Pressing [GET#] displays the message:

```
        FILE? ▓▓▓▓
(END LINE creates a new page)
```

When you type the file number into the protected field and press (END LINE), the program searches the disc for that file and displays Getting the file. If it is unable to locate the file, the program displays Can't find file# *file number* and prompts for a new file number.

To retrieve a secured file in readable form, append an S to the file number. For example, to retrieve a secured file numbered 381, type 381S (END LINE). The program displays the prompt:

KEY? ▓▓▓▓▓▓▓▓

The 8-character field allows you to enter the security key for that file. If you enter an incorrect security key, the file will be displayed in an encrypted form. File security is discussed in greater detail on pages 00 through 00.

When the program locates the requested file, it reads the entire file into computer memory and displays the first page of the file. You can view successive pages by pressing [NEXT]. Pressing [PREV] lets you read a previous page; the key beeps if you are already viewing the first page. Pressing [NEXT] when you are on the last page of the file displays the first page.

Each time PC/85 displays a page, it scrolls through the entire page (up to 64 lines) and leaves the cursor below the last line on that page. To view the top of the page, use the (ROLL) or (↖) key.

You can use the [GET#] key to access the EDIT-FILE, DAY-FILE, and ACTIVITY-FILE by typing E, D, or A in response to the FILE? prompt. Remember that retrieving the EDIT-FILE erases it on the data disc.

Example: If you have not already done so, enter EDIT from the home screen. Next, press [GET#]. When the program requests a file number, type 699 (PC/85) or 387 (PC/86) and press (END LINE). The program will search the data disc for that file and display the first page. The file begins with the heading INTRODUCTION and discusses some of the features of the EDIT function. (If you are using PC/85, use the (ROLL) key to view the entire page.) When you're ready, press (KEY LABEL) to see the EDIT key assignments and then press [NEXT] to see the next page. When you've read that page, return to the first page of the file by pressing [PREV].

Screen Editing

The PC screen editor enables you to edit the display so that it contains exactly the information you want to paste into the EDIT-FILE. The editor allows you to insert and delete characters on a line and to add or delete entire lines of information. The editor also provides limited line-wrap capabilities when you are inserting and deleting characters.

Screen editing affects the display only; the contents of the file in computer memory are not changed when you edit the display. Changes are preserved by pasting the edited display information into the EDIT-FILE. Suppose, for example, you edit and paste page 1 of a file. Then, you switch to page 2, edit that page, and paste it. If you return to page 1, it will be unchanged. Your editing changes have been transferred to the EDIT-FILE by pasting. However, they have not been recorded onto the page in computer memory.

Because of the number of differences between the PC/85 and PC/86 screen editors, they are discussed separately. Discussion of the PC/85 screen editor is on pages 40 through 44; the PC/86 screen editor is covered on pages 44 through 47.

The PC/85 Screen Editor

The PC/85 screen editor is designed to work with the 32-column display. The editor makes use of the entire 64 lines of HP-85 display memory.

An EDIT Page (PC/85)

Within the EDIT function, a page equals 54 lines of text. Since display memory can hold a maximum of 64 lines of information, you can add up to ten lines of information to a page before you run out of room. You must be careful when you are working in EDIT to stay within this 64-line limit. When you are typing in new material at the end of a page, the program warns you when you are soon to exceed the 64-line limit by lengthening the duration of the margin bell at line 60.

The screen editor allows you to add lines of text to the middle of a file. (This feature will discussed shortly.) You should avoid adding more than 10 lines to any given page. You'll receive no warning if you add more than 10 lines; however, you will lose information from the bottom of the page. For example, if you add a total of 16 lines to the middle of a 54-line page, the bottom six lines of the page will be lost from display memory.

> **Note:** When you use [GET#] to retrieve a file, the entire file is read into computer memory. If you add more than 10 lines to a page, the information lost off the bottom of the page is erased from display memory. However, the information remains in computer memory. You can recover the information by switching pages using the [NEXT] and/or [PREV] keys.

Keep in mind that the HP-85 display wraps vertically. That means that line 1 immediately follows line 64. The (ROLL) key ignores the boundary between line 64 and line 1 as you to scroll through the display. If you ever become confused about the location of the top of your page, press the home key, (🢰), to move the cursor to the upper left corner of the page.

When you create an empty page (covered on page 49), you can type up to 64 lines of information.

Using the (END LINE) Key in EDIT (PC/85)

During screen editing, the (END LINE) key functions much like the RETURN key on a typewriter. When you press (END LINE), the cursor moves to column 1 of the next line. You can use the (END LINE) key any time you want to start a new line of text. If you reach the end of the line and don't press (END LINE), the cursor will perform an automatic carriage return, wrapping to column 1 of the next line.

When you press (END LINE) to move the cursor to the beginning of a new line, the computer places an invisible "control" character, the carriage return character (CR, decimal code 13), at the end of the line. That character becomes part of your file. When you transmit the file or print it on the HP-85 internal printer, your lines will appear as they did on the display—32 characters or less.

If you are using the line wrap feature rather than pressing (END LINE), PC/85 inserts a carriage return after each 96 characters (three display lines) when it saves the file. When the file is retrieved using [GET#], you will see a blank line after every three consecutively wrapped lines. That blank line contains the CR character.

In general, you should type files as you would on a typewriter, listening for the margin warning bell and using the (END LINE) key to start a new line as you approach the right margin.

Replacing Characters (PC/85)

Unless you have specified character insertion, typing characters onto the display replaces characters already there.

Inserting Characters (PC/85)

You have the option of inserting characters with or without line wrap to the next line. To insert characters without line wrap, position the cursor at the position where you want to add one or more characters and press (INS RPL) to create a blank space. Pressing (INS RPL) repeatedly inserts additional blank spaces. If the line grows longer than 32 characters, text is lost off the right side of the display. When you've added enough spaces for the text you wish to insert, type the material into the space.

> **Note:** The screen editor used by PC/85 does not implement the *insert mode* used by the HP-85 editing keys. Pressing (INS RPL) does not display a double cursor, and there is no need to toggle out of insert mode.

Example: Position the cursor on the tenth line of file #699. The line currently reads:

`various sources,`

Change the line to read:

`a variety of sources,`

by inserting the word `a`, replacing the characters `ious` with `iety`, and inserting the word `of`.

Inserting characters with limited line wrap is accomplished using the (AUTO) key ((SHIFT) (↓); the (↓) key might help you remember which key to use—characters are being moved downward in the file). Pressing (AUTO) inserts spaces at the current cursor position and wraps characters, including spaces, from the end of the line to the beginning of the following line. Wrapping occurs for only those two lines; characters at the end of the second line are pushed off the screen.

Example: Edit the last two lines of the second paragraph to read:

`current file (on the disc)`
`you've been working with,`

First, use the (AUTO) key to wrap the words `you've been` to the beginning of the following line. Then, type the phrase `(on the disc)`. You'll have a space between the words `been` and `working`, but it can be closed up by deleting characters.

Because line wrapping only works for two lines at a time, (AUTO) is inappropriate for inserting words or phrases into the middle of large blocks of text. A technique for doing this is covered under Inserting and Deleting Lines of Text on the next page.

Deleting Characters (PC/85)

The screen editor can delete characters with or without limited line wrap. To delete characters on a line, use the (-CHAR) key. To delete characters with line wrap from the following line, press (DEL) ((SHIFT) (-CHAR)).

Example: Use the (-CHAR) key to close up the space created in the previous example between the words been and working.

Example: Change the second line of the third paragraph of the file to read:

you must remember that you are

First, position the cursor over the k in keep and type the word remember. Then, use the (DEL) key to remove excess characters and wrap the word are to end of the line. Finally, use the (-CHAR) key to remove the extra space between you and are.

Inserting and Deleting Lines of Text (PC/85)

The PC/85 screen editor allows you to insert entire lines of text. This feature is also used to insert words and phrases into the middle of paragraphs.

To insert lines of text, position the cursor on the line above which you wish to insert one or more lines. Then, press the (CLEAR) key ((SHIFT) (-LINE)). The program temporarily erases the line where the cursor is located and displays the message:

INSERT HOW MANY LINES? ▓

You must respond with a number between 0 and 8. Numbers greater than 8 are ignored; entering a 0 leaves the text unchanged. If you enter a number in the range 1 through 8, the program inserts the specified number of blank lines and restores the erased line to the screen. You can now type text into the inserted space.

Example: Roll the display to the last paragraph of the page (the paragraph that begins When you retrieve...). You'll be editing the third sentence of that paragraph to read:

```
------------------------------------------------ If you
make changes on a page and        ◄──────────────────── Add  This  Line
switch pages without pasting
text, and editing on that page
is lost.
```

Position the cursor on the eighth line of the paragraph and press (CLEAR). In response to the prompt, enter 1. The program displays an empty line into which you can type the new text.

Avoid inserting more than ten lines on any one page. Display memory can hold a maximum of 64 lines. If you insert more that ten lines into a 54-line page, lines at the bottom of the page will roll off the display. A technique for inserting more than 10 lines is covered under Creating an Empty Page on page 49.

To insert a word or phrase into the middle of a paragraph, insert a blank line beneath the line on which the word is to be added. Then, use the (AUTO) key to create a space large enough for the added text. Characters to the right of the cursor will wrap to the empty line. Then, if necessary, use the (DEL) key to fill any gaps.

Lines of text are deleted using the (-LINE) key. You can delete from 1 to 8 lines at a time. To delete lines, place the cursor on the first line of the block to be deleted and press (-LINE). The program displays:

```
DELETE HOW MANY LINES? ▓
```

If you enter a 0, the text remains unchanged.

Example: Delete the last two lines at the bottom of the first page:

```
YOU WILL BE DELETING THESE
TWO LINES FROM THE FILE
```

Position the cursor on the first line to be deleted and press (-LINE). In response to DELETE HOW MANY LINES?, enter 2.

The PC/86 Screen Editor

The PC/86 screen editor uses the 80-column, 24-line display of the HP-86/87. The (ROLL) key is not active while you are using the screen.

An EDIT Page (PC/86)

Within the PC/86 EDIT function, a page equals one full display (24 lines) of text. You cannot type in material beyond line 24. Pressing (END LINE) when the cursor is on line 24 causes the cursor to remain on that line.

When you retrieve ([GET#]) a file, the entire file is read into computer memory. The screen editor displays 24 lines of the file at a time; the [PREV] and [NEXT] keys are used to display other 24-line segments of the file. None of the editing operations you perform on the display affect the contents of the file in computer memory. Edited text is preserved only by pasting it to the EDIT-FILE.

The screen editor allows you to add lines of text to the middle of a page. When you add lines of text to a page, the bottom lines of the page roll off the display. Since the (ROLL) key is not active, those lines are lost from display memory. Since computer memory is unaffected, the lost text can be recovered by switching to another page and then back to the page containing those lines.

The easiest way to add a large block of text to a page is to create an empty page (refer to page 49).

Using the (END LINE) Key in EDIT (PC/86)

During screen editing, the (END LINE) key functions much like the RETURN key on a typewriter. When you press (END LINE), the cursor moves to column 1 of the next line. You can use the (END LINE) key any time you want to start a new line of text. If you reach the end of the line and don't press (END LINE), the cursor will perform an automatic carriage return, wrapping to column 1 of the next line.

When you press (END LINE) to move the cursor to the beginning of a new line, the computer places an invisible "control" character, the carriage return character (CR, decimal code 13) at the end of the line. That character becomes part of your file. When you transmit the file or print it, your lines appear as they did on the display.

The PC/86 PRINT function requires that there be no more than 160 characters between successive carriage returns. Therefore, you must press (END LINE) at the end of each line or every other line in order to obtain a printed copy of your work. In general, you should type files as you would on a typewriter, listening for the margin warning bell and using the (END LINE) key to start a new line as you approach the right margin.

Replacing Characters (PC/86)

Unless you have specified character insertion, typing characters onto the display replaces characters already there.

Inserting Characters (PC/86)

You have the option of inserting characters with or without line wrap to the next line. To insert characters without line wrap, position the cursor at the position where you want to add one or more characters and press (I/R) to create a blank space. Pressing (I/R) repeatedly inserts additional blank spaces. If the line grows longer than 80 characters, text is lost off the right side of the display. When you've added enough spaces for the text you wish to insert, type the material into the space.

> **Note:** The PC screen editor does not implement the *insert mode* used by the HP-86/87 editing keys. Pressing (I/R) does not display a double cursor, and there is no need to toggle out of insert mode.

Example: Position the cursor on the fifth line of file #387. The line currently reads:

from various sources.

Change the line to read:

from a variety of sources.

by inserting the word a, replacing the characters ious with iety, and inserting the word of.

Inserting characters with limited line wrap is accomplished using the (A/G) key ((SHIFT) (↓); the (↓) key might help you remember which key to use—characters are being moved downward in the file). Pressing (A/G) inserts spaces at the current cursor position and wraps characters, including spaces, from the end of the line to the beginning of the following line. Wrapping occurs for only those two lines; characters at the end of the second line are pushed off the screen.

Example: Edit the last two lines of the second paragraph to read:

```
the [SAVE] key. The [SAVE] key gives you the options of creating an entirely new
file or replacing the current file you've been working with.
```

First, use the (A/G) key to insert four spaces before [SAVE] and type The. Next, use (A/G) to insert four spaces after [SAVE] and type key.

Because line wrapping only works for two lines at a time, (A/G) is inappropriate for inserting words or phrases into the middle of large blocks of text. A technique for doing this is covered under Inserting and Deleting Lines below.

Deleting Characters (PC/86)

The screen editor can delete characters with or without limited line wrap. To delete characters on a line, use the (-CHAR) key. To delete characters with line wrap from the following line, press (E).

Example: Use the (-CHAR) key to remove the spaces created in the previous example at the beginning of line 11 of the file.

Example: Change the last two lines of the third paragraph to read:

```
final file, you paste that portion of the text into the EDIT-FILE and then
begin working on a new portion of text.
```

Use the (E) key to delete the word copy, and the parentheses and quotes around the word paste. Then, use the (-CHAR) key to remove the spaces created when words wrapped from the previous line.

Inserting and Deleting Lines of Text (PC/86)

The PC screen editor allows you to insert entire lines of text. This feature is also used to insert words and phrases into the middle of paragraphs.

To insert lines of text, position the cursor on the line above which you wish to insert one or more lines. Then, press the (CLEAR) key ((SHIFT) (-LINE)). The program temporarily erases the line where the cursor is located and displays the message:

```
INSERT HOW MANY LINES? ▓
```

You must respond with a number between 0 and 8. Numbers greater than 8 are ignored; entering a 0 leaves the text unchanged. If you enter a number in the range 1 through 8, the program inserts the specified number of blank lines and restores the erased line to the screen. You can now type text into the inserted space.

Remember that inserting lines on a page causes the bottom lines of the page to be lost from display memory. These lines can be recovered, however, by switching to another page, and then back to the page containing the lost lines.

To insert a word or phrase into the middle of a paragraph, insert a blank line beneath the line on which the word is to be added. Then, use the (AUTO) key to create a space large enough for the added text. Characters to the right of the cursor will wrap to the empty line. Then, if necessary, use the (E) and (-CHAR) keys to fill any gaps.

Example: Insert a blank line between INTRODUCTION and the first line of text. Position the cursor on the second line of text and press (CLEAR). Respond 1 to the prompt. Notice that the bottom line is pushed off the display.

Lines of text are deleted using the (-LINE) key. You can delete from 1 to 8 lines at a time. To delete lines, place the cursor on the first line of the block to be deleted and press (-LINE). The program displays:

DELETE HOW MANY LINES? ▓

If you enter a 0, the text remains unchanged.

Example: Delete the last line from the first page. Position the cursor on the line and press (-LINE). Respond 1 to the prompt.

Aborting Editing Changes

Screen editing affects only display memory. The contents of the file in computer memory are not changed. If you've deleted or overwritten text on a page, or if you've scrolled information off the bottom of the display, you can recover the lost material by switching pages and then returning to the page containing the "lost" material (using [PREV] and [NEXT]).

The EDIT-FILE

The EDIT-FILE is one of the PC scratch files that must be present on every data disc. The EDIT-FILE is used during editing sessions to accumulate information edited and excerpted from one or more of your PC files. The EDIT-FILE provides temporary storage—information copied from display memory to the EDIT-FILE must eventually be copied to a permanent file.

The EDIT-FILE has a maximum capacity of 13,000 characters.*

---

* The size of the EDIT-FILE and DAY-FILE can vary for PC/86. Refer to appendix A for additional information.

Moving Text Into the EDIT-FILE

When you've edited all or portions of a page on the display, the edited text must be moved into the EDIT-FILE. Otherwise, editing changes you've made will be lost when you perform any operation that erases that page from the display (for example, pressing [NEXT], [PREV], or [GET#]).

The PC editor allows you to paste all or portions of a page into the EDIT-FILE by designating the block of text to be moved. The [TOP] key is used to designate the first line of the block of text to be copied into the EDIT-FILE; the last line to be copied is designated using [BOTTOM].

To move a portion of text into the EDIT-FILE, move the cursor to the first line of the block and press [TOP]. The program displays the *top-of-block delimiter*, >>, in columns 31 and 32 of the line above the cursor. If the cursor is positioned on the first line of the page, no top-of-block delimiter is displayed. You do not need to mark the top-of-block if the block of text to be pasted starts with the first line of the page; top-of-block defaults to line 1 if you press [BOTTOM] without first pressing [TOP]. If you press [TOP] and then decide to change the top-of-block, reposition the cursor and press [TOP] again. The most recent top-of-block delimiter is used.

The selected text is pasted into the edit file as soon as you press [BOTTOM]. Therefore, you must be careful to place the *bottom-of-block delimiter* on the proper line. To select the bottom-of-text, place the cursor on the last line of the block to be pasted and press [BOTTOM]. The program copies the selected text into the EDIT-FILE and displays a bottom-of-text delimiter, <<, in columns 1 and 2 of the line underneath the last line in the block.

PC/85 does not allow you to paste a block of text that spans the line 64/line 1 boundary. You cannot place the bottom-of-block delimiter beneath the last line of the page. If you roll the display past line 64 and press [BOTTOM], the program places a bottom-of-block delimiter on the line following the line with the top-of-block delimiter, and nothing is copied into the EDIT-FILE.

If you type text onto a page and press [SAVE] without first pressing [BOTTOM], PC warns you that the current page has not been written to the EDIT-FILE by displaying:

`*** OK? (Y/N) ▒ ***`

If you respond N, the save operation is not performed.

If pasting text causes the EDIT-FILE to become full, its contents are automatically saved into a permanent file. The portion of the pasted page that didn't fit into the EDIT-FILE is lost. When the EDIT-FILE becomes full, PC/85 displays:

`Making Ready...`

as the saving operation begins.

Both PC/85 and PC/86 display the entire contents of the EDIT-FILE, and the message:

CREATING THE FILE...

as the permanent file is created on the data disc. When you've completed the index form, the program returns to the EDIT screen.

Example: The following procedure pastes your edited page into the EDIT-FILE.

1. Place the cursor on the first line of the first paragraph and press [TOP].

2. Move the cursor to the last line of the page and press [BOTTOM].

Creating an Empty Page

The [GET#] key can be used to create an empty screen into which you can type up to one full page of information. To create an empty page, press [GET#]. When the program requests a file number, press (END LINE). The cursor will be positioned in the home position of the page.

There are several times when you'll need to create an empty page:

*   When you are typing entirely new information to be saved into a file.

*   When you want to add blocks of text to a page without rolling information off the bottom of the display. (You can add 10 lines to an PC/85 page before information is pushed off the display).

