FOR ELCAP INTERNAL USE ONLY

THE ELCAP GUIDE TO ELECTRONIC COMMUNICATIONS: MAIL, PHONE AND DECNET

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CONTENTS

1.0 INTRODUCTION

1.1 PURPOSE OF THIS DOCUMENT

This document is intended to provide an overview of MAIL and other VAX-related communication facilities of interest to ELCAP staff. You should read about and utilize the facilities. See section 1.4.1 of this introduction for information on setting up an account on any of the VAX or MicroVAX systems utilized by ELCAP.

The availability of electronic communication is a great asset both in terms of productivity potential and convenience. The speed and ease of distribution inherent in electronic network-oriented communication is becoming even more apparent to ELCAP staff now that MicroVAX nodes have been installed in Portland, Seattle, and Richland.

Project functions including data processing, verification, analysis, site maintenance, and management all have come to depend on the existence of the network. As users have acquired experience with network facilities, procedures have been developed to facilitate the timely and accurate dispersal of information within, between, and among the respective project functions. Users have developed a feel for which communications are most effectively transmitted electronically and which are better suited to ordinary telephone conversations, meetings, and paper mail.

This document is divided into sections corresponding to several VAX and PC-oriented communication facilities of interest to ELCAP staff. So that you can get started quickly, each section begins with a brief overview and then proceeds with example commands and a listing of a short session with that facility. Afterwards the text gets involved in explanations and details of commands. Many users won't need to go much beyond the examples, although the additional information is provided for the inquisitive. If you have questions that go beyond the scope of this document, refer to the list of references in the appendix.

1.2 WHO WILL BENEFIT FROM THIS DOCUMENT

Most workers on ELCAP probably will use electronic mail. Levels of utilization will vary although project and task management will be among the most intensive users. The nature of utilization will vary also. Some users primarily will be recipients of mailing list distributions while others will generate frequent MAIL communications and perhaps will engage in interactive communications using PHONE and file transfers from personal computers.

This document does not assume any experience using the VAX communications facilities addressed; however, an elementary working knowledge pertaining to the VAX operating system (VMS/MicroVMS) is assumed. If you have never

used a VAX computer or do not have an account refer to the section "How to get started on the VAX" and consider participating in a Computer-Based Instruction (CBI) course on VMS available to VAX users. (The CBI course includes a section on MAIL, which may be of interest also to experienced users of VMS who have not used MAIL.) If you have questions that are not answered by the CBI course or the VMS HELP facility refer them to VAX system managers and ELCAP old hands. (The Appendix to this guide includes a list of phone numbers belonging to helpful persons.)

Experienced users of VAX communications facilities will be familiar with much of the information contained in this document. Even so, it might be useful to scan the contents as some new features are introduced that weren't available in past releases of VMS (Before 4.0). Previous users of MAIL who are somewhat rusty may want to scan the command glossaries at the end of that section, and to review the examples. Both experienced and inexperienced users are solicited to provide feedback and suggestions with application to the Users Guide so that we can improve it for the benefit of future readers.

1.3 OVERVIEW OF VAX ELECTRONICS COMMUNICATIONS

Four kinds of electronic communications are addressed in this document. The first two are MAIL and PHONE, each of which is a VMS software product associated with specific documentation from Digital Equipment Corporation. (References are listed in the appendix). The third category subsumes various VMS commands (called DEC Command Language or DCL) that somehow utilize DECnet networking facilities. The fourth category is not strictly VAX-oriented, but involves terminal emulation software on microcomputers. These terminal programs are used to communicate with the host VAX, both for ordinary interactive sessions and file transfers to/from the host. Each category is introduced here and is described in more detail elsewhere in this guide.

The VMS MAIL facility is used for "mailbox-oriented" communications on the VAX, including sending and receiving messages, files, and documents to and from other users on the system and other VAX nodes on the network. Each account has a mailbox, and it is possible to send a message to multiple accounts, using a distribution list (Standard lists are maintained by ELCAP secretaries). Senders can compose messages from within MAIL, using EDT, or simply by typing in the lines of the message. All received messages are saved in the destination account's mail file until deleted by the owner of the account.

The VMS PHONE facility resembles a collection of telephones as the MAIL facility resembles a collection of mailboxes. It is interactive, and involves placing a "call" from one terminal to another. It is possible to place "conference" calls, to place calls on "hold", and to reject incoming calls when one is otherwise occupied on the terminal.