Figure 4-2 illustrates how the [GET#] key is used to add more than ten lines of text to a page. Use the diagram as you read the step-wise procedure:
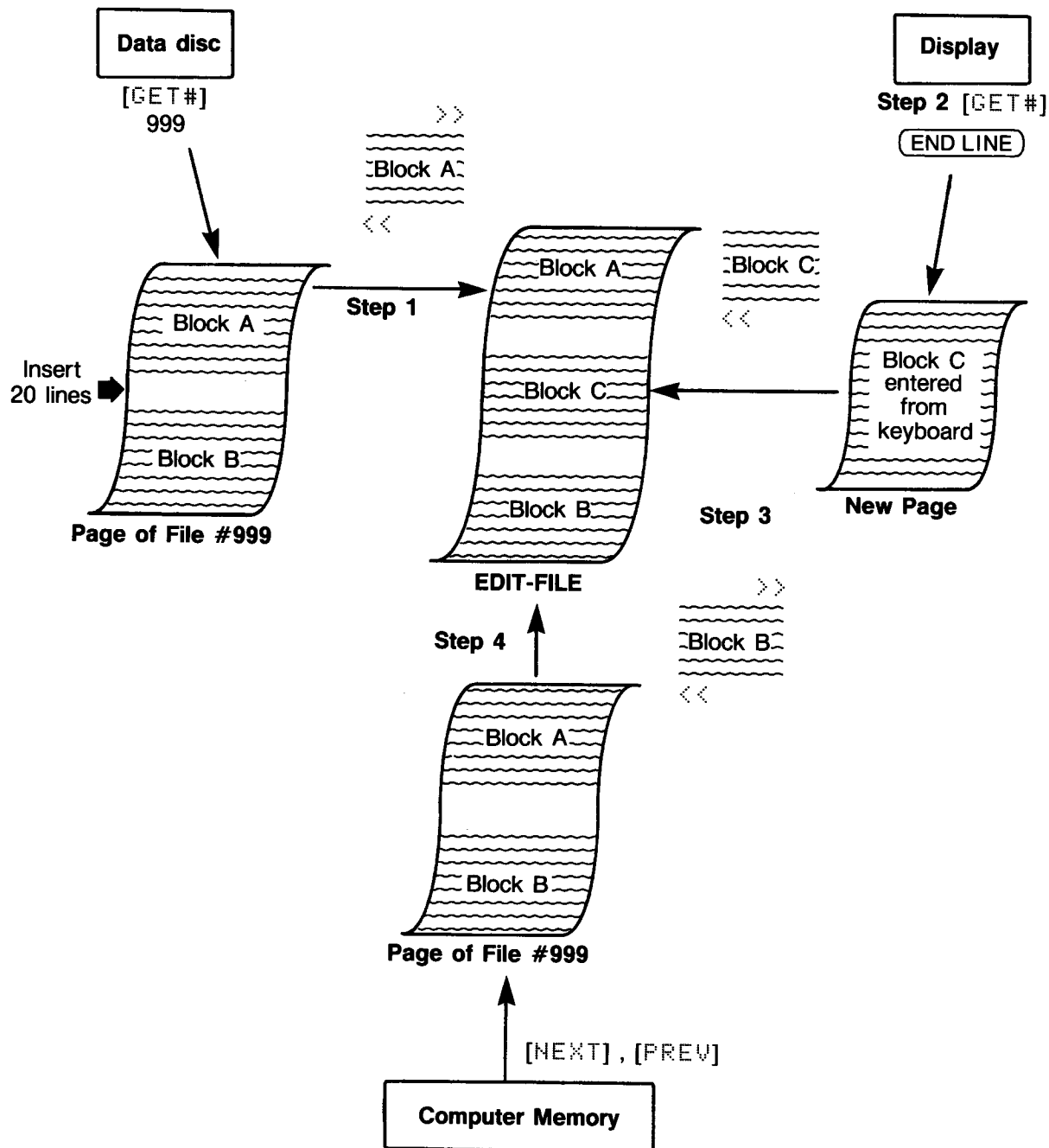
Figure 4-2. **Adding a Block of Text to a Page of File #999:**

Step 1: Pasting block A.

Step 2: Creating an empty page.

Step 3: Pasting new block C.

Step 4: Pasting block B.

1. Paste into the EDIT-FILE any text located above the place where the new lines are to be inserted.

2. Press [GET#] (END LINE). This clears the screen so that you can enter new information. However, the file you've been working on remains in computer memory.

3. Type the lines to be inserted, and then paste these lines into the EDIT-FILE.

4. Use the [NEXT] key to display a page of the original file. If necessary, use the [PREV] key to return to the page you were editing. Then, paste the rest of the page into the EDIT-FILE.

   Note: If you were working on the last page of the file, pressing [NEXT] displays page 1. You must use the [NEXT] key to return to the page on which you were working.

Example: Press [GET#] (END LINE) and type the following text. (The text is shown in 32-column format for PC/85.)

```
Editing a PC file
involves manipulating infor-
mation at three different
layers. You use the keyboard
and display to change, add
and delete text. You use the
EDIT-FILE to organize and
reorganize blocks of text. For
example, you can switch the
order of two paragraphs by
pasting them into the
EDIT-FILE in the reverse
order that they appear on
the display. In the final
layer, you make a permanent
copy of the EDIT-FILE.
```

Position the cursor on the bottom line and press [BOTTOM] (the top defaults to line 1). The text will be pasted into the EDIT-FILE after the first page of the file. Now, retrieve the second page of the file by pressing [NEXT] and paste that page into the EDIT-FILE.

Saving the EDIT-FILE

When you've completed an editing session, you must store (save) the contents of the EDIT-FILE into a permanent file on the disc. Otherwise, your editing work will be lost the first time you press [BOTTOM] in the new editing session.

To save the contents of the EDIT-FILE, press the [SAVE] key. (PC/85 displays the message Making Ready... while it accesses the data disc.) The display then scrolls through the entire EDIT-FILE, giving you one more chance to see the results of your editing session. If you've been editing a previously-existing, numbered file, the program displays the message:

Create or Replace #*file number*? (C/R)

You then have the option of creating a new file (by typing C) or replacing the contents of the numbered file with the contents of the EDIT-FILE (by typing R).

If you chosse to replace the file, the program displays:

`Storing the file`

as the contents of the EDIT-FILE are copied to the permanent file on the data disc. If you've been working with several files, the EDIT-FILE is copied to the file last retrieved using [GET#].

You do not have the option of replacing the file if:

- Your last [GET#] operation retrieved a scratch file (the EDIT-FILE, the ACTIVITY-FILE, or the DAY-FILE).

- Your last [GET#] operation created a blank page ([GET#] (END LINE)).

If you specify the Create option, or if PC automatically creates a new file, the program display:

`CREATING THE FILE...`

as the new file is created and named on the data disc. PC names the file by assigning it a unique, randomly selected file name consisting of a 3-digit number. Leading zeros are part of the name and can be used to distinguish between files created in EDIT and CONTROL. For example, file #009 created in EDIT is different from file #9 created in CONTROL.

When you create a file, you must index it. Indexing is explained on the following pages.

Example: Press [SAVE] and specify the Create option to save the current contents of the EDIT-FILE. When the permanent file has been created, the program displays the index form. Read the following pages for instructions on filling out the index form.

Indexing Files

Indexing a file makes it a part of your electronic filing system. The index entries you create in the EDIT function are stored in the INDEX-FILE and used within the FIND function to identify and locate files.

You create the index entry for a file using the *index form*. The program displays the index form any time you create a new file in EDIT. The index form allows you to input entries under the criteria To:, From:, Date:, Type:, Secure it? (file security), and Subject. These entries are analogous to the entries in the search criteria form in the FIND function.

Remember that PC distinguishes between uppercase and lowercase letters during an index search. You may want to standardize your indexing by using all uppercase or lowercase letters to avoid missing files during a FIND search. Also keep in mind that the FIND function performs a substring search for the To:, From:, Type:, and Subject Keywords criteria. You can index file for two or more matches. For example, indexing a file To: JIMJUNEJOHN in EDIT will produce matches for JIM, JUNE, or JOHN typed into the FIND search criteria form.

The To: Entry

The first entry in the index form is To:. The program displays the file number assigned to the new file and the To: field.

```
                    File# 126
             To: ███████████████████
```

You can type any sequence of up to 20 characters. Press (END LINE) to enter the entry. If you simply press (END LINE), the index entry defaults to ME.

The From: Entry

The From: entry, like the To: entry, can be any sequence of characters. Pressing (END LINE) causes the entry to default to ME.

The Date: Entry

You can specify any date, in the form MMDDYY. Typing (END LINE) displays the current date.

The Type: Entry

You can enter any sequence of characters; pressing (END LINE) causes the type to default to TEXT. You might want to develop certain standard types for your system—for example, PROG for data files containing programs, FORM for blank forms, and APPT for your appointment calendar. Indexing files by type APPT and date lets you use PC as an appointment book.

Certain file types affect the accessibility of your files to people who phone your system. Types MAIL, MAILP, and MAILIN were covered briefly in section 2 and are covered in more detail in section 6.

You can specify files created in EDIT as type CTRL. However, you will probably want to reserve this type for files created in the PC CONTROL function.

File Security

The index form provides the option of converting the file to an encrypted form readable only by those who know the file's security key. File security allows you to send and receive private mail and to maintain an electonic filing system containing confidential information.

To secure a file, type Y in response to the question Secure it?. The program displays a field into which you must enter an 8-character *security key*:

Key: ████████

This key becomes associated with the file and is used to restore the encrypted file to its readable form when you want to read, edit, or print it.

You must type in all eight characters; the program will not accept a security key with fewer characters. The key can include upper- and lowercase letters and numbers. In general, encryption is most effective when you use a security key based on the file's contents:

- If the file contains mostly lowercase letters, use mostly uppercase letters and numbers in the security key.

- If the file contains mostly uppercase letters, use mostly lowercase letters and numbers.

- If the file contains mostly numbers, use mostly upper- and lowercase letters.

Make sure you have a record of the security key you've typed in before you press (END LINE).

To retrieve file in readable form using the EDIT [GET #] key or the FIND [READ #] key, append the letter S to the file number. The program requests the security key. If you do not append the S, or if you enter an incorrect security key, the file is in an encrypted form. If you try to read a secured file using the index Read command, the program automatically requests the security key.

When you are editing a secured file, the text is transferred into the EDIT-FILE in unencrypted form. When you save the EDIT-FILE using the Replace option, the file is encrypted using the same security key. To save a secured file in unencrypted form, you must specify the Create option and No file security. To change the security key, specify the Create option and file security (Y).

Secured files can be transmitted in COMM in encrypted form. Once they are received, they can be read by anyone with a PC system who knows the security code.

The Subject Entry

The `Subject` entry can be any sequence of characters up to 64 characters (2 lines) long. You can use key reminder words or entire sentences if you'd like. Keep in mind that FIND allows you to search for subjects using Boolean logic. You may want to develop a set of standard subject keywords used throughout your electonic filing system.

PC/85 requires that you enter the entire subject before pressing (END LINE); use the space bar, if necessary, to move the cursor to the second line. PC/86 requires that you enter each subject line separately by pressing (END LINE).

When you've completed the `Subject` entry, the program displays:

`Storing the file...`

as the file and its index entries are stored on the data disc.

Example: If you saved the file in the previous example, you should now be viewing an index form. Index your file as follows:

```
To: ME (default)
FROM: HP
DATE: System date (default)
Type: TEXT
Security: N (default)
Subject: PC EDITOR
```

Scanning the File

The scanning feature in the FIND function was covered in section 3. The EDIT function also provides file scanning, allowing you to scan all or a portion of a file for a specified sequence of characters. For example, you can scan a file for the character sequence `edit`. The scan will find every occurrence of those characters—for example, the words `edit`, `editor`, `editing`, and `credit`. The scan differentiates between upper- and lowercase; scanning for `edit` will not find `Edit` or `EDIT-FILE`.

The major differences between the FIND and EDIT scans are:

- An EDIT scan proceeds page by page. When you've scanned the current page, you can continue the scan on another page by pressing [PREV] or [NEXT].

- You can edit the file while you are scanning it; those changes are preserved when you paste the edited page into the EDIT-FILE.

- Scanning begins at the current cursor position.

You specify where in the file the scan begins by positioning the cursor on the first line to be scanned and pressing (SHIFT) (CONT) ((SCRATCH) on the HP-85, (TR/NORM) on the HP-86/87). The program temporarily erases two lines of text and displays:

`Search for what?`

Type up to 30 characters and press (END LINE). The program restores the two lines erased and starts the scan. When the first match is found, the cursor is positioned beneath the first character of the match. (The HP-85 display scrolls so that the line containing the match is on line 2.) You can perform an editing operation or continue the scan by pressing (CONT). When the program has found the last match on that page, the computer beeps and the cursor moves to home position of that page. You can repeat the search of that page by pressing (CONT), or you can move the scan to the next or previous page.

Changes made to text on the screen are not preserved as you page through a file unless you paste the edited page into the EDIT-FILE. If you've made any changes on a page and have not pasted the page to the EDIT-FILE, pressing [NEXT] or [PREV] displays:

`*** OK? (Y/N) ※ ***`

Typing N gives you the opportunity to perform a pasting operation.

Example: Use the [GET#] key to retrive file #699 (PC/85) or 387 (PC/86). Position the cursor to the top line of the first page of the file and press (SCRATCH) (HP-85) or (TR/NORM) (HP-86/87). In response to the message `Search for what?`, type `file` (END LINE). The cursor moves to the first match. Notice that the display scrolls during the scan, so that the match is always displayed on the second line of the display. Press (CONT) to continue scanning the page. When the program beeps and moves the cursor to home position, press [NEXT] to continue the scan on page 2.

> **Note:** You can use the scan feature to save time in moving the cursor during editing. It is often faster to scan for a sequence of characters than to use the cursor control (arrow) keys.

Merging Files

Merging files involves copying the entire contents of one file into a position at the end of another file. PC provides two ways to merge files. One way, already covered, involves pasting the first file page by page into the EDIT-FILE and then using the [GET#] key to retrieve the second file. The second file is then pasted into the EDIT-FILE page by page. This is the method you must use if you are combining portions of files rather than the entire contents of both files.

The [MERGE#] key provides a way to merge two entire files without using the EDIT-FILE. The two files together must not exceed the maximum file size for PC files.

Pressing [MERGE#] displays the message:

`1'st file# ▨▨▨▨`

Enter the file number of the file you want to be positioned first. If the file is secured, append an ꙅ onto the file number and then respond to the request for the security key. You can also enter typing aids for any of the three scratch files (EDIT-FILE, ᗡAY-FILE, ꓶCTIVITY-FILE). The program retrieves the first file from the data disc and scrolls through the entire file without regard to page divisions. When the entire file has been entered into memory, the program displays:

`2'nd file# ▓▓▓▓`

Enter the file number of the file to be merged with the 1'st file, appending an ꙅ and providing the security key if necessary. The second file is read into computer memory and displayed. When the entire file has been read into the computer, the program displays:

`Create or Replace #`*file number of 1'st file*

if the 1'st file is not a scratch file. If the 1'st file is a scratch file, you do not have the option of replacing the file.

If you enter an invalid file number for the 1'st or 2'nd file, the program returns to the prompt for that file.

Copying Files

The [ᑭERGE#] key provides an easy way to make a copy of a file. To copy a numbered file or a scratch file, press [ᑭERGE#] and respond to the request for the 1'st file with the number of the file to be copied (or the typing aids E, ᗡ, or ꓶ). When the program requests the 2'nd file, press (END LINE), and specify the Create option.

If the file to be copied is secured, append an ꙅ to the prompt for the 1'st file. then, when you index the file, you may:

- Secure the file using the same security key by indexing the new file `Security: Y` and specifying the same key.

- Secure the file using a new security key by indexing the new file `Security: Y` and entering a new key.

- Store the copy unsecured by indexing it `Security: N`.

Using More Than One Data Disc

Caution

Attempting to access more than one EDIT-FILE during an editing session may cause loss of information from your data disc.

You can retrieve files from more than one data disc during an editing session. However, you must do this with care . **Never use more than one EDIT-FILE during an editing session**. Once you've pasted text to the EDIT-FILE during an editing session, the program knows exactly where that EDIT-FILE is located. If you attempt to paste information into an EDIT-FILE located on another data disc, you will lose the information you are pasting, and you may erase information on the data disc.

To access a file from another data disc, change data discs, press [GET#], and enter the file number of the file you want to retrieve. When the file has been read into computer memory, replace the original data disc, so that you'll access the proper EDIT-FILE when you press [BOTTOM].

You can change data discs when you save the contents of the EDIT-FILE using the Create option. Change discs when the program displays the message:

Create or Replace #*file number?* (C/R) ▓

Type C to store the file.

If you attempt to replace the file onto the new data disc, the program displays:

Change media and press [CONT]

If you get this message after specifying Replace, you must replace the original data disc and press (CONT) in order to save the contents of the EDIT-FILE.

Full Data Disc

If you attempt to create a new file on a full data disc, the program displays:

Change media and press [CONT]

When you see this message, change the data disc and press (CONT).

Formatting and Indexing Non-PC Files

A text file created using a system other than PC can be added to your PC database. The file must be adapted to meet the following specifications:

- The file must contain only ASCII characters.

- The name must be consistent with PC files—a one- to three-character string containing numbers 0 through 9.

- Files must be serial with records up to 96 characters long. Records must be terminated with a carriage return, decimal code 13.

To add a file to your data disc, rename the file if necessary using the Series 80 RENAME command. Then, use the [MERGE#] key and Create option to copy the file to an PC data disc. Index the file as you would any other file.

The COMM Function–Outgoing Calls

Introduction

The COMM (communications) function allows you to use PC to send information to other computers and to receive information from other computers. The computer *receiving* the call is referred to in this manual as the *host*. You can initiate the communications yourself (outgoing calls to a host), or you can receive calls (incoming calls), in which case *your* system acts as host. Either way, you need not be present to perform many COMM operations; PC provides ways of automating your communications activities. For incoming calls, automated communications involves merely placing your system in *standby mode*; the program handles the details of communicating with the other computer. For outgoing calls, PC provides the capability of writing *control files*. A control file contains a program, written in the *Gaia Communications Language*, that directs your computer to send certain data to the host computer.

Section 5 covers outgoing calls. Incoming calls are covered in section 6. Using control files is covered partially in this section. Writing and editing control files is covered in section 8.

Entering COMM

COMM is entered from the Home Screen by pressing the [COMM] softkey (PC/85 displays the message Chaining...). The program briefly displays:

OPENING DAY-FILE / ACTIVITY-FILE

These are the two scratch files used in COMM to record your communications activities. The DAY-FILE is discussed in greater detail later in this section. The ACTIVITY-FILE is covered in section 6.

Finally, the program displays the COMM *standby* screen:

When you are viewing the standby screen, the program is in *standby mode,* prepared to accept incoming calls. The COMM screen also displays the number of pending outgoing calls. COMM allows you to place delayed phone calls to other computer systems. For example, you can set up your system to call another system late at night while you are asleep. The integer displayed here is the number of outgoing calls your system will make.

COMM Key Assignments

The COMM standby mode uses four softkey assignments:

[CALL]   The [CALL] key is used to make outgoing calls. You can make the call immediately, or you can specify when the call will be placed. If you specify any time other than immediately, the call becomes a pending call. Your system can have up to two pending calls.

[CANCEL]   The [CANCEL] key is used to cancel a pending outgoing call.

[NORMAL]   This is a toggle key. Pressing it changes the key label to [TERMINAL]. In *normal mode*, everything displayed during outgoing communications is written into the DAY-FILE, providing you with a record of the communications session. When your system is in *terminal mode*, nothing is written into the DAY-FILE. You may want to use *terminal mode* for long sessions where no record is required, such as playing a game on a timesharing system. PC automatically uses *normal mode* for delayed calls.

[HOME]   The [HOME] key displays the home screen. Pressing this key displays the message:

```
CLOSING DAY-FILE / ACTIVITY-FILE
```

to let you know you will no longer be recording information into these files.

[COPY] and [PAPER ADVANCE] (PC/86 only)   Operation of these keys is covered on page 21.

The following keys are active in COMM and function as they usually do:

- All alphanumeric and numeric keypad keys, (SHIFT), and (CAPS LOCK).

- The (CTRL) key.

- (END LINE), (ROLL), (BACK SPACE), (CLEAR), (COPY) and (PAPER ADV).

- (KEY LABEL) displays momentary key labels.

- The (RESET) key can be used to halt program execution if the system locks up. Press (RUN) to return to the standby screen.

- The HP-85 (COPY) key copies the contents of the display to the HP-85 internal printer.

The DAY-FILE

When you are placing outgoing calls in *normal mode*, all information displayed on the screen while your system is on-line is written into the DAY-FILE. The DAY-FILE is one of the PC scratch files; it is erased for reuse each time you enter COMM and then press [CALL].

The purpose of the DAY-FILE is to provide a complete record of an outgoing communications session without using a peripheral printer. If your system had to produce a printed record of your communications activities, the rate at which the computer could transfer information would depend on the speed of the printer. The computer is able to output data to the DAY-FILE much faster than a printer can output text. It is to your advantage to store information as rapidly as possible—it minimizes your connect time and phone charges.

PC does not write data into the DAY-FILE continuously. The program creates an *input buffer* in computer memory that can hold up to 3,000 characters. Your system uses XON/XOFF handshaking to control flow of information into the buffer. When the buffer becomes full, the program halts incoming data temporarily and transfers the contents of the buffer to the DAY-FILE. You can see this happening—information will be frozen on the screen while the disc drive light is on. Communication resumes when the buffer contents has been copied to the disc.

The information written into the DAY-FILE must be saved into a numbered file to keep it permanently. Portions of the DAY-FILE are saved by retrieving it in EDIT, pasting text into the EDIT-FILE, and then saving the EDIT-FILE. Or, the entire DAY-FILE can be copied to a permanent file using the [MERGE#] key. Refer to section 4 for the details of these procedures.

Figure 5-1 on pages 64 through 66 shows an PC/85 sample DAY-FILE. The DAY-FILE starts accumulating information as soon as the program displays the message Connection Established. Almost everything displayed during the communications session is written into the DAY-FILE, including information received from the host (the computer with which you are communicating), information you type, such as log-ons and commands, and control files that were run. At the conclusion of the session, the program writes a *time stamp* into the DAY-FILE with the date, phone number, time, and connect time (duration of the session). Connect time is measured from the time the host answers the phone (the program displays Connection established) until your system hangs up the phone, rounded to the nearest minute.

The DAY-FILE can store up to 13,000 characters.* When space remains for only approximately 500 characters, the program beeps and displays FINISH UP. If the DAY-FILE becomes full, your system hangs up the phone, cancels any pending calls, and returns to the standby screen. Your system can still accept incoming calls.

```
        PROFESSIONAL
        COMMUNICATIONS

WHAT IS YOUR NAME (FIRST LAST)?
THOMAS DILLON
YOUR PASSWORD? (OPTIONAL)       }  Log-on
TOM

WELCOME, THOMAS

TIME: 12:20:32  DATE: 06/09/83

-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*
```

Figure 5-1. Sample DAY-FILE

---

* The size of the DAY-FILE can vary for PC/86. Refer to appendix A for additional information.

This is Anna Ellman. Thanks for
calling. Type "?" for a list of
commands or "HELP" for the
details of this bulletin
board, including how to read
files and send me mail.

-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*

>?

} File 001

****** System Commands ******

MAIL SEND - prepares the system
             to take a message.

 .SEND   - posts the message
             and returns you to
             command level.

MAIL READ - reads MAIL files on
             the system.

?   - lists commands.

HELP   - details the
             system and the
             commands.

OFF   - log off the system
             (hang up the phone)

* Press [BREAK] to return to
   system level at any time.

* Press [END LINE] to make any
   of the search criteria (To,
   Date, Subject) wild.

* [CTRL] [S] stops the system
   from sending characters.

* [CTRL] [Q] starts it sending
   again.

* Time limits two minutes
   between keystrokes; 30
   minutes maximum connect time.

} File 002

****
>MAIL READ
TO: STAFF
SUBJECT KEYWORDS:
DATE:

Subject and date are wildcards.

Figure 5-1. Sample DAY-FILE (continued)

```
              FILE# 685

TO: STAFF

DATE: 061583

SUBJECT:

DAILY SCHEDULE

READ,NEXT, or SEARCH? R
To all callers:

Here is my schedule for 6/15.
Please contact my secretary if
you need to make an appoint-
ment.

I will be out of town for
four days next week. Please
arrange to see me this week
about matters that need to
be settled before I go.

Today's schedule:

8 a.m. - 10  Staff meeting
11:30  - 1   Lunch with support
             staff.
2 p.m. - 3   Training presen-
             tation.

SEARCH COMPLETE

>MAIL SEND
SUBJECT: WED. TARGET MEETING
TEXT:
Anna - Can I meet with you
sometime on Wed. to discuss targets?

        Thomas
.SEND
POSTED

>OFF

BYE, THOMAS

CONNECT TIME WAS 5 MINUTES

    Date: 06/09/83
    To: 3385
    Call began: 12:19:18
    Connect time: 5 minutes
```

File #685 is a MAIL or MAILP file that meets the search criteria.

This message is sent to Anna and stored on her system as a MAILIN-type file.

Accounting information. (3385, Anna's phone extension, is the number dialed by Thomas' system when the call was placed.)

Figure 5-1.   Sample DAY-FILE (continued)

The following information is not written into the DAY-FILE:

- Files sent to the host (*uploaded*) using the [SEND] key or ,SEND command. When you send an PC file to the host, it is displayed on the screen but not written into the DAY-FILE. Instead, the message SENT file #*file number* is recorded into the DAY-FILE. Uploading files is covered later in this section.

- Information saved in the XTRACT-FILE. The XTRACT-FILE and XTRACT routines are covered in section 10.

The DAY-FILE is also used to store system messages. A system message is generated if the program encounters a problem during a communications session, and PC automatically branches to an operation that tries to recover from the error. The program then prints MESSAGE #*message number* and an error code into the DAY-FILE. The message number and code can be used in correspondence with Hewlett-Packard support personnel.

Communications Options

PC allows you to select from several options for parity, word length, and baud rate by specifying these parameters in the PHONE-FILE. (Entering information into the PHONE-FILE is covered in section 7.) Your system must match the host system in each of these parameters:

Parity—Parity is an error detection mechanism. You can select odd, even, none, always 0, or always 1. If you see a large number of underlined characters in the information sent from the host, it's likely that you have chosen the wrong parity. Once you've selected the proper communications parameters, an underlined character indicates an error may have occurred in transmitting or receiving characters.

Word length—This is the number of bits per character, excluding the parity bit. You may select a seven- or eight-bit word length.

Baud—This is the number of bits per second transmitted on the communications line. PC supports both 300 and 1,200 baud.

The default communications parameters used by PC for outgoing calls are odd parity, 7-bit word length, and 300 baud. You must use the PHONE-FILE to place calls using non-default parameters.

The Call Screen

To place a call, press [CALL]. The program displays the *call* screen with two new softkey assignments:

[STANDBY] The [STANDBY] key returns the program to the standby screen from the calling screen. You can switch to standby at any time before the program starts dialing. If you make a mistake typing information into the call screen, use [STANDBY] to return to the standby screen, and then press [CALL] to start over.

[HOME] The [HOME] key returns the program to the home screen. If the program is dialing a phone number, it completes the dialing operation and rings the host phone once before hanging up and returning to the Home Screen.

The procedure for placing an outgoing call depends on the configuration of your system. Using an HP 82950A Modem, an accoustic coupler, and a "smart" modem are covered separately.

Placing Outgoing Calls Immediately
With the HP 82950A Modem

To place an outgoing call immediately, first select whether you want your session recorded into the DAY-FILE. Whenever you enter standby mode, the program automatically enters *normal mode*. If you don't want a record of your session in the DAY-FILE, switch to *terminal mode* by pressing (k3).

To place the phone call, press [CALL]. The program switches to the *call* screen. In response to the message:

When? ▒▒▒▒ (NOW or HHMM)

type N (now). Next, the program displays:

Who? ▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒▒
     (NAME or PHONE NUMBER)

The Who? field accepts both letters and numbers. If the first character is a number, the program assumes that the field contains a phone number and ignores all non-numeric characters except asterisks, *. An asterisk is used to produce a three-second delay during dialing. For example, if your phone system requires that you dial 9 to get an outside line, you may want to enter a phone number in the form 9*xxxxxxx. You can insert hypens for readability—they will be ignored. When you specify a number, COMM uses the default communications parameters.

If the first character is a letter, the program assumes the field contains a name and searches the PHONE-FILE for a name containing that sequence of characters. If the name is not in the phone file, the program displays NOT FOUND. If the program finds the name, it displays the phone number to be used and sets the communications parameters according to the information in the PHONE-FILE. If the PHONE-FILE specifies 1,200 baud, the program beeps and displays the warning message:

1200 baud

The Control file number? field is used to enter the file number of the control file to be used. If you press (END LINE), the program displays ON-LINE; you will have to log on manually once the connection has been established.

When you've entered your responses onto the call screen, the program displays Dialing phone number as it dials the number. Each digit is displayed as the modem dials it. When the phone number has been dialed, the program displays:

          ON-LINE
Awaiting carrier...

The program displays Connection established when the host answers the phone. If you have not specified a control file, you can now proceed to log on manually. If you are using a control file, that file will now start executing.

If the host is unable to answer the phone for any reason, the program redials the number every 20 seconds until a connection is established. To stop the redialing, press [STANDBY] or [HOME] while the program is displaying Awaiting carrier.

> **Note:** Some systems require more than 20 seconds to answer the phone. When you are placing calls to those systems, you can specify a longer interval between redialing by placing asterisks at the end of the phone number. Each asterisk provides an additional three seconds. For example, placing four asterisks at the end of the phone number causes your system to wait for 32 seconds before redialing.

Placing Delayed Calls
With the HP 82950A Modem

The Now? field in the COMM calling screen allows you to specify a future time when the call will be placed. Enter the time in HHMM (hour-minute) format, based on a 24-hour clock. For example, to place a call at 4:30 p.m., enter 1630. You can specify any time within the next 24 hours. When you specify a time other than Now, that call becomes a *pending call*. PC allows a maximum of two pending calls. The number of pending calls is displayed in the COMM standby screen.

You can specify either a phone number or a name in the Who? field. You must must enter a control file number in the control file field. The program then displays:

```
Time limit? ▒▒▒
            (minutes)
```

You can specify any time limit up to 999 minutes. The program will hang up the phone when the duration of the communications session reaches the specified time limit.

If PC is busy with an incoming or outgoing call when the time arrives to make a pending call, the program does not interrupt that call. Instead, the program attempts to make the pending call five minutes later, and every five minutes until the system is free. Once the system has dialed the number, it will continue dialing every 20 seconds until the connection is established or until a second pending call comes due. If the time arrives to place a second pending call before communication has been established for the first pending call, the system places the second pending call and cancels the first.

If the DAY-FILE becomes full in your absence, any pending calls are canceled.

Placing Outgoing Calls Using the
HP 82939A Serial Interface and an Acoustic Coupler

If you are using an acoustic coupler connected using a serial interface, you do not have the option of placing delayed calls, since you must dial the number yourself. Your system automatically skips the autodial routine when the serial interface is properly set to a select code less than 9.

To place an outgoing call from the standby screen, press [CALL]. The program switches to the call screen and displays:

```
Who? ▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓
     (NAME or PHONE NUMBER)
```

Enter a nonsense number, such as 123, or a name from the PHONE-FILE. The program does not actually use this number or name for dialing the number, since you must dial the number yourself. However, if you specify a name from the phone file, the program displays the phone number and sets the communications parameters (parity, word length, and baud) according to the entry in the PHONE-FILE. You must use the PHONE-FILE unless you are communicating with a host that uses odd parity, 7-bit word length, and 300 baud. Unless you dial the phone number now, you may want to write it down. The screen is cleared after you've entered the control file number.

In response to Control file number?, enter the number of a control file or press (END LINE). If you press (END LINE), you must perform the log-on procedure yourself. When you've completed the call screen, the program displays ON-LINE. When you see the message:

```
Awaiting carrier...
```

you can start dialing the number. When the host answers the phone, you'll hear a high-pitched tone. Place the handset in the coupler, making sure the receiver and transmitter ends are in their proper places. When your computer has reached the host computer, the program displays:

```
Connection Established
```

If you've specified a control file, it will start executing now. Otherwise, you can proceed to log on to the host yourself.

> **Note:** Before you place the handset in the acoustic coupler, make sure you hear the high-pitched tone and that the program is displaying the message Awaiting carrier....

Placing Immediate and Delayed
Outgoing Calls With a "Smart" Modem

If you are using a "smart" modem with autodial capabilities, you can place both immediate and delayed calls, using a control file to dial the number. Sample control file #6 on your data disc is an example of a control file for 1,200 baud communications using the Hayes Smart Modem. Notice that the control file contains the phone number of the host.

To place the call, press [CALL] to view the call screen. Enter N or the time into the HHMM field. Entering anything other that N sets up a delayed call and prompts for a time limit:

```
Time limit? ▩▩▩
            (minutes)
```

The time limit is the maximum duration of the call. Your system will hang up the phone after the specified number of minutes has elapsed.

Enter a name from the PHONE-FILE into the Who: field. The phone number from the PHONE-FILE is **not** used to dial the host. However, the communications parameters specified in the phone file are used.

> **Note:** A smart modem uses its own dial routine to phone the host. Therefore, it is important to distinguish between the PC dial routine and the modem dial routine. If the PHONE-FILE contains a phone number, the program executes its dial routine and *appears* to dial that number. However, the phone is not actually dialed until the control file is executed. To shorten the time required to complete the PC dial routine, place a sequence of non-numeric characters in the Phone #: field in the PHONE-FILE (such as the name). That sequence of characters will be displayed while the PC dial routine is executing.

In response to the Control file number? prompt, enter the number of the control file containing the phone number. If you are placing an immediate call, the control file can contain only a dialing routine; you can proceed to log on manually.

When you've entered the control file number, the program displays on-line and:

Dialing *sequence of characters from PHONE-FILE*

The program then displays Awaiting carrier..., followed almost immediately by Connection established. Execution of the control file now begins, and the modem dials the number in the control file.

Canceling Pending Calls

To cancel one or both pending calls, press [CANCEL]. The program displays:

```
The call to phone number ? (Y/N) ▩
     Control file number# file number
```

Pressing Y cancels the specified call. Pressing N retains it. If the system has a second pending call, the message is displayed again.

The ON-LINE Screen

Once the program has displayed the message ON-LINE, a new set of softkey assignments are in effect. The ON-LINE screen has the following key assignments:

[BREAK] The [BREAK] key sends a break to the host. If a host recognizes a break, it usually halts the current activity and resets itself to *command level*. This allows you to send a new command.

[SEND] The [SEND] key retrieves a file from the data disc and sends it to the host.

[ON/OFF] This is a toggle key that allows you to turn parity error checking on and off. With error checking on, suspect characters are underlined.

[STANDBY] Pressing [STANDBY] breaks the communications link and returns the program to the standby screen.

Sending Files to the Host

The [SEND] key is used to transfer, or *upload*, files from your system to the host. To upload an PC file, prepare the host to accept the uploaded file. Refer to the host documentation for the appropriate command. If you are communicating with another PC system, the command you must execute in response to the system prompt, >, is:

MAIL SEND

The host may request certain indexing information at this time. In response to a prompt for the actual data, press the [SEND] key. The program displays:

File? ▓▓▓

Pressing only (END LINE) aborts the uploading operation.

When you enter a file number, the program retrieves the file from the data disc and displays its contents one line at a time as it is transferred to the host. When the entire file has been transferred, the program displays:

File transferred

To signal the host that all the information has been sent, execute the host command for posting a file.

If the file to be uploaded contains control characters, it must be edited to remove those control characters before it can be uploaded. Refer to Uploading Control Files on page 102 for additional information.

Example: The following sequence of operations sends a PC file to another PC system (host):

1. In response to a system prompt, >, type MAIL SEND. This command prepares the host to receive mail.

2. In response to the message SUBJECT:, enter up to 64 characters.

3. When the computer displays T E X T :, press [S E N D].

4. When you see the prompt F i l e ? ※※※, enter the file number. The contents of the file are displayed as it is transferred.

5. When you see the message F i l e   t r a n s f e r r e d, execute the . S E N D command to post the file. You will not see a system prompt at this point. When the file has been sent to the host, you will receive the message P O S T E D, indicating that the host has created a M A I L I N-type file for the information you just transmitted. The MAILIN file cannot be read by others who phone the host.

6. When you see another system prompt, continue with your session.

Receiving Files From the Host

There are two ways to record information transferred (downloaded) from the host—using the DAY-FILE or using the XTRACT-FILE.

Downloading Files Using the DAY-FILE

When PC has placed a call and is on-line in *normal mode*, all information received from the host is written into in the DAY-FILE. If you want to transfer a file from the host to your system, make sure the program is using *normal mode*. When the call is completed, use the EDIT function to store all or portions of the DAY-FILE into one or more numbered files. You can also use the PRINT function to obtain a printed copy of the DAY-FILE or any file created from the DAY-FILE.

Another way to obtain a record of information received from the host is to copy the display to the printer using the HP-85 (COPY) key or the PC/86 [C O P Y] softkey. You can copy an entire PC/85 page (64 lines) by using the (ROLL) key to display 16-line portions of the page and pressing (COPY) to print the contents of the display.

Downloading Secured Files

When you are logged on to another PC system, you can download any MAIL (and MAILP) type file, regardless of whether or not the file is secured. However, a secured file will be written into the DAY-FILE in encrypted form. You must know the security key in order to read or edit the unencrypted file. The security key must be sent to you in a separate communication, since it is **not** downloaded with the file.

To view the unencrypted file:

1. Edit the DAY-FILE and save the encrypted information into a permanent file. Index this new file with **no** file security (S e c u r i t y : N). Note the file number assigned to the file.

    Note: If you specify Y (yes) for file security when you index the file, the encrypted file will be subject to another "layer" of encryption.

2. Retrieve the file using the EDIT [G E T #] key, appending an S to the file number to display the prompt for the security key. You must have previously received the security key for that file.

3. If you want to save an unencrypted form of the file, paste the file into the EDIT-FILE. Use the [SAVE] key to save the file, and specify the Create option. The new file will be unencrypted.

4. If you edit the file and want to save it encrypted, use the [SAVE] key and specify the Replace option. The file will be encrypted using the same security key.

Downloading Files Using the XTRACT-FILE

The XTRACT-FILE records information received from the host when your computer is communicating with the host using the XTRACT routine. The XTRACT routine is accessed using control files. Refer to section 10 for a explanation of the XTRACT routine and the XTRACT-FILE.

Using More Than One Data Disc

There are several reasons you might want to change data discs during a COMM session:

- If the phone number you want is in a PHONE-FILE on a different data disc, you can change data discs in response to the Who? : message on the call screen. You must replace the disc as soon as the new number has been displayed on the screen.

- If a file you want to upload is on a different data disc, perform the following procedure:

    1. Do **not** change data discs before pressing [SEND].

    2. Press [SEND] and specify the file number in response to the message Upload which file?. The program will search the data disc for the file.

    3. When the program displays:

       Can't find file #*file number*
       File? ▧▧▧

       change data discs and enter the file number again. You must change back to the original data disc when you see the message File Transferred.

The control file must be on the same data disc that will be used during the COMM session. Never switch data discs when the message Control file number? is displayed.

Terminating an Outgoing Call

If your system includes an HP 82950A Modem or other autodial modem, the program terminates the communications session automatically and returns to the standby screen when it loses the host carrier signal. The session also ends when you press [STANDBY].

If you are using the serial interface with an acoustic coupler, the program displays:

Hang up and press (CONT)

when you lose the carrier signal from the host or when you press [STANDBY].

The COMM Function—Incoming Calls

Introduction

If your PC system includes the HP 82950A Modem or other modem that provides auto-answer capability, your system can operate as a "bulletin board." Callers can log on to your system, read files from your data disc, and leave messages.

> **Note:** The features described in this section apply only to systems with certain modems having auto-answer capabilities. The modem must be capable of providing a DCD (carrier detect) signal to the serial interface. If the modem is connected using a serial interface, its select code must be set to 9 or 10.

Your computer is ready to answer an incoming call when the COMM standby screen is displayed. Once your computer has answered an incoming call, it becomes the "host" system. Your system understands certain commands that the caller can use. It also has welcome messages and help files that callers can read.

Once a caller has established communications with your system, operation of PC is completely automated. You can watch the interaction between computers as data is displayed. However, your keyboard is completely inactive until the communications session ends and the program returns to the standby screen.

Communications Parameters

Your PC system handles incoming calls using full duplex, asynchronous communications and the following communications parameters:

Baud rate: 300
Word length: 7 bits per word, excluding parity
Parity: odd
Maximum connect time: 30 minutes
Handshake: XON/XOFF (DC1/DC3)
(CTRL) (S) stops your system from sending characters.
(CTRL) (Q) resumes transmission.

When your system sends a prompt to the caller, it waits a maximum of 2 minutes for a response. If two minutes elapse without any data transmission from the caller, your system breaks communications and returns to standby mode.

Entering Standby Mode

To enter standby mode, press the [COMM] key on the Home Screen.

```
                  Professional
                  Communications

           Outgoing calls pending: 0
           Standing by for a call...

                  Time: 14:30:17
                  Date: 08/25/83
```

```
 8   ----      9   ----     10   ----     11   ----          COMM     14      COPY
 1   CALL      3   CANCEL    3   NORMAL    4   HOME                    7  PAPER ADV.
```

Your system is now prepared to accept incoming calls.

The ACTIVITY-FILE

The ACTIVITY-FILE provides a record of who called your system and the files they read and sent. The contents of those files are not stored in the ACTIVITY-FILE. Files sent to your system (using your system's MAIL SEND and .SEND commands) are stored onto your data disc, classified as Type: MAILIN.

Figure 6-1 shows a sample ACTIVITY-FILE for PC/85. The file came from Anna Ellman's system after receiving one call from Thomas Dillon (see figure 5-1 on pages 64 through 66.)

```
NAME: THOMAS DILLON
TIME: 12:20:32   DATE: 06/09/83
READ #001                           ⎫
READ #002                           ⎬  Files read
READ #685                           ⎭
SENT #388                              File sent
CONNECT TIME WAS 5 MINUTES
```

Figure 6-1. Sample ACTIVITY-FILE

Each READ entry is a MAIL or MAILP file in your system that was read by the caller. Each SENT entry is a file received from the caller. The ACTIVITY-FILE entry says that Thomas read the welcome file (file# 001) and used the ? command to read file# 002. He also sent a file that was recorded on the data disc as file# 388, type MAILIN.

If your data disc becomes full during an incoming call, the message:

NO MORE ROOM

is recorded into the ACTIVITY-FILE. The ACTIVITY-FILE also records system messages if a problem develops during an incoming call.