All ELCAP MicroVAX systems and the AVAX have purchased DECnet support for VMS. As such, many DCL commands have been enhanced to utilize network facilities. It is possible, for example, to PRINT, COPY, and TYPE files on a remote DECnet node. This capability vastly improves inter-node access. DECnet capabilities have been augmented further by the PNL Information Systems Department. ISD staff have provided utilities that enable more secure and flexible network operations than would otherwise be possible.

Many ELCAP analysts have access to microcomputers and terminal emulation software (generally Persoft-VT/240). The software emulates a specialized DEC text and graphics terminal and allows the user to interact with the VAX as if he or she were using a hardware terminal (well, almost!). In addition, the software provides the additional capability of file transfer to and from the host VAX. Analysts using PCs will be able to transfer data files, MAIL messages, and other documents.

1.4 HOW TO GET STARTED ON A VAX OR AN ELCAP MICROVAX

1.4.1 Opening a New Account

Contact the system manager of the system where you need an account. A list of ISD managers and phone numbers is posted on all VAX 11/780 computer lab doors, in the "PNL VAX Computer Center Users Guide", and in the ISD newsletter. If you cannot reach the listed system manager, any of the other system managers can help you.

Request that the system manager set up a personal account for you, and be prepared to give him or her a list of projects to which you will require access (more about projects shortly). If you are setting up an account on the AVAX or another system that is managed by the Information Systems Department, you might also ask for a copy of "The PNL VAX Computer Center Users Guide".

If you have not done so previously, you will be required to fill out a New User Identification Form before opening an account. This establishes the identity of the user and provides certain required information for security purposes. Following receipt of the form (available from any system manager), the system manager will open a personal account for you. Each user has only one personal account on any one VAX, though he or she may possess an account on each of several systems.

Your account will be associated with a "username" that is unique to you. Generally, it will be based on your payroll number, and it will be the same on each of your respective VAX accounts. You will also be given a password for each account. The password is highly confidential and must not be disclosed to any other person or handled in a careless manner. You should change your password periodically or anytime that you suspect that its confidentiality has been compromised.

The AVAX and all ELCAP-owned MicroVAX systems utilize the PNL-developed Project Authorization and Accounting system. PAAS augments and extends the security and charging mechanisms provided with VMS. The idea is that the user's single personal account can be granted access privileges to one or more "project" accounts, each of which is set up with a work package. Also, more than one personal account can be granted access to the same project account, so that the users can easily share data.

ELCAP projects generally correspond to functions or studies: COMVER, DPTEAM, RESDATA, and SOFTDEV are among the many projects set up for ELCAP. Each project has a manager (who oversees activity within the project) and the manager can grant access to his or her projects. The system manager can also grant access to projects once the project manager has provided authorization to do so. In many cases, a project of the same name is found on the AVAX and one or more of the MicroVAX systems, although access privileges must be granted separately on each system. It is not possible to "$ SET PROJECT" to a project on another node.

1.4.2 Contacting the AVAX

PNL IBX Users. Users with IBX datasets need only place a call to 6373, pressing the data button when the tone is heard. This provides a direct 9600-baud connection to the AVAX. If a direct line is not available, contact the data switch at 6374, press two carriage returns approximately one second apart, and specify "AVX" followed by carriage return as the destination.

Non-IBX and external users. Users at PNL or elsewhere who do not have access to an IBX dataphone, an AVAX hard-wired terminal, or another networked VAX must access the AVAX through the telephone call-back system. In order to set this up, contact Garth Driver at 375-2359.

Users on other network VAXs. Users logged on to another PNL network VAX who desire access to the AVAX without disrupting their connection can use the "$ SET HOST PNLA" command to obtain the AVAX login sequence. On logging out from the AVAX, control will be passed back to the original VAX. (Note that usage charges on both VAXes are accrued during the time that the SET HOST command is in effect).

1.4.3 Logging on to the Computer

Following connection to the AVAX, the sign-on message is seen and the user is prompted for username and password. If a previous session was interrupted, the user is given the opportunity to re-connect with the interrupted process.