The ACTIVITY-FILE on the data disc shipped with PC can hold information for approximately 100 incoming calls. Each incoming call requires approximately 256 bytes of disc space. The exact number of calls it can store depends on how many activities are performed by each caller.

The contents of the ACTIVITY-FILE are erased when your system has exited COMM and then reenters COMM and receives a call.

Logging On To Your System

When your system answers an incoming call, the caller must log on to your system to perform any communications activities. The following text illustrates the dialog involved in the log on procedure for PC/85. Text transmitted by your system is shown in dot matrix. Answers typed in by the caller (or sent by a control file) are displayed in *italic*.

```
PROFESSIONAL
COMMUNICATIONS

WHAT IS YOUR NAME (FIRST LAST)?
THOMAS DILLON
YOUR PASSWORD? (OPTIONAL)
TOM
WELCOME, THOMAS

TIME: 12:20:32  DATE: 06/09/83

-*-*-*-*-*-*-*-*-*-*-*-*-*-*

This is Anna Ellman. Thanks for
calling. Type "?" for a list of
commands or "HELP" for the
details of this bulletin
board, including how to read
files and send me mail.

-*-*-*-*-*-*-*-*-*-*-*-*-*-*

>
```

Log-on

Welcome file

System prompt

In response to WHAT IS YOUR NAME?, the system looks for a first and last name, separated by a space. The program uses the sequence of characters before the space to address the caller (such as in WELCOME, THOMAS). The log on procedure will continue if the caller fails to provide a name, pressing only (END LINE).

If the caller provides a password, the program searches the PHONE-FILE for the caller's name. If the name is found, the program checks to see if the password in the PHONE-FILE matches the one the caller typed. If the passwords are identical, the caller is permitted to read type MAILP (protected mail) files.

The > symbol is your system prompt. When the caller sees it, your system is at *command level*, ready to accept one of your system commands. To execute a system command, a caller types the command and presses (END LINE).

Creating the Welcome Message and Help Files

PC uses three special files to communicate with people who log on to yourksystem. These files are numbered 001, 002, and 003. You can read and edit them using EDIT.

> **File 001** contains the welcome message callers see when they've logged on to your system. You will want to edit this file to tell people who you are. Make sure your welcome message describes the ? and HELP commands, so that new users will be able to access files# 002 and 003. The example on page 00 shows a typical welcome message.
>
> **File 002** contains a description of all the commands your system understands. Figure 6-2 shows the contents of file# 002 on the data disc shipped with your pac. A caller reads file# 002 by typing ? (END LINE) in response to a system prompt.
>
> **File# 003** is a help file. Callers can read this file by typing HELP (END LINE) in response to a system prompt. Figure 6-3 shows the contents of file# 003 on the data disc shipped with your pac.

If you don't want any message files on your system, you should use EDIT to create empty files numbered 001, 002, and 003. Otherwise, your system could randomly assign those numbers to other files, and those files would become your system message files.

```
******* System Commands ******      *  Press [BREAK] to return to
MAIL SEND - prepares the system         system level at any time.
            to take a message.
                                     *  Press [END LINE] to make any
  .SEND     - posts the message         of the search criteria (To,
            and returns you to          Date, Subject) wild.
            command level.
                                     *  [CTRL] [S] stops the system
MAIL READ - reads MAIL files on         from sending characters
            the system.
                                     *  [CTRL] [Q] starts it sending
  ?         - lists commands.           again

HELP       - details the             *  Time limits: two minutes
            system and the             between keystrokes; 30
            commands.                  minutes maximum connect time

OFF        - log off the system      ******************************
            (hand up the phone)
```

Figure 6-2. File 002

```
              BULLETIN
          BOARD OPERATION

Communications

      300 baud; 7 bits/word;
   odd parity; full duplex

Handshakes
[CTRL] [S] stops the host from
sending characters, and [CTRL]
[Q] restarts it.

A BREAK or an error returns the
host to system level.

Logon

In response to "PASSWORD" ,you
can press [END LINE] (ENTER or
RETURN). No password is required
to gain access to the system.
If you provide a password,
the system looks up your name.
If it finds it and the passwords
match, you have access to
"protected" files in addition to
the files available to all
callers.

Reading Messages

When reading files, you can
just press [END LINE] in
response to "To:", making the
addressee search criterion wild.
You can use your name if you
think there might be a message
waiting for you.

In response to "Date:" you can
specify "AFTER", "ON",
"BEFORE" or "BETWEEN" dates.
Dates must be expressed in
MMDDYY form.

For the subject keywords you
can OR, AND, or NOT two
keywords. Or, you can
read every file on-line by
pressing [END LINE] at every
prompt.
```

```
Search Capabilities Summary

TO:       Wild or any substring.
DATE:     Wild or ON, AFTER, or
          BEFORE a date, or
          BETWEEN two dates.
SUBJECT: Wild or 1 keyword or 2
          keywords AND'ed, OR'ed,
          or NOT'ed. Adjacent
          words and word roots
          are permitted.

If your commands (SEND,
READ, ON, BETWEEN, AND, etc.)
are not entered correctly.
the system will "beep" the cal-
ling system, indicating that
the command is not recognized.




Sending Messages

When sending messages, you won't
be prompted "To:". All messages
go to the system operator, and
if he chooses, the SYSOP can
make them public.

Upon receiving the SEND command,
the system prompts the caller
for a subject that can be up
to 64 characters long.

The system can accept lines
up to 96 characters long.
If you type something
longer than that before pressing
[END LINE], your system beeps
and displays "LINE EXCEEDS 96
CHARACTERS".

The host creates an 8K byte
file for messages. If the
file is bigger than that, the
system saves the first 8K
bytes and logs off the caller.
```

Figure 6-3.   File 003

When the host sees ".SEND" in
the first column, it saves and
indexes the file and sends
"POSTED" to the caller to
confirm that the entire message
has been received and safely
stored.

If there isn't enough room
on the disc to create an 8K
file, the caller is notified
immediately upon typing MAIL
SEND.

Miscellaneous

Maximum caller connect time is
30 minutes.

Maximum wait for an input is
two minutes.

The SYSOP can watch everything
that's going on but cannot
interrupt it -- the host key-
board is completely locked out.

Figure 6-3.   File 003 (continued)

MAIL-Type Files

There are three MAIL-type files used by PC during incoming calls—MAIL, MAILP, and MAILIN.

MAIL and MAILP files are files you place on your system for others to read. Anyone establishing contact with your system can read a MAIL-type file. MAILP files are "protected" files that can be read only by callers whose log-on name and password matches an entry in the PHONE-FILE. You can create these type files in EDIT by saving an EDIT-FILE using the create option and indexing it Type: MAIL or MAILP. Or, you can make an existing file available to callers by changing its index Type: using the FIND function.

When a caller sends text or a file to your system, PC saves that file onto the data disc as Type: MAILIN. The file is available for you to read; however, incoming calls cannot access the file.

Your system can have a maximum of 30 MAIL and MAILP files accessible to callers. Your data disc can contain any number of MAIL and MAILP type files; however, only the first 30 in the index can be accessed by callers.

File Security During Incoming Calls

PC allows you to use file security with MAIL, MAILP, and MAILIN type files. If you save a file using file security and designate Type: MAIL or MAILP, the encrypted file can be viewed by callers. If a caller is using PC to communicate with your system, the operator of that system can read the file by transferring the encrypted material from his/her DAY-FILE to a permanent file and then using [GET#] with the security code to view the unencrypted form.

The caller can send encrypted files to you. To view those files, you must unencrypt them with the correct security key using the EDIT [GET#] key or the FIND [READ#] key. Files sent to you are always indexed Security: N, regardless of whether or not the file is encrypted. You can change the index entry for the file to Security: Y. Changing the index entry does not affect the contents of the file; however, PC will automatically prompt for the security key when you execute the index Read command.

System Commands

There are six commands available to callers after they've logged on to your system. Each command is discussed in greater detail later in this section.

MAIL SEND—The caller executes this command to prepare your system to receive text.

.SEND—When the caller has transmitted all the information, either by typing it or uploading a file to your system, executing .SEND ends the transmission, closes the destination MAILIN file, and writes SENT #*file number* into your ACTIVITY-FILE.

MAIL READ—The command allows callers to search and view your MAIL (and MAILP) files.

?—The ? command accesses file# 002, which contains a description of each of the commands listed here.

HELP—This command is used to read file# 003, which describes how to log on and to send and receive information.

OFF—When your system receives the OFF command, it terminates the session and writes the connect time into the ACTIVITY-FILE.

If your data disc does not contain files 002 and 003, your system will ignore the ? and HELP commands and issue another system prompt.

The MAIL READ Command

The MAIL READ command allows callers to search your MAIL and MAILP files in much the same way that you can search your own files in the FIND function. When callers execute MAIL READ, they receive a TO: prompt. When they've responded by typing a sequence of characters and pressing (END LINE), they receive the SUBJECT: prompt. They can respond to the prompt with one sequence of characters or with two sequences of characters, separated by the Boolean operators AND, OR, or NOT. The maximum length of each sequence is 45 characters.

In response to the DATE: prompt, callers can specify a particluar day or time interval by typing in one of the following formats:

    ON *MMDDYY*
    BEFORE *MMDDYY*
    AFTER *MMDDYY*
    BETWEEN *MMDDYY* AND *MMDDYY*

Pressing only (END LINE) in response to a MAIL READ prompt makes that criterion a "wild card" not used in the search.

When the caller has entered the DATE: criterion, your system searches the first 30 MAIL (and MAILP) type files in the index for files that meet the search criteria. If a file is found, the caller views an abbreviated index form for that file showing the file number, To:, Date:, and Subject: entries, and the available commands—READ, NEXT, and SEARCH.

There are three commands available to callers within the MAIL READ file search. A command is executed by entering its typing aid.

> READ (R)—The READ command allows the caller to view the contents of the file. The file is sent to the caller in one unit, rather than page by page. When the entire file has been transmitted, the caller views an index form of the next file that meets the search criteria. The message:
>
> SEARCH COMPLETE
>
> is displayed when no other files meet the criteria.
>
> NEXT (N)—The NEXT command is used to view the index form for the next file that meets the search criteria.
>
> SEARCH (S)—The SEARCH command is used to enter new criteria for a search. Callers can use the typing aid S.

The MAIL SEND Command

The MAIL SEND command is used by the caller to transmit information to your system. Your system creates an 8K-byte, MAILIN-type file for each message it receives. If the caller attempts to send more than 8K bytes of data, your system stores the first 8K bytes of the message and terminates the session.

Your system receives data from the caller line by line; that is, data is sent from the caller in separate blocks separated by carriage returns. PC/85 is capable of receiving lines up to 96 characters long; therefore, the caller must press (END LINE) (or the equivalent key on other systems) at least as often as every 96 characters. PC/86 can receive lines up to 160 characters long. If your system receives a block of text that is too long, it sends the message:

```
LINE EXCEEDS 96 CHARACTERS     PC/85
LINE EXCEEDS 160 CHARACTERS    PC/86
```

and waits for the next line of text.

To start transmitting information, the caller types:

```
MAIL SEND
```

in response to a prompt from your system. Your system sends a SUBJECT: prompt; the caller's response can be up to 64 characters long. Your system then sends the prompt TEXT:. In response to this prompt, the caller can type information, which is transmitted in blocks each time the caller presses (END LINE) (or an equivalent key). Or, the caller can upload a file.

When all the data has been sent, the caller transmits the .SEND command. When your system receives this command, it stores the information received from the caller into an 8K-byte file, which is indexed as follows:

```
To: ME
From: Log-on name
Date: Your system date
Type: MAILIN
Security: N
Subject: Caller's response to Subject: prompt
```

Your system will warn the caller when insufficient space remains on your data disc to create an additional file by sending the message Sorry, No More Room when the caller sends the MAIL SEND command. At the same time, the message NO MORE ROOM is written into your ACTIVITY-FILE to let you know a caller was unsuccessful in attempting to send you a message.

Sorting Your Incoming Mail

When your system has been in standby mode for a while (for instance, overnight), you will want to sort through your mail, saving or discarding items where appropriate. To read your incoming mail, enter the FIND function and use the search criteria form to locate all files with Type: MAILIN and Date: today's date. You can use the index Read command to view the contents of the message. The Delete command allows you to "throw away" a piece of mail.

If you intend to save a file, you may want to index it yourself. In addition, you should resave the file. All MAILIN files occupy 8K bytes on the data disc. Resaving the file stores it into a space just large enough for all the information. To resave a MAILIN file, perform the following procedures:

1. When you've located a MAILIN file in FIND that you want to save, copy down its file number.

2. Return to the Home Screen and enter EDIT. Copy the file using the [MERGE#] key, responding to the prompt for file #1 by typing the file number. Press (END LINE) in response to the prompt for file #2.

3. Use the FIND Delete command to delete the original MAILIN file.

Refer to Copying Files on page 57 if the MAILIN file is secured.

The PHONE Function

Introduction

The PHONE function is used to maintain the PHONE-FILE, a list of phone numbers of other computers with which your system communicates. The PHONE-FILE also contains the communications parameters—parity, word length, and baud rate—used with each host.

In addition to the communication parameters, the PHONE-FILE stores a password for each name in the PHONE-FILE. When an incoming call transmits a name and optional password as part of the log on procedure, PC searches the PHONE-FILE for that name. If it finds the name, it determines whether the transmitted password matches the password in the PHONE-FILE. A matching password allows the incoming caller to read all files indexed type MAILP (protected mail).

The PHONE-FILE can store information for up to 10,000 names.

Entering PHONE

To enter PHONE, press the [PHONE] softkey on the Home Screen (PC/85 displays the message Chain-ing . . .) to view the PHONE screen:

```
                    Professional
                    Communications



                        PHONE



 8   ----    9   ----   10   ----   11   ----   PHONE   14    COPY
 1   ADD     2  DELETE   3  CHANGE    4   HOME                7 PAPER ADV
```
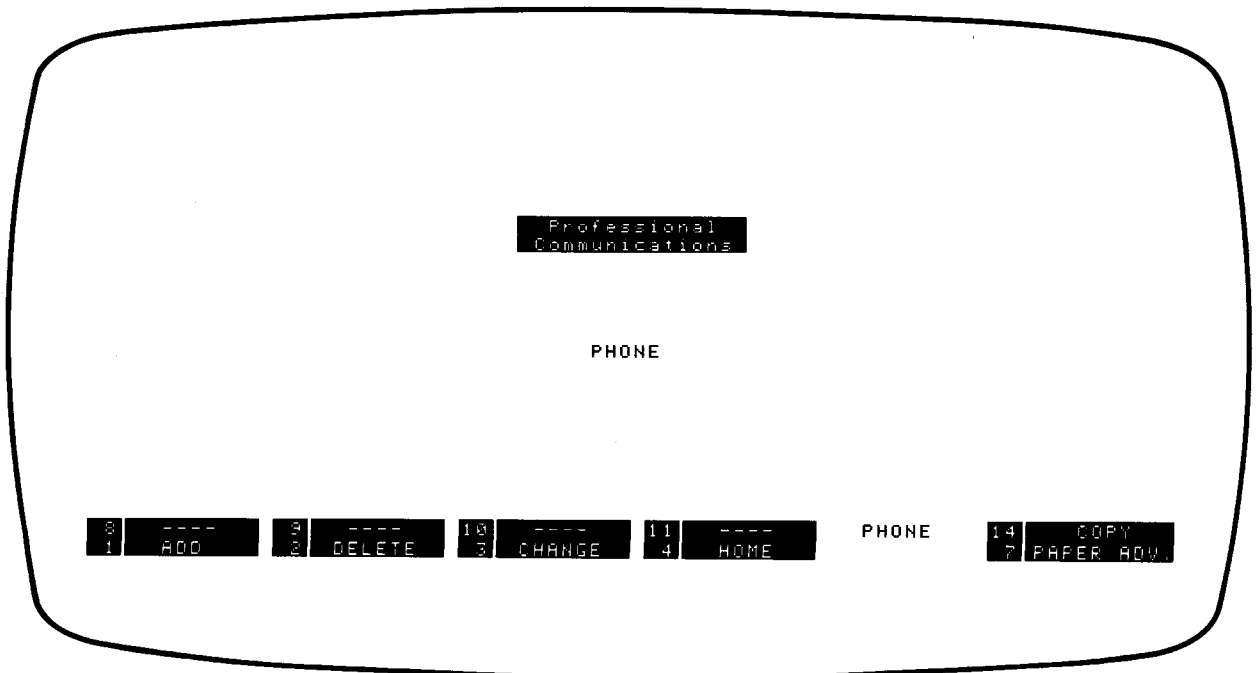
Changes made to the PHONE-FILE are not recorded on the data disc until you exit PHONE by pressing [HOME].

PHONE Key Assignments

The PHONE function uses four softkeys:

[ADD]   The [ADD] key is used to add listings to the PHONE-FILE.

[DELETE]   The [DELETE] key is used to delete lisitings from the PHONE-FILE.

[CHANGE]   The [CHANGE] key is used to change phone numbers, communications parameters, and passwords for listings already contained in the PHONE-FILE.

[HOME]   This key returns the program to the Home Screen and writes any additions or changes you've made during your PHONE session into the PHONE-FILE.

[COPY] and [PAPER ADVANCE] (PC/86 only)   Operation of these keys is covered on page 21.

In addition, the following keys are active:

- The (P LST) prints all the names currently in the PHONE-FILE.
- The alphanumeric keys and the (←), (→), (R), (-LINE), (-CHAR), (INS RPL) (HP-85) or (I/R) (HP-86/87), and (BACK SPACE) keys are active when you are filling in a protected field.
- (COPY) (HP-85).

The PHONE-FILE

The PHONE-FILE is used to store the following information about the host computers with which you communicate:

- Name: Maximum length is 18 characters. The program distinguishes between lettercase. When you specify a name for a COMM outgoing call, the program performs a substring search of the PHONE-FILE for that sequence of characters. The program will return the phone number of the first name it finds that contains the character sequence.

- Phone #: You may use numbers, letters, and symbols. The COMM dialing routine ignores all non-numeric characters except asterisks (*). If you are using the HP 82950A Modem, an asterisk introduces a three-second delay in dialing.

  Note: For some phone systems, a delay in dialing is necessary when you must dial an outside line and wait for a dial tone. a delay may also be necessary when a host requires more than 20 seconds to answer the phone. Placing asterisks at the end of the phone number causes your system to wait for 20 seconds before redialing.

- Password: The password is used when an incoming call logs on to your computer. The password can include any alphanumeric characters and symbols. If the name and password used by a caller matches entries in the PHONE-FILE, the caller can read MAILP (protected mail) files.

- Parity: This is the parity that will be used during an outgoing call. The program accepts the typing aids O (odd), E (even), and N (none) and the numbers 0 and 1.

- Baud rate: This is the number of bits per second to be used during an outgoing call. The program accepts the typing aids 3 (300) and 1 (1,200).

- Word length: You can enter 7 or 8.

Adding Entries

Press [ADD] to display the Name: field. When you've entered the name, the program displays the next field to be filled out. When you've filled out the last field (Word length:), the program returns to the phone screen. However, the new entry is not recorded onto the disc until you press [HOME] to exit the PHONE function.

To abort the [ADD] operation, press [HOME] before the entire form has been filled out.

Deleting Entries

When you press [DELETE], the program displays the Name: field. When you've entered the name (or a sequence of characters contained in the name), the program searches the file for that sequence of characters (a substring search). If it finds a match, the program displays:
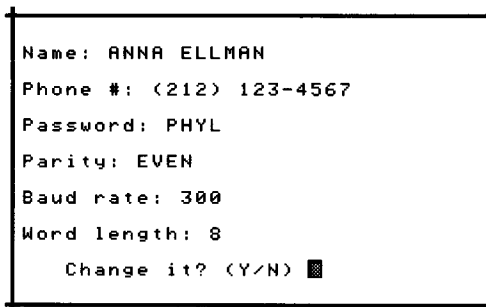
Delete it? (Y/N)

If you press N (no), the program continues searching for a matching name. When no matches are found, the program displays SEARCH COMPLETE.

Changing Entries

When you press [CHANGE], the program displays a Name: field. When you've entered the name, the program performs a substring search for that sequence of characters. If it finds a matching entry, the program displays the *phone change form* containing all the parameters for that name and the message:

Change it? (Y/N) ▓

```
Name: ANNA ELLMAN
Phone #: (212) 123-4567
Password: PHYL
Parity: EVEN
Baud rate: 300
Word length: 8
    Change it? (Y/N) ▮
```

If you press Y (yes), the cursor moves to the NAME: field. You can now type a new name up to 18 characters in length, overwriting the previous name. If your new name is shorter than the existing name, use the (-LINE) key to erase the rest of the field. To leave the field unchanged, simply press (END LINE). The Phone #: and Password: fields are changed the same way . The Parity: field accepts the typing aids O, E, and N, and the integers 0 and 1. The Baud rate: field accepts the typing aids 3 (300) and 1 (1,200). The Word length: field accepts 7 or 8. When you've completed the change form, the program returns to the PHONE screen.

If you press N (no) in response to Change it?, the program searches for other PHONE-FILE entries whose names match the specified sequence of characters. When no more matches remain, the program displays:

SEARCH COMPLETE

Using More Than One Data Disc

You should not switch data discs between the time you press [ADD], [DELETE], or [CHANGE] and the time you press [HOME]. Any changes you make to the PHONE-FILE are not recorded onto the data disc until you leave the PHONE function.

The CONTROL Function

Introduction

This section covers how to write and edit control files. Control files are programs that automate your outgoing communications. For example, a control file can be used to log your system onto a host, send commands to the host for accessing one or more host files, and then log off. Control files allow your system to place outgoing calls in your absence. You can take advantage of lower nighttime phone rates and plan your day without the contraints of having to be present to place a call at a certain time.

The CONTROL function is a screen editor for writing and editing control files.

Entering CONTROL

To enter CONTROL, press the home screen [CONTROL] key (PC/85 displays the message Chaining...) to view the CONTROL screen:
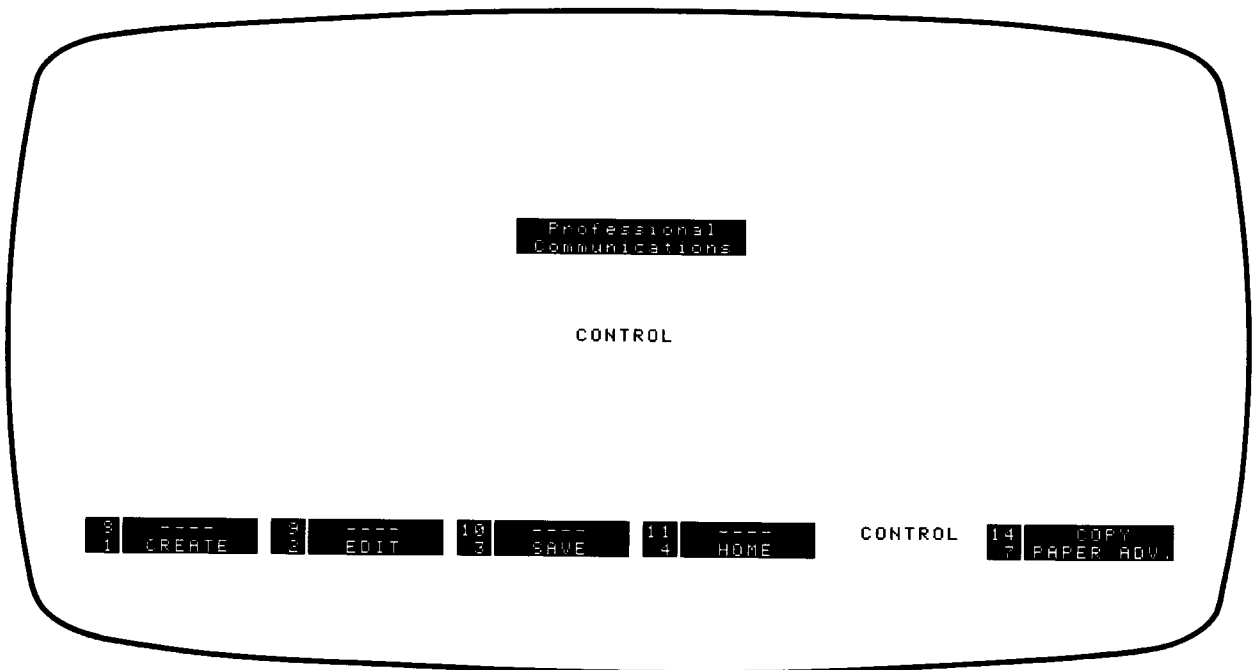
CONTROL Key Assignments

The CONTROL function has the following softkey assignments:

[CREATE]   This key is used for creating new control files. Pressing [CREATE] displays 30 empty prompt/command-pair lines and places the cursor at the prompt line for the first statement.

[EDIT]   This key retrieves a specified control file for editing.

[SAVE]   Pressing [SAVE] allows you to create a new control file on the data disc or to replace the one you've been editing.

[HOME]   Pressing [HOME] displays the Home Screen.

[COPY] and [PAPER ADVANCE]   (PC/86 only) Operation of these keys is covered on page 21.

In addition, the following keys are active when you are using the CONTROL screen editor:

- The alphanumeric keys, including the (CTRL) key.

- The cursor movement keys (↑), (↓), (←), (→), and (↖). The (ROLL) key is also active.

- The editing keys (INS RPL) (HP-85) or (I/R) (HP-86/87), (-CHAR), (-LINE) (delete line), and (CLEAR) (insert line).

- If the cursor is positioned in the first position of a prompt line, typing (END LINE) places a line-feed character (↵) in that position. Otherwise, (END LINE) moves the cursor to the first position of the next line.

- (COPY) and (PAPER ADV) (HP-85).

- (P LST) (PC/85) lists the currently displayed control file on the HP-85 internal printer. The listing stops at the first blank line.

- (P LST) (PC/86) prints the first 24 lines of the control file. Pressing (P LST) again displays the next 24 lines.

How Control Files Work

A control file is a program, written in the *Gaia Communications Language*, that regulates interaction between your system and the host. Each control file consists of one or more *prompt-statement/command-statement* (or, *prompt/command*) *pairs*. The *prompt* portion of the pair usually specifies the character sequence your system expects to see from the host. The *command* portion of the pair is a command sent to the host or an operation performed by your system when the conditions in the prompt statement have been met.

Example: The following statement is a prompt/command pair:

```
?P:↑>
 C:MAIL READ
```

Statement 7 directs your system to look for a line-feed character followed by a prompt from the host—in other words, a host prompt at the beginning of a new line. If these characters are received, your system transmits a MAIL READ command to the host.

Figure 8-1 shows the flow of information between your system and a PC host during execution of three control file statements. These statements log your system onto the host and send the MAIL READ command.
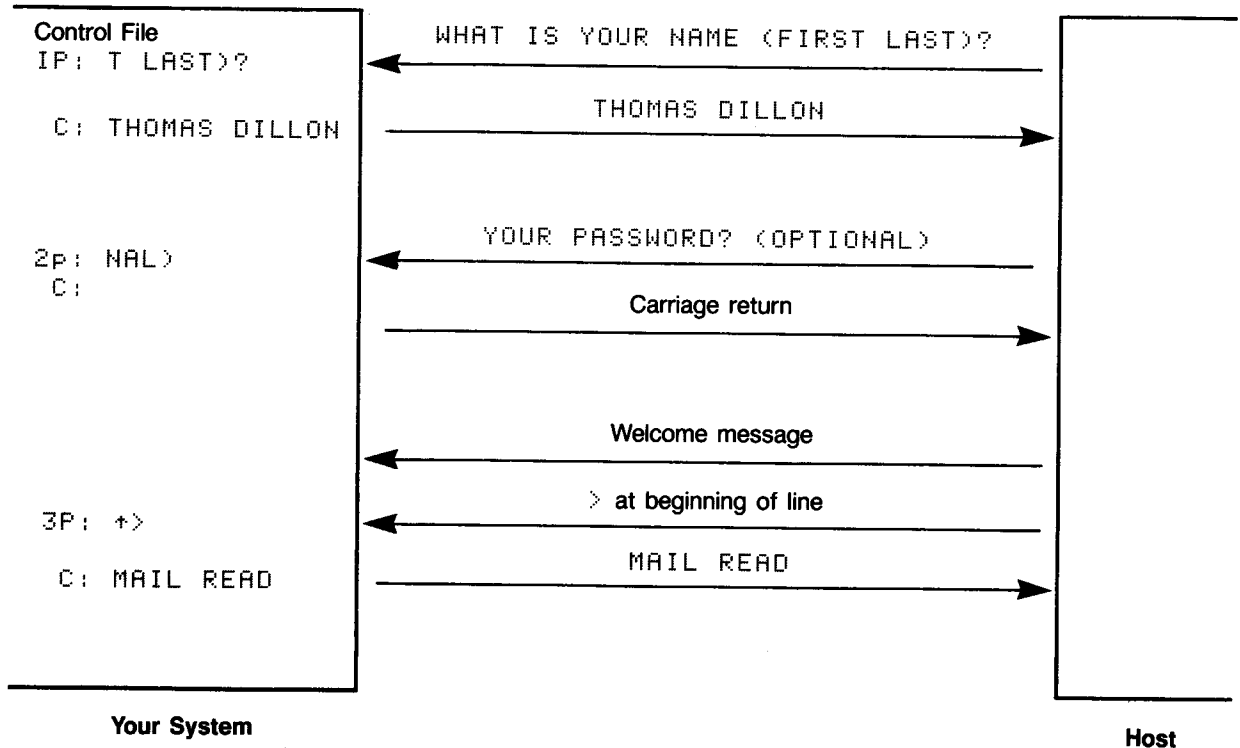

Figure 8-1. Logging on Using a Control File.

The Control Statements

PC provides its own language for writing control files. This language is divided into two types of statements— prompt statements and command statements.

Prompt Statements	Command Statements
GOTO IF...ENB character *sequence* WAIT	BREAK END SEND XTRACT *character sequence* *blank line* NOP

In the descriptions that follow, the syntax for each statement is enclosed in a box. The statement is constructed by typing the dot matrix characters exactly as shown along with the proper parameters shown in *italic*. The characters shown in dot matrix must be typed in uppercase letters. Maximum statement lenth is 28 characters (PC/85) or 50 characters (PC/86).

Refer to appendix E for listings of control files that show examples of each statement in use.

Prompt Statements

Prompt statements are used to construct the prompt portion of a prompt/command pair. Start each statement immediately after the characters P:.

GOTO *line number*

The GOTO statement causes your system to perform an immediate, unconditional branch to the specified line number. The *line number* parameter refers to the number preceding each prompt/command pair. No command is sent; the command line following the prompt should be left blank.

IF *character sequence* ENB *line number*

The IF...END (execute and branch) statement provides conditional branching. If your system receives the specified *character sequence* from the host, your system transmits the command in the prompt/command pair and then branches to the specified *line number*. The *character sequence* is not enclosed in quotes.

---

character sequence

When a sequence of characters appears in the prompt line with no control statement keywords (such as IF or GOTO), the control program waits until that character sequence is received from the host and then sends the sequence of characters on the command line. Characters must be typed in the correct lettercase.

WAIT *number of seconds*

The WAIT statement delays execution of the control program for the specified number of seconds. When the delay interval has elapsed, the program immediately executes the command line. The WAIT statement is useful when you want your control file to send data to the host regardless of the information received from the host. Two places where this may be necessary occur during the log on procedure:

- When you don't know the exact sequence of characters received from the host, but you know the response you must make to the host prompt.

- When you encounter parity errors during log on. This happens more frequently at 1,200 baud than at 300 baud.

Example: The following statements send the data TOM DILLON to the host, regardless of the prompt received from the host.

```
P: WAIT 1
C: TOM DILLON
```

> **Note:** The parameter in the CONTROL WAIT statement is the number of seconds. Note that this differs from the BASIC WAIT statement parameter, which is number of milliseconds.

Command Statements

Three command statements—BREAK, SEND, and END—perform operations analogous to the [BREAK], [SEND], and [STANDBY] softkeys of the ON-LINE screen. The NOP and XTRACT statements perform functions unique to control files.

BREAK

The BREAK statement sends a break to the host. If the host recognizes the break, it is usually set to command level.

SEND *file number*

The SEND command is used to retrieve from your data disc a file to be uploaded to the host. The command performs the same function as the [SEND] key on the ON-LINE screen. In order to send a file to the host, your control program must perform the following operations:

1. Prepare the host to receive a file. For instance, to send a file to another PC system, your control file must transmit the MAIL SEND command.

2. Retrieve the file to be uploaded from the data disc and transmit it to the host. The control SEND command accomplishes this.

3. Notify the host that transmission is complete and that the file can be posted. In PC systems, this is accomplished by sending the .SEND command.

---

character sequence

If the command line contains a sequence of characters other than the keywords BREAK, END, or SEND, the character sequence is sent to the host. A carriage return is sent following the last character.

---

blank line

If a command line is left blank, a carriage return is sent to the host. The command line following a GOTO prompt statement is ignored, and nothing is sent to the host.

NOP

The NOP (no operation) statement does not perform any system activity. When NOP appears in a command line, execution of the control program proceeds immediately to the next prompt/command pair. No carriage return is sent to the host.

```
END
```

The END statement halts communications between your system and the host. Executing END is equivalent to pressing the [STANDBY] key; your system enters standby mode.

```
XTRACT
```

The XTRACT statement begins execution of the PC XTRACT routine. The XTRACT routine is designed to obtain information from large data bases by manipulating the XTRACT file on your data disc. The routine reads commands from the XTRACT file, sends those commands to the host, and then writes information received from the host into the XTRACT file. The XTRACT file and XTRACT routines are covered in section 10.

A Sample Control File

The following control file, #9 on your data disc, is used to access The Source[SM] using TELENET. The program is described line by line to familiarize you with the structure of control files.

```
1P:WAIT 1
 C:
```
Wait one second and send a carriage return.

```
2P:WAIT 1
 C:
```
Wait 1 second and then send another carriage return.

```
3P:L=
 C:
```
When the host sends TERMINAL=, send a carriage return.

```
4P:↑@
 C:C 30147
```
When the host sends the character @ at the beginning of a line, send the TELENET host address, in this case, C 30147.

```
5P:↑>
 C:ID TCBX248 SECRET
```
When the host sends the prompt > at the beginning of a line, send the identification and password.

```
6P:umber
 C:6
```
When the host sends Number, send 6. This places the host at command level.

```
7P:↑↑->
 C:MAIL READ
```
When the host sends a prompt at the beginning of a line, send the MAIL READ command.

```
8P:If --More ENB 8
 C:
```
If the host sends --More, send a carriage return and continue to receive input from the host.

```
9P:IF <Q>UIT ENB 12
  C:QUIT


10P:IF Disposition ENB 8
   C:DELETE



11P:GOTO 8
   C:




12P:+>
   C:OFF



13P: DISCON
   C: END
```

If the host sends <Q>UIT, send the host QUIT command and branch to statement 12.

If the host sends Disposition, send the host DELETE command to delete the file. Then, branch to line 8 to continue receiving input from the host.

The host has not sent Disposition, --More, or <Q>UIT. Return execution to line 8 to re-examine the data from the host.*

The program branched here from statement 9. Send the OFF command when you receive a system prompt.

Stop execution of the control file when the host sends DISCONNECT. Hang up the phone and return to standby mode.

Execution of Control Files

If you specified a control file when you set up the call, the control file starts executing when your system receives the DCD (carrier detect) signal from the host and displays Connection established.

Execution of the control file continues until one of the following occur:

- The last statement in the control file is executed.

- The END statement in the control file is executed.

- Your system loses the host carrier detect signal.

- You press any key. This allows you to abort the control file and execute host commands from the keyboard.

Creating a New Control File

To create a new control file, press the [CREATE] key. The program displays 30 empty prompt/command pairs. Start each statement in the first position after the colon and use the alphanumeric keys and the CONTROL screen editor to enter and edit the control file. You can use the (END LINE) key and the cursor control (arrow) keys to move the cursor around the display.

---

* An IF...ENB statement should always be followed by another IF...ENB statement or by a GOTO statement.

Editing Control Files

To edit an existing control file, press [ED I T] and respond to the message:

```
FILE? ▓▓▓
```

with the number of a control file. PC retrieves the file, displays it, and places the cursor at the beginning of the first prompt line.

The CONTROL Screen Editor

The CONTROL screen editor is activated by pressing either [CREATE] or [EDIT]. The editor allows you to move the cursor anywhere on the screen using the cursor control (arrow) keys and to and type any alphanumeric or control character. You do not need to press (END LINE) to "enter" the corrected program line. Use the (ROLL) key, if necessary, to scroll the display.

The (END LINE) Key

The (END LINE) key does not have the same function in writing control filess as it does in writing BASIC programs. Pressing (END LINE) does not check the program for syntax errors. An improperly constructed statement is detected when the control program fails to run properly.

The (END LINE) key has a particular function when it is pressed while the cursor is positioned immediately after P :. At that time, (END LINE) is a typing aid for the line feed character, ⭢. The ⭢ character is very useful in control programs because many prompts from the host occur at the beginning a line, when the host has just sent a line feed. For example, the statements:

```
3P:⭢>
 C:MAIL READ
```

direct your system to send the command MAIL READ when you receive the prompt > at the beginning of a new line. You can place the line feed character at other places in a control file by typing (CTRL) (J).

You should keep in mind that the prompt line directs your system to look for a particular sequence of characters, including spaces. One possible source of problems might be trailing spaces (spaces at the end of the line). For example, the prompt line:

```
P:DATE:
```

is intended to look for the exact sequence of characters DATE: from the host. If, in typing or editing the line, you accidently placed spaces at the end of the line (for example, DATE:<space> <space> <space>), the program looks for that exact sequence. If you suspect that a line has trailing spaces, you can delete them by positioning the cursor after the last displayed character and pressing (-CHAR) repeatedly.

Pressing (END LINE) at any cursor position other than the first character on a prompt line places a carriage return (CR—CHR$(13)) character at that position. These characters are not displayed. To ensure that your control file has carriage returns positioned properly, the PC CONTROL editor performs the following operations when a control file is saved:

- The editor examines each prompt line and removes all carriage returns.
- The editor places a carriage return at the end of each command line except NOP commands. Thus, the statements:

```
4P: WAIT 1
 C:
```

cause execution of the control file to delay one second, at which time a carriage return is sent to the host.

Adding and Deleting Statements

The CONTROL editor can add and delete prompt/command pairs, renumbering the program sequentially. To delete a prompt/command pair, place the cursor on the prompt line of the pair to be deleted and press (-LINE). The cursor can be anywhere on the line except the last column.

To add a prompt/command pair to the middle of a control program, place the cursor on the prompt line below the place where the pair is to be inserted and press (CLEAR). For example, to insert a pair between lines 3 and 4, place the cursor on the prompt line of line 4. The editor beeps and inserts a blank prompt/command pair at that position and renumbers the program. You must fill in that prompt/command pair before you add other lines.

When you add or delete a prompt/command pair, the editor changes all line number references in GOTO and IF...END statements. If a deleted line is itself referenced by a GOTO or IF...END statement, the editor underlines all references to the deleted line, and you must manually change those references.

Saving Control Files

When you've finished writing or editing a control file, press [SAVE] to copy the file to the data disc. If you have been editing an existing file, the program displays:

Create or Replace# *file number?* (C/R)

If you specify Create, or if you have been writing a new file, the program displays:

SAVE FILE NUMBER? ▒▒▒

CONTROL allows you to assign the file number. If you choose a number already used, the program displays FILE NUMBER ALREADY USED and requests a new file number.

When the file has been stored on the data disc, the program requests a `Subject:` entry for the index by displaying:

```
DESCRIPTION (2 lines)?
```

The subject entry can be up to 64 characters long. For PC/85, use the space bar to wrap the cursor to the second line of the field. For PC/86, press (END LINE) to enter each line.

Control files are indexed as follows:

```
To: ME
From: ME
Date: system date
Type: CTRL
Subject: as entered in the DESCRIPTION field when saved
```

Debugging Control Files

You may find that writing control programs is an iterative process. It is very likely that your program will not run as expected the first time you use it. When this happens, you will have to find the errors in the program—a process called *debugging*.

The contents of the DAY-FILE can assist you in debugging programs. When a control file is executing, your system monitors data sent by the host. If two minutes elapse without receiving information from the host, your system hangs up the phone and writes the following message into the DAY-FILE:

```
Timed out on line# line number
```

If some other type of error occurs, your system hangs up the phone and writes a message into the DAY-FILE:

```
Stopped at line# line number (error number , line number)
```

This information can help you find the errors in your file. If you feel that the error is caused by a problem with PC, include this information in any communication with Hewlett-Packard customer support personnel about the problem.

One common bug results from not knowing the exact sequence of characters, including control characters, sent by the host. PC sets aside a portion of computer memory for an *input buffer* that receives characters from the host. If a control file fails to operate properly, and you suspect that the problem results from an incorrect prompt line in your program, establish communications with the host and allow the program to execute to the point at which the host has issued the prompt in question. Then, pause PC by pressing [SEND] to receive the message `File? ▒▒▒`, and then press (PAUSE). To view the contents of the input buffer, type:

`I$[Z]` (END LINE)

The computer displays all the characters sent by the host since the last time a host prompt was recognized by your control program.

Uploading Control Files

If a control file contains control characters, the file must be edited before it can be transferred to the host. Control characters are those with decimal codes in the range 0 through 31. If you attempt to send a file containing control characters, the bell (BEL, decimal code 7) line feed (LF, decimal code 10) and carriage return (decimal code 13) characters will be interpreted by the host. All other control characters are stripped from the file.