1.4.4 Computer-Based Instruction

Two CBI courses are available under VMS on the AVAX. One course is on VMS, the operating system, and the other is about EDT, the editor. Both will be of interest to ELCAP staff and each is a professionally designed tutorial by Digital Equipment Corporation Educational Services. The

courses utilize advanced display techniques and involve the student in simulated sessions with the DIGITAL software product that is the topic of the course.

Typically, a short "animation" sequence demonstrates a function or command and the student is then guided through a sample application. The student receives immediate feedback and is shown the proper syntax or key presses if an error is made. Following each section of the course is the opportunity for additional practice.

To some extent the courses are user-paced and the student can repeat a section, skip a section, or resume a section at a later time. The CBI courses are exceptionally effective when compared with traditional written materials and all ELCAP staff should avail themselves of the opportunity to use them. After all, the best way to learn to use a computer is to use a computer!

VMS course. The VMS course, on the VAX operating system, is useful to all VAX users including users of communication facilities. It covers use of common operating system commands and introduces the VMS file system. It also includes a section on the VAX MAIL facility that is a very good "hands on" introduction for first time users. The course content is the following:

VMS -- About the Course
Getting Started
Specifying Files, Directories
Creating Files, Directories
Manipulating Files
Command Procedures
Using MAIL

To invoke the VMS course, type CBI VMS at the $ prompt.

EDT course. The EDT course, on the standard VMS text editor, is an extremely useful course to VAX users who are going to edit documents or other textual material. MAIL users who create documents outside of the MAIL facility will generally use EDT. The course content is the following:

EDT -- About the Course
Getting Started with EDT
Keypad Editing
Line Editing
Multi-Buffer Editing
Advanced Features

To invoke the EDT course, type CBI EDT at the $ prompt.

2.0 VAX COMMUNICATION FACILITIES

2.1 NETWORK USE (DECnet)

2.1.1 A Smaller World

The AVAX and all of the ELCAP MicroVAXes are licensed as either DECnet end nodes or routers. What this means to you as a user is that VMS commands have been augmented to utilize the network. You can send mail to users on other nodes, for example, and can copy a file from one node to another. Other commands work similarly. Every other node on the network, in effect, is right next door.

2.1.2 The SET HOST Command

Probably the single most important facility provided as a part of DECnet to most of us is the "$ SET HOST" command. This enables you to change your host (or the node you appear to be logged onto) from one node to another. Thus if you have personal accounts on both the AVAX and ELCAP3, you could log on to ELCAP3, work on it a while, and then change your host to the AVAX. On issuing the command "$ SET HOST PNLA", you would see the AVAX logon sequence, and would proceed to logon in the usual manner. You could then work with your account and projects on the AVAX. On logout from the AVAX, you would be returned to your session on ELCAP3 (where you were logged on the whole time).

2.1.3 Examples of Other Commands

You don't necessarily have to SET HOST to another node to access the files on that node. Alternatively, you can use regular VMS commands with network specifications.

Fortunately for the users of the operating system, the designers of VMS used a highly regular syntax when they enhanced the standard VMS commands to use network facilities. All you have to do, in effect, is to prefix the node name to the regular username or file specification. Here is an example of a fully-qualified network file specification:

ELCAP3::DISK0:[D39434.DOC]MYMAIL.TXT.

The node is ELCAP3, the device is DISK0:, the account is D39434, the subdirectory is DOC, and the filename is MYMAIL.TXT.

You don't have unrestricted access to any file in any account on any node, however. In general, you will need to provide a password when accessing an object (a file or directory) over the network. This applies to commands including COPY, CREATE, DELETE, DIRECTORY, EDIT, PURGE, TYPE, etc.

This unfortunately brings up a complication from the security point of view, since you need to type in the password and anyone could look over your shoulder and read it on the screen.

Like this:

```
$ COPY MYMAIL.TXT ELCAP3"D39434 mypassword"::DISK0:[.DOC]*.*
```

As you can see, the password is clearly visible. Since COPY is probably the most frequently-used network command, the PNL Information Systems Department has developed a utility called NETCopy that prompts you for the password without echoing it to the screen. Example:

```
$ NETC MYMAIL.TXT ELCAP3"D39434"::DISK0:[.DOC]*.*
  Password? _____
```

Another utility provided by ISD is NETPrint. It allows you to access printer queues on remote nodes. Example:

```
$ NETP/ON=PNLA!!/FORM=LASER/QUEUE=LPB0: filename
```

A couple of other commands useful on the network:

```
$ SHOW NETWORK  -- to see which nodes are accessible.  Does not
                   work on the ELCAP MicroVAXes.

$ WHO nodename  -- to see which users are logged into another node.
```

Use of MAIL over the network will be covered in the next section.