To edit a control file for uploading, replace each control character with some sequence of non-control characters. For example, you can replace the line-feed character ☨ with the mnemonic LF or the keystroke sequence (CTRL J). The recipient can then insert the correct control characters to restore the file.

Using More Than One Data Disc

In CONTROL, you may change data discs at any time. If you attempt to create a control file on a full disc, the program displays `Change media and press [CONT]`. Change data discs and press (CONT) to store and index the file.

To copy a control file to another data disc, use the [EDIT] key to read the file into computer memory. Change data discs, press [SAVE], and specify the Create option.

The PRINT Function

Introduction

The PRINT function allows you to produce printed copies of your PC files. PC/85 provides for using either the HP-85 internal printer or a peripheral printer. You can choose from four different printing options:

- Text is *formatted* for the HP-85 built-in, 32-column printer.

- Text is *formatted* for an 80-column peripheral printer.

- Text is *dumped,* or printed without formatting, on the HP-85 internal printer. You can specify single- or double-spaced output.

- Text is *dumped* to an 80-column peripheral printer, single- or double-spaced.

PC/86 provides one printing option—*copying* the file to an 80-column printer.

Because of the large number of differences between the PC/85 and PC/86 PRINT functions, they are discussed separately.

The PC/86 PRINT Function

The PC/86 PRINT function prints the file by copying lines of text exactly as they appear on the display. Pages are 56 lines long, single-spaced, and numbered sequentially at the bottom of the page. You can specify a beginning page number in the range 1 through 999.

> **Note:** In order for a file to be printed properly, it must contain 160 characters or less between successive carriage return characters (decimal code 13). The EDIT function does this automatically. If you are printing text obtained from a host known to use line lengths exceeding 160 characters, use the EDIT function and (END LINE) key to insert the necessary carriage returns. A displayed line has no carriage return characters if an alphanumeric character appears in column 80.

To enter PRINT, press the [PRINT] key on the Home Screen. The program displays the PRINT screen and key assignments:
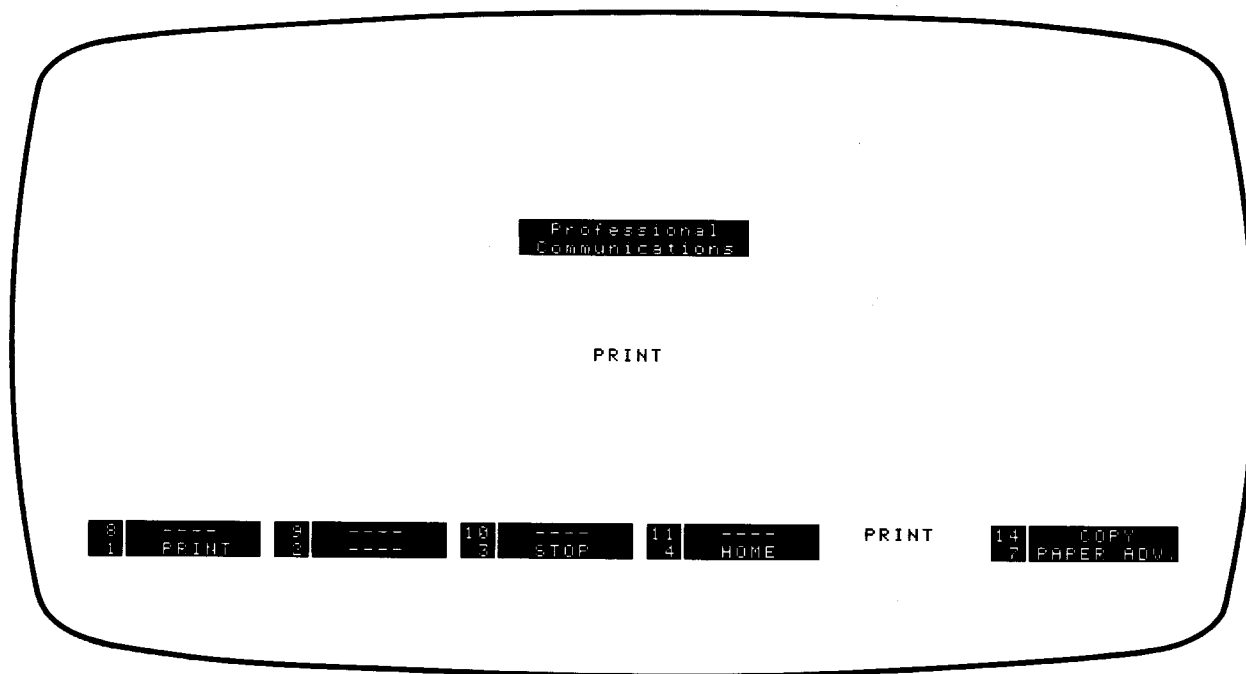
PRINT Key Assignments (PC/86)

The PRINT function has four key assignments:

[PRINT]   Pressing [PRINT] prompts for a file number and beginning page number, and then prints the file.

[STOP]   The [STOP] key is used to halt printing.

[HOME]   Pressing [HOME] returns the program to the Home Screen.

[PAPER ADVANCE]   The [PAPER ADVANCE] key is used to send one or more line-feeds to the printer.

Printing a File (PC/86)

When you press [PRINT], the program prompts for a file number by displaying:

FILE? ▓▓▓▓

Enter a file number or the typing aids E (EDIT-FILE), D (DAY-FILE), or A (ACTIVITY-FILE). If the file is secured, append an S to the file number and enter the security key. When the program displays:

Beginning page number? ▨▨▨

enter a number in the range 1 through 999. If you press only (END LINE), the beginning page number defaults to 1.

After printing starts, you can stop it at any time by pressing [STOP].

The PC/85 PRINT Function

The PC/85 PRINT function requires that you enter the address of the printer to which output is directed. You can print files on the HP-85 internal printer or on a peripheral printer. Once you've entered the printer address, you select the form in which the file is to be printed—formatted or dumped.

Entering PRINT (PC/85)

To enter PRINT, press the [PRINT] key on the Home Screen. When the PRINT function has been loaded into the computer, the program displays the *printer address screen*:

```
        Printer Address: ▨▨▨

        2 for internal printer
        X for parallel printer
           (X = select code)
        7XX for an HP-IB printer
           (XX= device address)
```

Note: If an external printer is not turned on when you enter the PC/85 PRINT function, you can turn it on when the printer address screen is displayed. Never turn on an external printer while PC/85 is chaining.

Enter the address for the printer. When you press (END LINE), the program displays the PRINT screen and key assignments:

```
                    Professional
                   Communications




                       PRINT




        ----------------------------------------
        FORMAT     DUMP     STOP     HOME
```
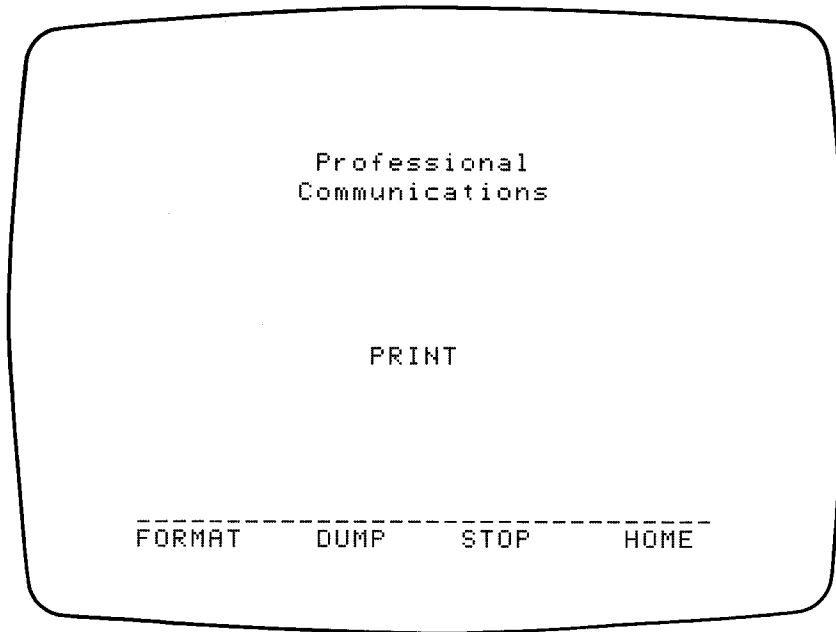
PRINT Key Assignments (PC/85)

The PRINT function has four softkey assignments:

[FORMAT] The [FORMAT] key specifies formatted output. Pressing [FORMAT] displays the header form. The header form is used to create a header for the printed output and to specify the file to be printed.

[DUMP] The [DUMP] key is used to dump a file, single- or double-spaced, to the printer.

[STOP] The [STOP] key is used to halt printing. Since the HP-85 screen is blank while the internal printer is operating, you should memorize this key assignment.

[HOME] The [HOME] key returns the program to the Home Screen.

In addition, the (PAPER ADV) key is active when the print screen is displayed. Pressing (PAPER ADV) sends one or more line feeds to the printer specified on the printer address screen.

Specifying the Printer Address (PC/85)

The printer address screen has a three-character field for entering the printer address. To specify the HP-85 internal printer, enter 2. To specify a peripheral printer, enter its one- or three-digit address. If necessary, refer to your printer documentation and interface owner's manual for information on printer addresses.

When you've typed the address and pressed (END LINE), the program displays the print screen.

Page Layout on the HP-85 Internal Printer (PC/85)

The appearance of the printed file depends on whether you specify formatted or unformatted output.

Unformatted Printing on the HP-85 Internal Printer

Unformatted printing *dumps* the file to the printer exactly as is appears on the display, except that you can choose single- or double-spaced output. Pressing [DUMP] displays:

```
FILE? ▒▒▒▒
```

When you've entered the file number (appending an S if the file is secured), or the typing aids E, D, or A, the program displays:

```
Single or Double spaced? ▒ (1/2)
```

Type 1 for single-spaced output or 2 for double-spaced output. Printing begins immediately.

Formatted Printing on the HP-85 Internal Printer

The formatted printing option outputs the file in 60-line blocks; blocks are separated from one another by a line containing three asterisks against the margin. The astericks are a cutting line. By cutting the blocks apart and pasting them side-by-side onto 8½- by 11-inch paper, you can produce two-column pages suitable for photocopying. The formatter provides page numbers by numbering every other block, starting at the second block.

The formatter reserves 15 lines at the beginning of the file for a file header. The contents of the file header are typed into the header form.

Figure 9-1 illustrates the first and second pages of a file arranged in a two-column format.
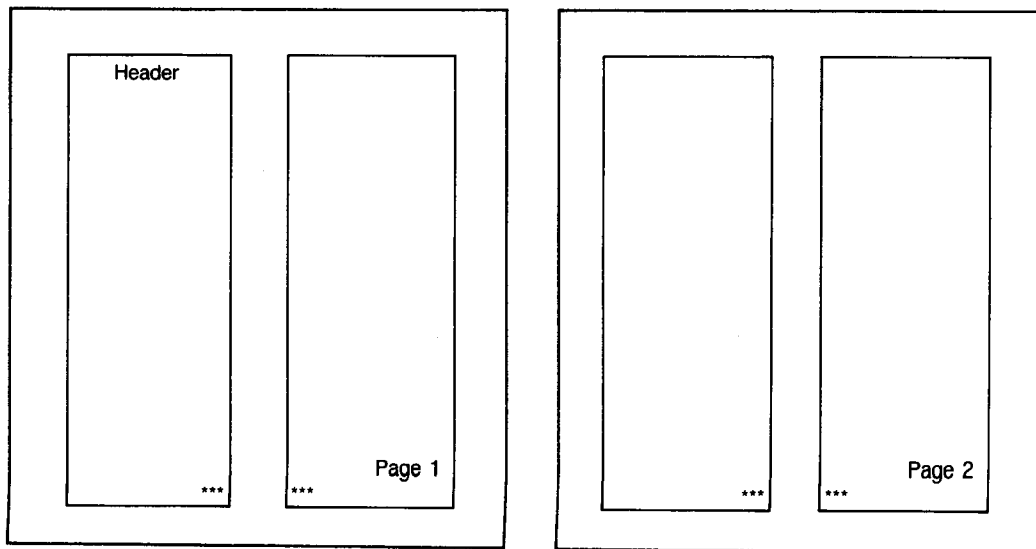
Figure 9.1   Formatted Layout Using the HP-85 Internal Printer.

Creating a 32-Column File Header

The PRINT function allows you to print files with or without a file header. The header is useful for writing memos and letters with headings such as TO:, FROM:, addresses, and phone numbers. You specify the contents of the headers while you are formatting the file; the header is independent of the indexing entries for that file. file.

Pressing [FORMAT] displays the header form:

```
1   - - - - -
2   - - - - -
3   - - - - -
4   - - - - -
5   - - - - -
6   - - - - -



         Position:  ▒
```

The header form has six positions. When the file is printed, positions 1 through 6 are printed on the odd-numbered lines 1 through 11. The even-numbered lines and lines 12 through 15 are left blank.

To enter text into a header position, type the position number, 1 though 6. In response to the message:

Text?

type up to 32 characters and press (END LINE). The first five characters of the header are displayed on the header form. If the entry has leading spaces, the header form displays the first five characters following the spaces. When the file is printed, however, those leading spaces are preserved.

You need not fill in the entire header form. When you've finished typing header information, press (END LINE) while the cursor is under the Position: field. To print the file without a header, press (END LINE) when the cursor is under the Position: field of the empty header form.

When you've completed the header form, the program displays:

`FILE? ▒▒▒▒`

Enter the file number, appending an `S` if the file is secured so that the program will request a security key.

The formatter prompts you to specify the beginning page number . In response to the message:

`Beginning page number: ▒▒▒`

enter a number in the range 1 through 999.

The program then displays:

`Formatting.  Please Standby...`

Printing starts as soon as formatting is completed.

Page Layout on an 80-Column Peripheral Printer (PC/85)

As with the HP-85 internal printer, you can specify either dumped or formatted output to a peripheral printer.

Unformatted Printing on a Peripheral Printer

When you specify unformatted (dumped) output, the file is printed on the peripheral printer without a file header. There are no page numbers, or margins. Each line starts in column 1 of the printer. Pages are 56 lines long.

The appearance of a dumped file depends on how it was originally typed in. Carriage returns in the file cause the printer to start a new line. If the file was created using PC/85 EDIT, a carriage return was placed in the file each time (END LINE) was pressed. Therefore, if you typed in the file using (END LINE) as a carriage return at the end of each line, the file will be dumped in a 32-column format exactly as it appears on the display.

If line wrapping occurs in the file (in other words, there are more than 32 characters between carriage returns), the peripheral printer will continue printing across the page until it encounters a carriage return or until it is forced to start a new print line. Keep in mind that PC/85 automatically inserts a carriage return into wrapped lines that are longer than 96 characters.

Formatted Printing on a Peripheral Printer

Formatted printing allows you to output a file with a header, page numbers, automatic page breaks, and margins. Pages are 56 lines long, numbered at the bottom. You can specify the starting page number. Margins are set at positions 10 and 75, and text is printed single-spaced, left-justified, and ragged-right. The first page can contain an optional 15-line header.

The file is formatted by pairing successive display lines. When lines are joined, a space is inserted between the last character on the first line and the first character on the following line. The text is printed in *block mode*; leading spaces on a line are ignored.

Example: Two consecutive lines of a file that contain the following text:

```
then begin working on a new
portion of the text. When
```

are printed as:

```
then begin working on a new portion of the text. When
```

If the final character on the first line is a hyphen, the hyphen is stripped out and the lines are joined without a space.

Example: The following two lines:

```
operation is done by press-
ing the [SAVE] key. Then
```

are printed as:

```
operation is done by pressing the [SAVE] key. Then
```

You must be careful not to end a line with a hyphen you want to be printed. For example, if the text ACTIVITY-FILE was broken at the hyphen, the formatter would print ACTIVITYFILE.

The formatter provides for canceling line merging under two conditions:

* Blank lines are preserved. When a blank line appears in a file, that line is not merged with the previous or following line. (See figure 9-2).

File   **Formatted Output**

line 1   line 1   line 2
line 2   line 3   line 4
line 3   blank
line 4   line 6   line 7
blank   line 8
line 6   blank
line 7   line 10
line 8
blank
line 10

Figure 9-2. Preserving Blank Lines

- When a *force left character*, ⟨, is placed at the end of a line, the following line is not joined to it. In other words, the line following the ⟨ symbol is forced to the left margin. (See figure 9-3).

Figure 9-3. Text Forced Left

Creating an 80-Column File Header

When you press [FORMAT], the program displays the file header form:


```
    1  -----              4  -----
    2  -----              5  -----
    3  -----


               6  -----
               7  -----


          Position:  ▓

    Press END LINE to start printing
```

Text is entered into the header form in the same way as with the 32-column header (refer to page 108). When the file is printed, the header items are printed on every other line, as illustrated in figure 9-4.
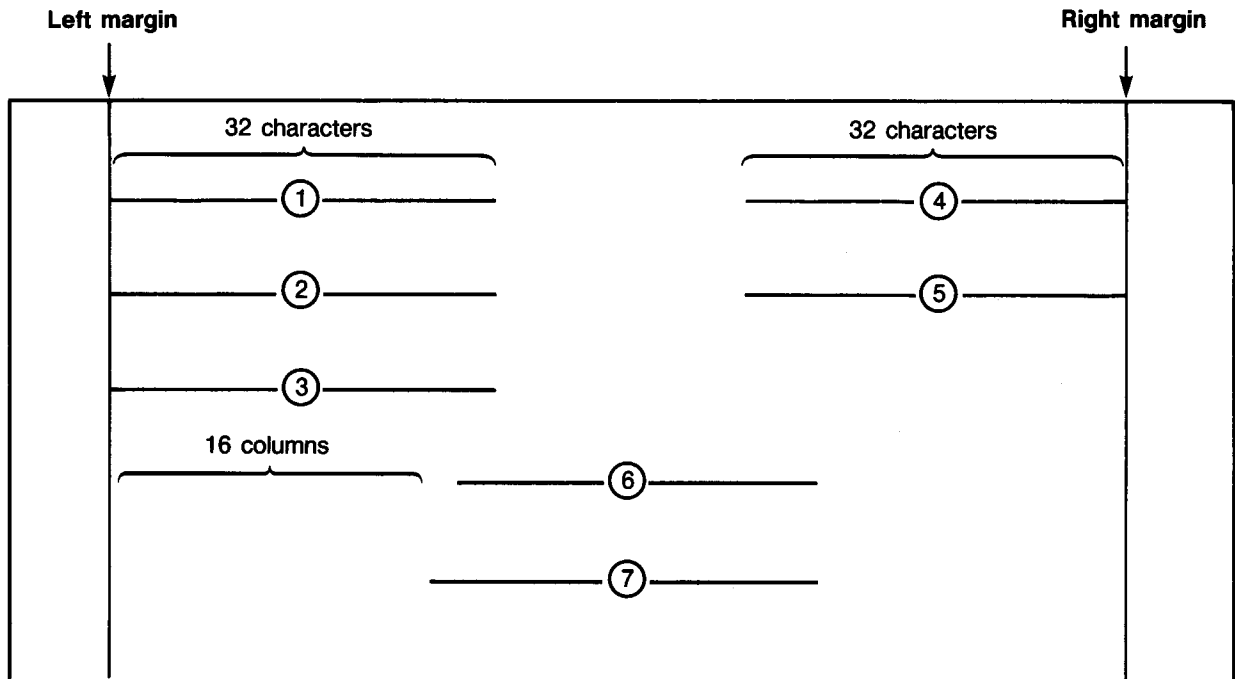
Figure 9-4.   An 80-Column Header.

USER2, the XTRACT-FILE and PC/85 User-Written Programs

Introduction

This section covers:

- The USER2 function provided with PC/85 and PC/86.

- Using and editing the XTRACT-FILE.

- The PC/85 USER1 function, which allows HP-83/85 users to integrate their own programs into the PC environment. USER1 is not available with PC/86.

The XTRACT-FILE and USER2 function included with PC/85 and PC/86 are designed to be used with Dow Jones NEWS/RETRIEVAL® service to obtain stock prices. The PC/85 USER2 function assumes that you are using a 32-column format account. The PC/86 USER2 function assumes you are using an 80-column format account.

PC/85 provides the ability to adapt USER2 for use with other accounts or databases by editing or rewriting the program. You cannot edit the PC/86 USER2 function.

To understand what USER2 does, you must first understand the structure of the XTRACT-FILE and how it is accessed by control programs.

The XTRACT-FILE

The XTRACT-FILE is a type of control file. Its purpose is to interact on-line with a host database to obtain specific pieces of information. The XTRACT-FILE differs from other control files in that it is used both to send characters to the host and to store the host response. When the XTRACT-FILE is executing, data received from the host is written into the XTRACT-FILE file rather than into the DAY-FILE. The USER2 function is used to view that information off-line.