2.2 MAILBOX-ORIENTED COMMUNICATIONS (MAIL)

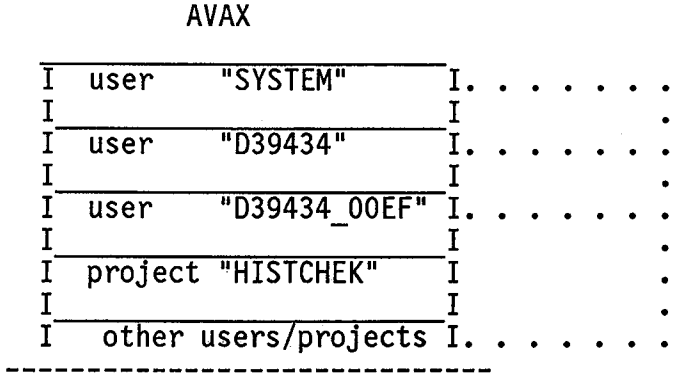
2.2.1 Overview

The MAIL facility is designed to be much like paper mail, but without the delays and postage. Each user account has its own "mailbox", and users are notified at next log in if new mail is waiting to be read. MAIL lets you compose, send, read, print, delete, and organize messages, all without leaving the MAIL facility. You can send a message to a single user, or to a group of users identified by a distribution list, and replying to a message is easy.

This section of the document will help get you started with MAIL by showing you how to accomplish most basic operations. However, you definitely should spend 20 or 30 minutes with the MAIL section of the VMS CBI course (See "Computer-Based Instruction" in this guide). It will give you a good feel for the more elementary capabilities of the MAIL facility and will let you practice your new skills without pestering other users with bogus messages. On completing the course, this Guide will help keep your new skills fresh in your mind. In addition, the command glossary included here will introduce some advanced commands that are not covered in the CBI course.

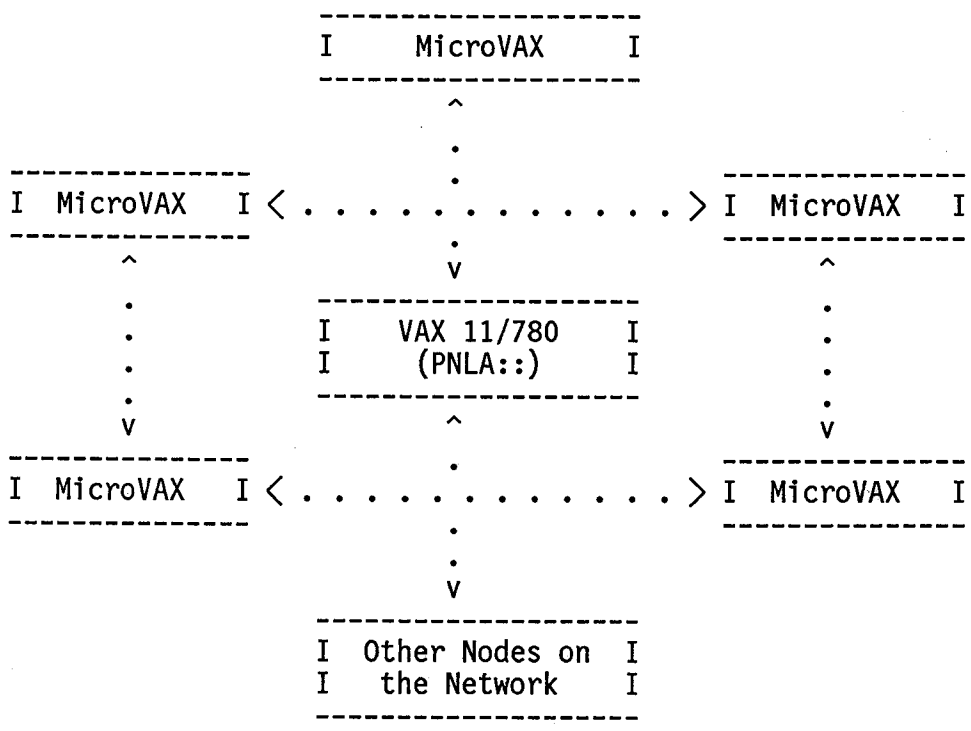
The prompt you normally see when you are within MAIL is "MAIL>". In this guide, you will see sample commands preceded by that prompt. When using the commands it is not necessary, of course, to type the prompt: MAIL will display it to you. If you are within MAIL but do not see the prompt it is probably because you are reading a message, composing a message, in HELP, or otherwise engaged in doing something where it wouldn't make sense to display the prompt. Incidentally, rather than repeating the phrase "followed by a carriage return", sample commands will be followed by "<CR>", meaning the same thing.