Structure of the XTRACT-FILE

Figure 10-1 illustrates the organization of the XTRACT-FILE. The XTRACT-FILE on your data disc contains 102, 85-byte records. You may shorten or lengthen the file as necessary. You should create records 85 bytes long to allow for overhead in storing character strings.
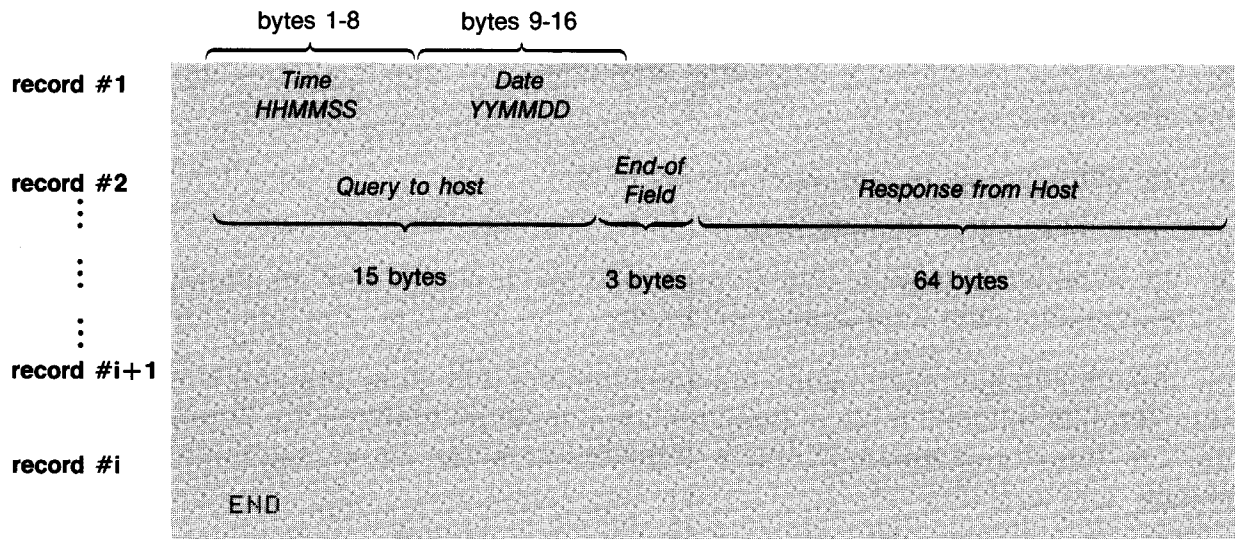
Figure 10-1. Structure of an XTRACT File i Records Long.

The various records of the XTRACT-FILE contain the following information:

Record #1 contains a time and date stamp from your system clock. When you retrieve data from the XTRACT-FILE using USER2, the time and date let you know when the data was obtained.

Records #2 through i-1 are used to interact with the host. Each record is divided into three fields:

- Bytes 1 through 15 contain the query sent to the host. To obtain stock prices, this will usually be a stock symbol such as , 1HWP for Hewlett-Packard.

- Bytes 16 through 18 contain the *End-of-Field specifier* (EFS). The EFS indicates which characters received from the host in response to a query are saved. The XTRACT-FILE saves the last 64 characters in the specified field. For example, if the EFS is 260, the XTRACT-FILE stores characters 197 through 260 of the host response (see figure 10-2). The EFS for each stock symbol is determined empirically by examining the host output. Literature available from Dow Jones NEWS/RETRIEVAL Service™ is also useful. An example later in this section shows how the EFS was determined for a particular application.

- Bytes 19 through 82 store the host response to the query.

Record i contains the END statement.

First 260 characters of host response to stock symbol

64 characters
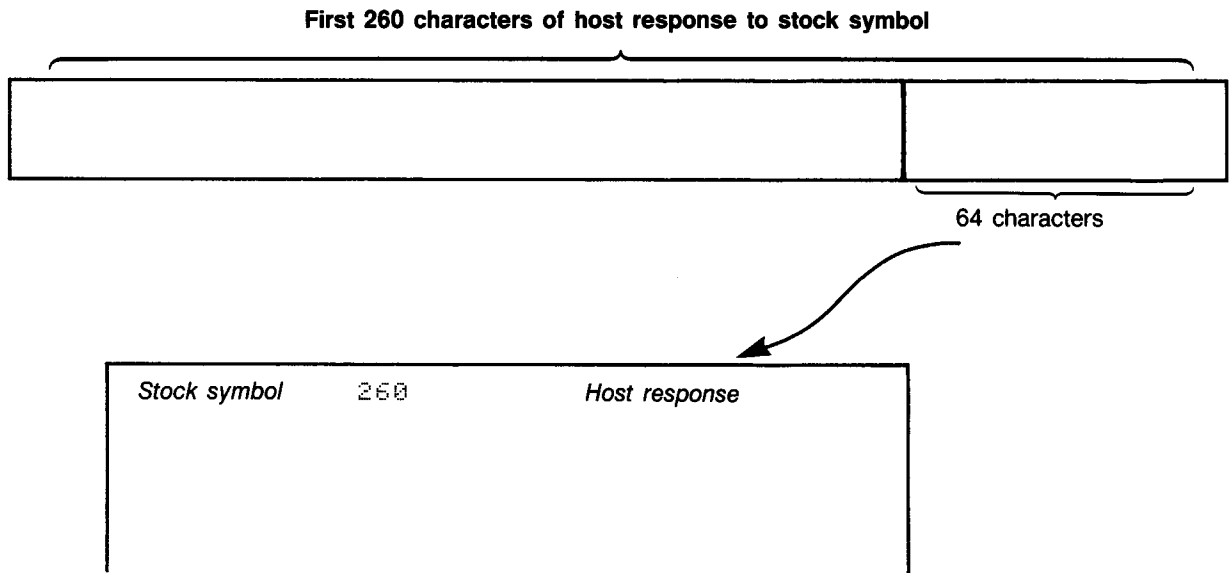
Figure 10-2.   The XTRACT-FILE End-of-Field Specifier.

Execution of the XTRACT-FILE

Execution of the XTRACT-FILE begins when the XTRACT command is executed in a control program. The XTRACT-FILE operates like a subroutine. Execution of the END statement in the XTRACT-FILE returns program control to the next prompt line of the control file.

Execution of the XTRACT-FILE starts with record #2 and proceeds as follows:

1. The query is read from the XTRACT-FILE and sent to the host.

2. The specified characters of the host response are stored in the XTRACT-FILE.

3. If the next record contains an END statement, the time and date are written into record #1 and execution branches to the original control program. Otherwise, steps 1 and 2 are repeated.

If the XTRACT-FILE END statement is never executed due to a bug in the XTRACT-FILE or some other problem, the message:

END not reached. Last command was *query*

is written into the DAY-FILE, along with the last response from the host. This message is also written into the DAY-FILE if no response is received from the host within one minute of sending a query. Program execution returns to the originating control file.
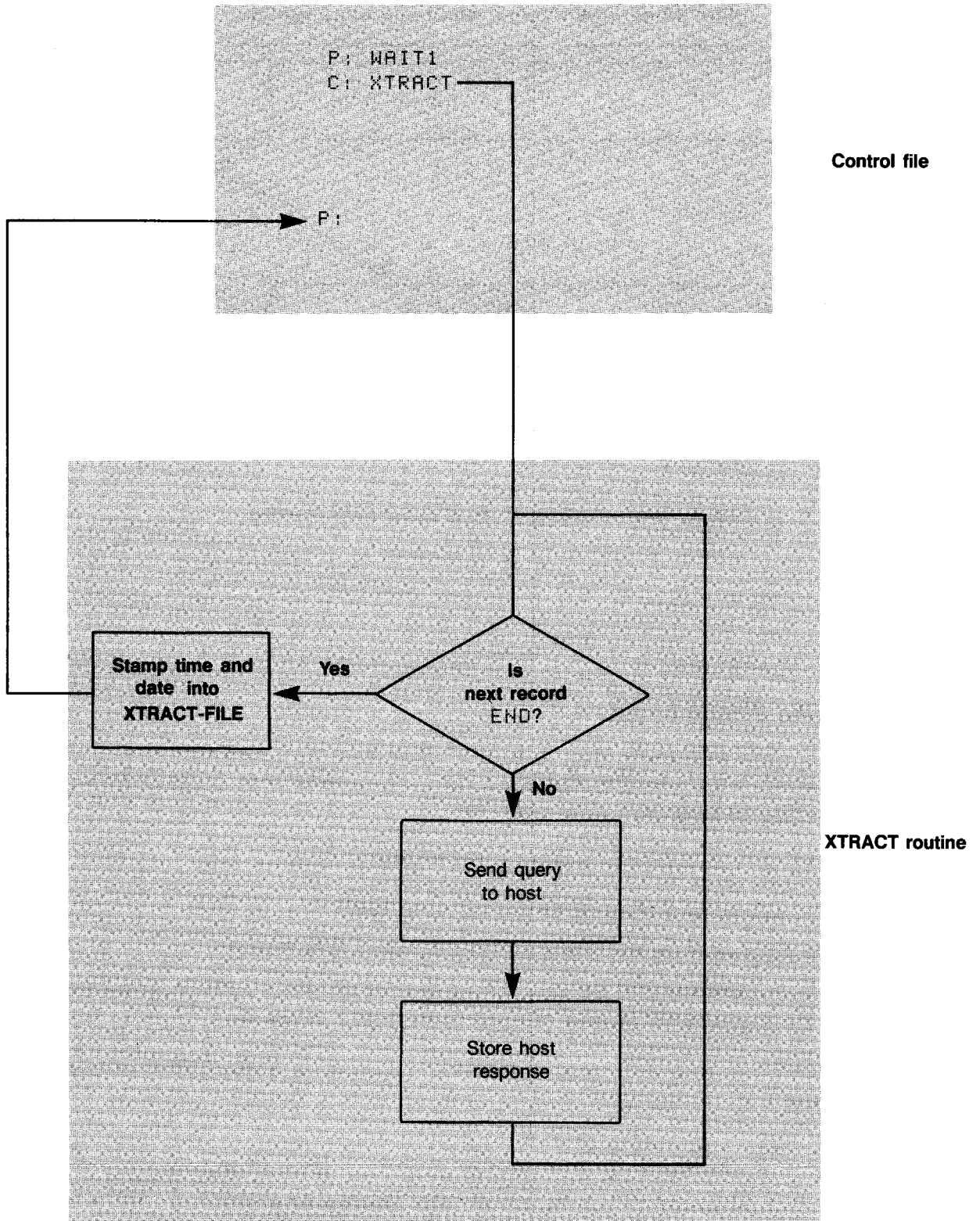
Figure 10-3. Execution of the XTRACT-FILE.

Obtaining Stock Prices Using USER2

The USER2 function is designed to read data stored in the XTRACT-FILE that was obtained from Dow Jones NEWS/RETRIEVAL Service. USER2 also allows you to edit the XTRACT-FILE to add and delete queries (stock symbols), and to change the EFS for a query.

To enter USER2, press the [USER2] key on the Home Screen. The program displays the USER2 screen and key assignments.

```
                    Professional
                    Communications

                        USER2




  8 ----      9 ----     10 ----     11 ----    USER2    14  COPY
  1 ADD       2 DELETE    3 QUOTE      4 HOME             7 PAPER ADV.
```
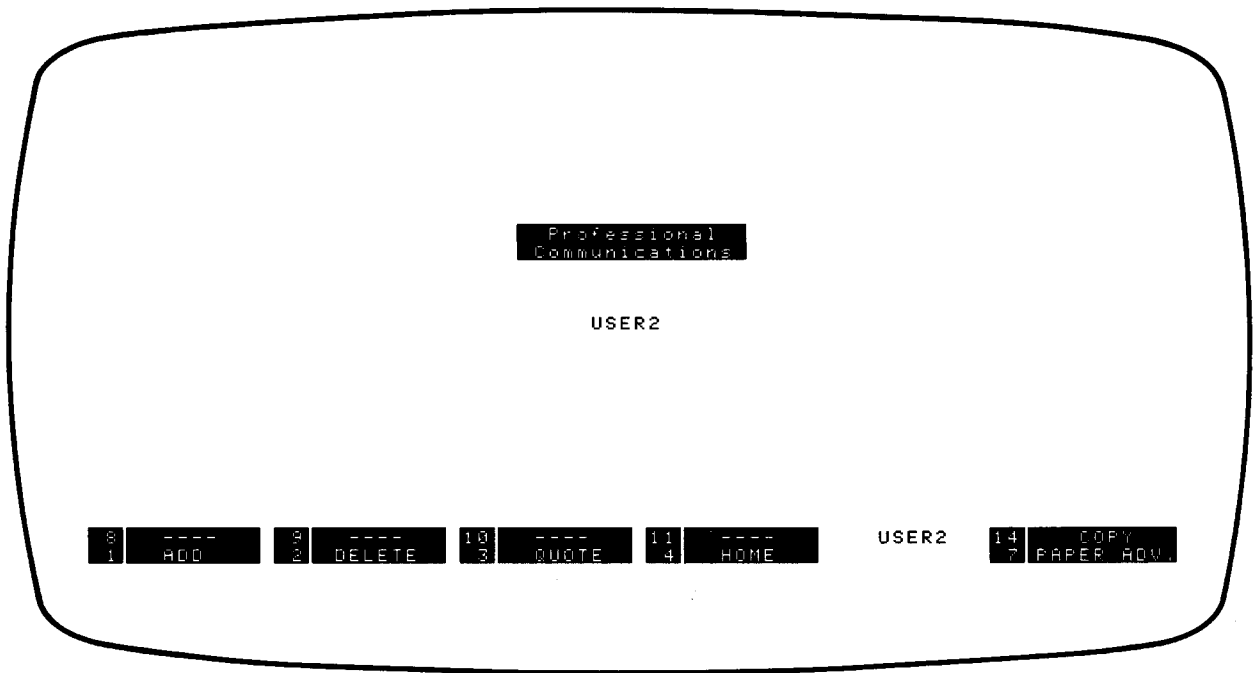
The following softkeys are assigned by USER2:

[ADD]   The [ADD] key is used to add queries (stock symbols) to the XTRACT-FILE.

[DELETE]   The [DELETE] key deletes the contents of an XTRACT-FILE record.

[QUOTE]   Pressing [QUOTE] retrieves the most recently obtained stock price(s) from the XTRACT-FILE.

[HOME]   The [HOME] key returns the program to the Home Screen. Changes made to the XTRACT-FILE are not recorded on the data disc until you exit USER2 by pressing [HOME].

In addition, the (P LST) key lists each the query in the XTRACT-FILE and its EFS.

The alphanumeric keys are active while you are adding or deleting queries and when you are obtaining stock prices.

Adding Queries

When you press [ADD], the program prompts for the addition by displaying:

`Symbol ⬚⬚⬚⬚⬚⬚⬚⬚⬚⬚⬚⬚`

Type in the stock symbol exactly as it is listed by Dow Jones. When you've entered the symbol, the program requests the numerical End-of-field specifier (EFS) by displaying:

`End of field?`

When you've entered the EFS, the information is placed into the first empty record.

Deleting Queries

When you press [DELETE], the program prompts for the stock symbol to be deleted by displaying:

`Symbol ⬚⬚⬚⬚⬚⬚⬚⬚⬚⬚⬚⬚`

When you've entered a sequence of characters, the program searches the XTRACT-FILE for a query containing that sequence. When a match is found, the program displays the query and the message:

`Delete it? (Y/N) ⬚`

If you answer N, the program continues searching the XTRACT-FILE for a matching query.

When the program deletes the contents of a record, it places the character string ✳✳✳✳ into the beginning of the record. In adding a stock, the program searches for the first empty record; if no record containing ✳✳✳✳ is found, the END statement is moved to the next record and the new stock is inserted in its place.

Obtaining Stock Quotes

To obtain stock prices from the XTRACT-FILE, press [QUOTE]. The stock price stored in the XTRACT-FILE is the most recent ("LAST") price that was available when you were on-line.

PC/85 and PC/86 differ in how they display stock prices.

If the EFS for the stock was incorrect, the entire host response to the query is displayed. When you press [QUOTE], PC/85 displays the prompt:

`Stock?`

Respond to the prompt by entering a sequence of unique characters contained in the stock symbol. For example, you can enter WP for HWP. The stock price is displayed along with the time and date stamp.

```
STOCK  PRICE  DATE    TIME
HWP  40 7/8 82/06/11 14:22:14
```

PC/85 requires that you press [QUOTE] for each stock price you wish to retrieve.

PC/86 displays the stock prices for all the stocks in your XTRACT-FILE when you press [QUOTE]. If the EFS for a stock is incorrect, the entire host response to the query is displayed.

Hints for Editing the XTRACT-FILE

The most difficult part of setting up the XTRACT-FILE is selecting the EFS. Both LAST and the line-feed character ↑ must be present in the stored response from the host; otherwise, the EFS and host entire responses are displayed. If this happens, you must change the EFS for that query.

One way to determine an appropriate EFS for a query is to log on to the host and obtain data without using the XTRACT-FILE. Then, view the DAY-FILE to see the entire host response to the query. Count the number of characters from the beginning of the host reponse to the word "LAST", and use this number to choose an EFS. You can also compare the response in the DAY-FILE to the portion of the host response that was stored in the XTRACT-FILE (64 characters) during your most recent session.

Example: Figure 10-4 shows the 32-column format output from Dow Jones NEWS/RETRIEVAL Service for two stock queries, along with the cumulative character count of the host response. To ensure that the XTRACT-FILE captures the correct portion of the response, make sure the stored host response includes the word LAST and its associated price. An appropriate EFS for the first quote might be 250; a value of 140 would work for the second quote. The character count per line and the cumulative character count include an invisible line feed character at the end of each line.

Output in Response to First Query	Character Count	Cumulative
DOW JONES STOCK	16	16
QUOTE REPORTER SERVICE	23	39
STOCK QUOTES DELAYED	21	60
OVER 15 MINUTES	16	76
‡ CLOSE ADJ. FOR EX-DIVIDEND	31	13
	1	114
STOCK HWP	18	131
BID/CLOSE 88	17	148
ASKED/OPEN 88	17	165
HIGH 88 3/4	21	186
LOW 88	17	203
LAST 88 1/8	21	224
VOLUME (100'S)1084	19	243

Output in Response to Second Query		Character Count	Cumulative
STOCK	TEK	18	18
BID/CLOSE	75 7/8	21	39
ASKED/OPEN	74 3/4	21	60
HIGH	75 5/8	21	81
LOW	74 3/4	21	103
LAST	75	17	120
VOLUME (100'S)236		18	138

Figure 10-4. Stock Prices from Dow Jones NEWS/RETRIEVAL Service in 32-column format.

Changing Data Discs

You should not change data discs between the time you press [ADD], [DELETE], or [CHANGE] and the time you press [HOME]. Any changes you make to the XTRACT-FILE are not recorded onto the data disc until you leave USER2.

User-Written Programs (PC/85 Only)

PC/85 allows you to write your own BASIC programs that can be executed during operation of the PC program as a separate PC function. Execution of your program begins when you press the [USER1] softkey on the Home Screen. Pressing [USER1] chains the program on your program disc named "USER1" into computer memory.

Currently, the "USER1" program is an "dummy" program. Pressing [USER1] displays the USER1 screen and the Home Screen key assignments. To replace the dummy program with a self-written program, scratch computer memory, enter the program into the computer, and execute:

```
STORE "USER1.1"
```

If you have the programming expertise, there are many capabilities you might want to incorporate into PC/85 as a USER1 function. Examples include:

• Converting text files created using a different word-processor into files compatible with PC/85.

• Reformatting files to remove gaps created by editing changes.

• Preparing Visicalc worksheets for uploading, and then restoring the transferred worksheet.

If you write your own program, you should use USER2 as an example program to get an idea of the program structure and variable assignments. You will also need to study lines 1198 through 1460 of USER2; these lines return program control from USER2 to the PC/85 Home Screen.

Back-Up and Master Discs

Creating Back-Up Discs

In order to prevent loss of information from media damage or wear, you should maintain backup copies of your program disc and each data disc in your PC system. The easiest way to back up a disc is to copy the entire contents of the disc to a second, empty disc.

An empty disc must be initialized before it can store data. To initialize a blank disc, remove all other discs from your disc drive. Then, place the blank disc into DRIVE 0 and execute the initialize statement:

```
INITIALIZE "AAAAAA", ":D700", 13, 6  For 5 1/4-inch flexible discs.
INITIALIZE "AAAAAA", ":D700", 13, 7  For 3 1/2-inch flexible discs.
```

assumes select code 7 for your HP-IB interface

where *AAAAAA*, the volume label of the disc, is any sequence of letters and numbers. The volume label is a disc title used to identify the disc; it is displayed when you obtain a disc directory using the CAT statement. If the disc you are initializing is going to be a back-up disc, you should assign it the same volume label as the disc you are backing up.

To back up an entire disc, transfer the empty disc to DRIVE 1 and place the original disc in DRIVE 0. Execute the disc copy statement:

```
COPY ":D700" TO ":D701"
```

Maintaining a Master Data Disc

Your master data disc is the disc you use to create new data discs properly formatted for use with PC. Once you have created a master disc, you can create new data discs from the master disc by copying the entire contents of the master to an intialized, empty disc.

There are two ways to create a master disc:

- You can create a data disc with an empty DAY-FILE, ACTIVITY-FILE, EDIT-FILE, XTRACT-FILE, PHONE-FILE, and INDEX-FILE. This is a "minimum" disc needed to run PC. If you use this type of master disc, each new data disc you create will contain no control files, message files (file# 001, 002, and 003), or stored phone numbers.

- You can maintain an up-to-date master data disc that contains:

    1. An empty DAY-FILE.

    2. An empty ACTIVITY-FILE.

    3. An empty EDIT-FILE.

    4. All the control files you use frequently.

    5. An up-to-date INDEX-FILE containing an entry for each control file on the master disc.

    6. An up-to-date PHONE-FILE containing all the phone numbers you use frequently.

    7. If you use USER2 to obtain stock prices from Dow Jones NEWS/RETRIEVAL Service, you should have an up-to-date XTRACT-FILE containing all the stock symbols you routinely use to query the host.

    8. Up-to date versions of files 001, 002, and 003.

Methods for creating both types of masters are discussed next.

Creating a "Minimum" Master Data Disc

The following statements create a master data disc with the files necessary to run PC. The statements assume the disc is located in DRIVE 1, and that the HP-IB select code is 7.

```
CREATE  "DAY:D701",  1,  13000*
CREATE  "ACT:D701",  1,  10000
CREATE  "EDIT:D701",  1,  13000*
CREATE  "XTRACT:D701",  100,  85
CREATE  "PHONEL:D701",  100,  51
CREATE  "INDEX:D701",  90,  128      For PC/85.
CREATE  "VINDEX:D701",  90,  128      For PC/86.
```

Numbers in *italic* can be smaller or larger to suit your needs.

Creating an Up-to-Date Master Data Disc

An up-to-date master disc is created using a data disc containing your bulletin board files, your personalized PHONE-FILE and XTRACT-FILE, and your commonly used control files. Place your future master disc in DRIVE 1 and your most up-to-date data disc into DRIVE 0.

---

* The size of these files may vary for PC/86. Refer to page 124 for additional information.

The master must contain an empty DAY-, ACTIVITY-, and EDIT-FILE, created by executing the following statements.

```
CREATE "DAY:D701",1,13000*
CREATE "ACT:D701",1,10000
CREATE "EDIT:D701",1,13000*
```

You must also create an empty INDEX-FILE by executing:

```
CREATE "INDEX", 90, 128       For PC/85.
CREATE "VINDEX",90, 128       For PC/86.
```

To maintain up-to-date PHONE-FILE, XTRACT-FILE, and message files, you should copy those files from your up-to-date data disc to the master data disc. The following statements copy the indicated files from the data disc in DRIVE 0 to the future master in DRIVE 1.

```
COPY "PHONEL" TO "PHONEL:D701"
COPY "XTRACT" TO "XTRACT:D701"
COPY "001" TO "001:D701"
COPY "002" TO "002:D701"
COPY "003" TO "003:D701"
```

The easiest way to transfer control files is to copy them using the PC CONTROL function, using the following procedure:

1. Place your PC program disc in DRIVE 1.

2. Place your up-to-date data disc in DRIVE 0.

3. Enter the CONTROL function and press [EDIT]. In response to the message FILE NUMBER? ▨▨▨, enter the number of a control file.

4. When the control file has been read into the computer, remove the data disc from DRIVE 0 and insert the master disc.

5. Press [SAVE] and specify the Create option. In response to the message SAVE FILE NUMBER? ▨▨▨, enter the same file number used to retrieve the file. The control file will be copied to the new disc, entered into the index, and assigned the same file number.

6. In response to DESCRIPTION (2 lines)?, enter a subject entry for the index, or press (END LINE) to skip this step.

7. Repeat steps 2 through 6 until all necessary control files have been transferred and indexed.

Once you have created your master disc, you can maintain it by periodically copying additional control files to it. If you make substantial changes to the PHONE-FILE, XTRACT-FILE, or any of the bulletin board files, you can purge the original file from the master disc and copy the updated file to the master.

---

* The size of these files may vary for PC/86. Refer to page 124 for additional information.

Changing the Maximum File Size
(PC/86 Only)

The maximum size of a PC file depends on the size of the EDIT-FILE and DAY-FILE on the data disc. Each of these files, which must be the same size, can currently hold approximately 13,000 bytes (characters) of information.*

If your HP-86/87 system is configured with more than 128K bytes of RAM, you can create a larger EDIT-FILE and DAY-FILE. Each additional 32K of RAM adds an additional 32K bytes to the maximum file size up to a maximum file size of 256K bytes.

The following table lists the optimum file sizes:

System RAM	Maximum File Size (Bytes)	Record Size (Bytes)	Number of Records
128K	13,000	13,000	1
160K	39K	13,000	3
192K	65K	13,000	5
224K	91K	13,000	7
256K	117K	13,000	9

To change the size of the files, purge the current EDIT-FILE and DAY-FILE on the data disc by placing the disc into DRIVE 0 and executing:

```
PURGE "EDIT"
PURGE "DAY"
```

Pack the disc to remove the gaps created when the files are purged. Then, create the new files:

```
CREATE "filename", number of records, record size
```

---

* The capacity of a PC file varies with the line length. For short line lengths, the file will become full before the character limit (for example, 13,000 characters for a 128K RAM system) is reached.

Running Professional Communications Using Single-Disc Systems

PC provides the ability to run the program using a single-drive disc drive, such as the HP 9130A and HP 82902 Flexible Disc Drives. The program knows whether you have the program disc or a data disc present in the drive, and prompts you to change discs when necessary.

To run PC/85 using a single-drive system:

1. Insert the program disc in the drive.

2. Follow the procedure on page 00 for loading & running PC.

3. Fill out the introductory screen.

4. Select a function from the Home Screen. When the function has been loaded into the computer, the program displays:

   `Switch media and press [CONT]`

   Remove the program disc and insert a data disc in the drive. Press (CONT).

5. Leave the data disc in the drive until it becomes full, or until you've returned to the Home Screen and selected another function. At that time, the program prompts you to switch media again. This time, remove the data disc and insert the program disc.

To run PC/86 using a single-drive system:

1. Insert the program disc in the drive.

2. Load and run PC, using the instructions on page 00.

3. Fill out the introductory screen.

4. Select a feature from the Home Screen. When the program displays:

   `Switch media and press [CONT]`

   remove the program disc and insert a data disc in the drive. Press (CONT).

5. There is no need to replace the program disc until you've scratched program memory and then wish to run PC again.

If a data disc becomes full, the program displays the message:

```
Change media and press [CONT]
```

when you attempt to save a file in EDIT or CONTROL. Note the use *change* rather than *switch*. When you are prompted to *change* media, replace the current data disc with another data disc. *Switching* media refers to substituting the program disc for a data disc, or vice versa.

Using the Electronic Disc

Using the HP-85B Electronic Disc

If you are using an HP-85B, you may want to take advantage of the increasd speed of mass storage operations provided by the electronic disc. Since PC/85 performs a chaining operation each time you enter a new function from the Home Screen, copying the functions to the electronic disc will make it easier to switch functions—for example, from FIND to EDIT.

To use the electronic disc with PC/85, your system must include at least one 128K memory module.

The easiest way to use the electronic disc is to edit your PC/85 program to automatically copy the PC/85 program files to the electronic disc at the beginning of a session. Use the following procedure to edit PC/85 for the electronic disc:

1. Place the PC/85 program disc into DRIVE 0 or DRIVE 1.

2. Execute the following commands:

    LOAD "PC.1" (END LINE)
    LOADBIN "OC.1" (END LINE)

3. Add the following statements to program "2.1" by typing each statement and pressing (END LINE):

```
150 CCLEAR @ ALPHA 8,5 @ AWRIT "
Loading Electronic Disc..."
200 COPY "FIND10.1" TO "FIND10.E
D"
210 COPY "EDIT10.1" TO "EDIT10.E
D"
220 COPY "PRINT.1" TO "PRINT.ED"
230 COPY "OC34.1" TO "OC34.ED"
240 COPY "PHONE4.1" TO "PHONE4.E
D"
250 COPY "CTRL6.1" TO "CTRL6.ED"
260 COPY "USER1.1" TO "USER1.ED"
270 COPY "USER2.1" TO "USER2.ED"
280 VOLUME ".ED" IS "1"
```

4. Store the program on the PC/85 program disc by executing:

    STORE "PC-ED:D701"
                    ↑
    assumes your HP-IB interface is set to select code 7.

5. Execute:

```
SCRATCH
```

to erase the BASIC and binary programs from computer memory. This is neccessary to avoid getting `Error 25 : TWO BIN PROGS` when you run PC/85.

Use the following procedure to run PC/85 with the electronic disc:

1. Place the data disc in DRIVE 0; place the program disc in DRIVE 1.

2. Execute the statement:

```
CHAIN "PC-ED,1"
```

3. Enter the time and date into the protected fields on the introductory screen.

4. The program displays:

```
LOADING ELECTRONIC DISC
```

as the PC/85 functions are copied from the program disc into the electronic disc.

5. When the program displays the Home Screen, proceed as usual.

Note: The program "PC-ED" assigns the volume label 1 to the electronic disc. This is also the volume label of the PC/85 program disc. When the HP-85B finds duplicate volume labels for the electronic disc and a flexible disc, it always uses the electronic disc. Therefore, once you've executed "PC-ED", the PC/85 program disc cannot be accessed until you assign a new volume label to the electronic disc or until you cycle power.

Using the HP-86/87 Electronic Disc

Since the entire PC/86 program is loaded at the beginning of an PC session, there is no advantage to using the electronic disc for program files. However, if you will be using PC for long, uninterrupted periods of time, you may find it useful to copy your PC data disc to the electronic disc. By placing your data files and the PC scratch files on the electronic disc, you will increase the speed of locating and indexing files, and decrease the time spent on-line in writing data to the DAY-FILE. Refer to the *Electronic Disc ROM Owner's Manual* for instructions on configuring the electronic disc and specifying it as the `MASS STORAGE IS` device.

To copy your data disc to the electronic disc, insert the data disc in DRIVE 0 and execute:

```
COPY ":D700" TO ":D000"
```

Make sure you copy the contents of the electronic disc to a flexible disc at the end of your PC session. Remember, all data in the electronic disc is lost when the computer is turned off.

Using a Hard Disc

A hard disc mass storage device can be used to store the PC program. Any Winchester Disc Drives supported by Series 80 computers can be used. If you transfer the program to hard disc, you should keep your original program disc for archive purposes.

Follow these steps to transfer your PC program the hard disc:

1. Select the volume on the hard disc to be used for storing the program and determine its mass storage unit specifier (msus). For example, this could be `":D722"`.

2. Determine the msus of the flexible disc drive from which you'll be copying the program—for example, `":D700"`.

3. Insert the PC Program Disc into the flexible disc drive and execute the `COPY` statement:

    ```
    COPY ":D700" TO ":D722"
    ```

4. Assign the volume label 1 to the volume on the hard disc by executing the `VOLUME IS` statement:

    ```
    VOLUME ":D722" IS "1"
    ```

5. Verify that all files have been copied by comparing disc directories for the flexible disc and the hard disc:

    ```
    CAT ":D700"     Obtains directory of a flexible disc at msus ":D700".
    CAT ":D722"     Obtains directory of a hard disc volume at msus ":D722".
    ```

Sample Control Files

The following control files are on your PC data disc. To use these files, edit them for your personal log on and password. You will probably also need to update them for any changes inthe host log-on procedure and menu. If you write your own control files, you may want to use these files as examples illustrating how to use the various control statements.

PC Log On and MAIL SEND (#35)

```
 1P:LAST)?
  C:Your Name Here
 2P:NAL)
  C:SECRET
 3P:↑>
  C:MAIL SEND
 4P:IF ROOM ENB 10
  C:OFF
 5P:IF SUBJECT: ENB 7
  C:Greetings
 6P:GOTO 4
  C:
 7P:TEXT:
  C:SEND 674
 8P:WAIT1
  C:.SEND
 9P:↑>
  C:OFF
10P:WAIT1
  C:END
```

PC Log On and MAIL READ (#36)

```
 1P:LAST)?
  C:Your Name Here
 2P:NAL)
  C:
 3P:WAIT.01
  C:BREAK
 4P:>
  C:READ
 5P:TO:
  C:
 6P:WORDS:
  C:
 7P:DATE:
  C:AFTER 072083
 8P:IF NEXT, or SEARCH? ENB 8
  C:READ
 9P:IF ↑> ENB 11
  C:OFF
10P:GOTO 8
  C:
11P:WAIT1
  C:END
```

TYMNET DOW JONES™ Log On and XTRACT (#23)

```
 1P:WAIT3
  C:A
 2P:WAIT3
  C:&DOW1;;
 3P:
  C:SECRET
 4P:QUERY
  C:XTRACT
 5P:WAIT1
  C:DISC
 6P:OFF
  C:END
```

TELENET SOURCE Log On and MAIL READ (#9)

```
 1P:WAIT1
  C:
 2P:WAIT1
  C:
 3P:L=
  C:
 4P:↑@
  C:C 30147
 5P:↑>
  C:ID TCX248 SECRET
 6P:umber
  C:6
 7P:◄->
  C:MAIL READ
 8P:IF --More ENB 8
  C:
 9P:IF Q>uit? ENB 12
  C:QUIT
10P:IF Disposition ENB 8
  C:DELETE
11P:GOTO 8
  C:
12P:->
  C:OFF
13P:DISCON
  C:END
```

TELENET SOURCE Log On And MAIL SEND (#29)

```
 1P:WAIT1
  C:
 2P:WAIT1
  C:
 3P:L=
  C:
 4P:↑@
  C:C 30147
 5P:↑>
  C:ID TCX248 SECRET
 6P:umber
  C:6
 7P:->
  C:MAIL SEND
 8P:To:
  C:ST4940
 9P:ubject:
  C:Greetings
10P:text:
  C:SEND 793
11P:WAIT1
  C:.SEND
12P:Q>uit?
  C:Q
13P:->
  C:OFF
14P:NNECTED
  C:END
```

**TELENET SOURCE Log On, MAIL SEND,
and MAIL READ**

```
 1P:WAIT1
  C:
 2P:WAIT1
  C:
 3P:L=
  C:
 4P:↑@
  C:C 30147
 5P:↑>
  C:ID TCX248 SECRET
 6P:umber
  C:6
 7P:◄->
  C:MAIL SEND
 8P:To:
  C:ST4940
 9P:ubject:
  C:Greetings
10P:text:
  C:SEND EDIT
11P:WAIT1
  C:.S
12P:Q>uit?
  C:R
13P:IF --More ENB 13
  C:
14P:IF Q>uit? ENB 17
  C:QUIT
15P:IF Disposition ENB 13
  C:DELETE
16P:GOTO 13
  C:
17P:->
  C:OFF
18P:DISCON
  C:END
```

HP Mail (#85)

```
 1P:WAIT1
  C:
 2P::
  C:HELLO USER.GENERAL
 3P:↑:
  C:HPMAIL
 4P:name:
  C:YOUR NAME HERE
 5P:HPMAIL >
  C:1
 6P:TRAY >
  C:READ
 7P:IF continue >> ENB 7
  C:
 8P:IF TRAY > ENB 10
  C:9
 9P:GOTO 7
  C:
10P:name:
  C:END
```

**TYMNET SOURCE^{SM} Log On Using
8-Bit Word, Parity:NONE (#12)**

```
 1P:WAIT 5
  C:A
 2P:WAIT 2
  C:STC12
 3P:↑>
  C:ID TCX248 SECRET
 4P:number
  C:6
```

**HAYES SMARTMODEM 300-Baud Autodial
SOURCE Log On (#1)**

```
1P:WAIT2
 C:AT T
2P:OK
 C:AT D116,295 3028
3P:IF CONNECT ENB 6
 C:
4P:IF CARRIER ENB 3
 C:A/
5P:GOTO 3
 C:
6P:WAIT1
 C:
7P:L=
 C:
8P:↑@
 C:C 30147
9P:↑>
 C:ID TCX248 SECRET
```

**HAYES SMARTMODEM 1200-Baud Autodial
DOW JONES Log On (#6)**

```
1P:WAIT2
 C:AT P
2P:OK
 C:AT D 1 2 295 3028
3P:IF CONNECT ENB 6
 C:
4P:IF CARRIER ENB 3
 C:A/
5P:GOTO 3
 C:
6P:WAIT 1
 C:
7P:WAIT 1
 C:
8P:TERMANAL=
 C:
9P:↑@
 C:C 60942
10P:PLEASE????
 C:DJNS
11P:@@@@@@@@@@@@
 C:SECRET
12P:↑£
 C:&FTS
13P:1_:    £
 C:    APPLE OR IBM OR HEWLET$
14P:2_:    £
 C:                TANDY OR 1
15P:3_:   £
 C:..LIMIT/2DD GT 830601
16P:4_:    £
 C:      ..P 3 HL,DD,SO/DOC=ALL
17P:£
 C:&OFF
18P:↑£
 C:DISC
19P:NECTED
 C:END
```

Compatibility Between PC/85
and PC/86 Files

The following rules and procedures apply to exchanging PC data files between PC/85 and PC/86 systems:

- PC/85 text files and control files can be retrieved by PC/86 systems. The files will be displayed in 32-column format.

- PC/86 text files can be retrieved by PC/85 systems.

- PC/86 control files can be used with PC/85 if none of the prompt or command lines of the file are longer than 28 characters.

- The PC/85 INDEX-FILE (named "INDEX") and the PC/86 INDEX-FILE (named "VINDEX") are **not** compatible. The PC/86 program disc contains two utilitiy programs to create compatible indexes:

  "XLATE" is used to create a PC/86 INDEX-FILE from a PC/85 index. The new file is named "VINDEX".

  "YLATE" is used to create a PC/85 index from a PC/86 index. The new file is named "INDEX".

- To create the new INDEX-FILE:

  1. Insert your PC program disc into DRIVE 1. Insert the PC data disc into DRIVE 0.

  2. Load the appropriate utility program into the computer by executing:

     LOAD "XLATE.1" or LOAD "YLATE.1"

  3. Press (RUN). The utility program creates the new file and copies the indexing information to that file.

PC Softkeys

PC/85 Softkeys

PC/85 FUNCTION	(k5) (k1)	(k6) (k2)	(k7) (k3)	(k8) (k4)
Home Screen	USER1 FIND	USER2 EDIT	PHONE PRINT	CONTROL COMM
FIND	---- INDEX	1'ST PAGE NEXT PAGE	---- READ#	----- HOME
EDIT	MERGE# GET#	PREV NEXT	TOP BOTTOM	SAVE HOME
PRINT	---- FORMAT	----- DUMP	----- STOP	----- HOME
COMM (Standby)	----- DIAL	----- CANCEL	----- NORMAL	----- HOME
COMM (Call Screen)	----- ----	----- -----	----- STANDBY	----- HOME
COMM (On-Line)	----- BREAK	----- SEND	----- ON/OFF	----- STANDBY
USER1	---- ----,	----- -----	----- -----	----- -----
USER2	----- ADD	----- DELETE	----- QUOTE	----- HOME
PHONE	---- ADD	----- DELETE	----- CHANGE	----- HOME
CONTROL	----- CREATE	----- EDIT	----- SAVE	----- HOME

PC/86 Softkeys

PC/86 FUNCTION	(k8) (k1)	(k9) (k2)	(k10) (k3)	(k11) (k4)	(k14) (k7)
Home Screen	EXIT FIND	USER2 EDIT	PHONE PRINT	CONTROL COMM	COPY PAPER ADV
FIND	----- INDEX	1'ST PAGE NEXT PAGE	----- READ#	----- HOME	COPY PAPER ADV
EDIT	MERGE# GET#	PREV NEXT	TOP BOTTOM	SAVE HOME	COPY PAPER ADV
PRINT	----- PRINT	----- -----	----- STOP	----- HOME	COPY PAPER ADV
COMM (Standby)	----- DIAL	----- CANCEL	----- NORMAL	--- HOME	COPY PAPER ADV
COMM (Call Screen)	----- -----	----- -----	----- STANDBY	----- HOME	COPY PAPER ADV
COMM (On-Line)	----- BREAK	----- SEND	----- ON/OFF	----- STANDBY	COPY PAPER ADV
USER2	----- ADD	----- DELETE	----- QUOTE	----- HOME	COPY PAPER ADV
PHONE	----- ADD	----- DELETE	----- CHANGE	----- HOME	COPY PAPER ADV
CONTROL	----- CREATE	----- EDIT	----- SAVE	----- HOME	COPY PAPER ADV

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