If you've never used an "Electronic Mail" facility on any system, this paragraph might give you a feel for this modern mode of communication. Just about any multi-user system has separate accounts or user partitions of some sort. Provided that the system supports a form of electronic mail, the users will be able to send mail messages to one another. For example, in the diagram of accounts on the AVAX below, user SYSTEM could send a message to user D39434. That message, which is an electronic analogue of paper mail, would be copied into a disk file belonging to D39434. The next time that user D39434 logged onto the system, he would be notified that he has new mail. Presumably, he would then read it and perhaps reply. Later on, we will discuss the odd user "D39434_00EF" and the example project "HISTCHEK".



It is possible to send mail messages from user to user, even if the users are on different systems. To do this, the systems must be installed on the network (as are all of the ELCAP MicroVAXes and the AVAX), and the connection must be "up" at the time the message is sent.

Take a look at the following conceptual diagram of the network. The dotted lines show how MAIL messages can go back and forth between the nodes.



Here's hoping you have a feel for electronic mail now and are ready to read about the nitty-gritty. One nice thing about electronic mail under VMS is that you can know a little or a lot, and still get the job done.

After using MAIL for even a short time, you will develop your own style of usage, becoming expert with some facilities and paying little attention to others. For example, some users will compose all messages from within MAIL; others will use the EDT editor from the $ prompt. You may prefer to organize your mail with special "folders"; other users will be content with the standard setup. Feel free to skip sections that don't seem useful to you.

2.2.2 Getting Help On-Line

Within the MAIL facility, you can get help any time you see the MAIL> prompt by typing "MAIL> HELP <CR>". HELP will show you a list of topics on which help is available. This on-line help can be very useful if you need assistance with command syntax or need to see some examples of command usage. MAIL help also is available from the $ prompt by typing "$ HELP MAIL <CR>". From within MAIL, this is what you see when you ask for help:

To obtain information about all of the MAIL commands, enter the following command:

```
MAIL> HELP *
```

To obtain information about individual commands or topics, enter HELP followed by the command or topic name.

```
MAIL> HELP [topic]
```

Additional information available:

```
/Edit          Answer     Attach     Back       Compress      Convert_files
Exit           Extract    File       First      Folders       Forward
Getting_Started           Help       Keypad     Last  Mail    Move
Next           Print      Purge      Quit       Read  Reply   Search
Select         Send       Set-Show   Spawn      Syntax        V4-Changes
```

2.2.3 Getting Started

You can do a lot with only a few commands:

```
$ MAIL       => Enters the MAIL facility.

MAIL> SEND   => Lets you compose and send a message, or send a file.

MAIL> READ   => Lets you read the messages you have received.

MAIL> DIR    => Shows you a listing of the messages you have received.

MAIL> EXIT   => Leaves MAIL and returns you to the $ prompt.
```

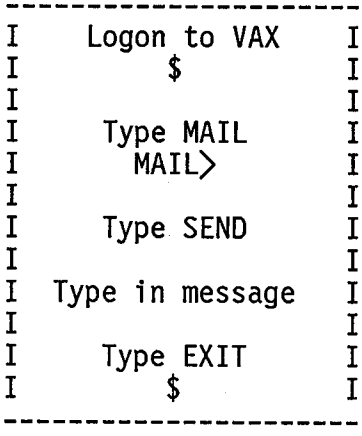
Many users of mail never go beyond the above five commands. You probably could send and read messages right now just by typing the commands and answering the prompts.

Let's think about what happens when one user sends a message to another. The sender logs on to the VAX, enters MAIL, types "SEND", tells MAIL who the message is being sent to and what the subject is, types in the message, presses "CTRL/Z", types "EXIT", and logs off the VAX.

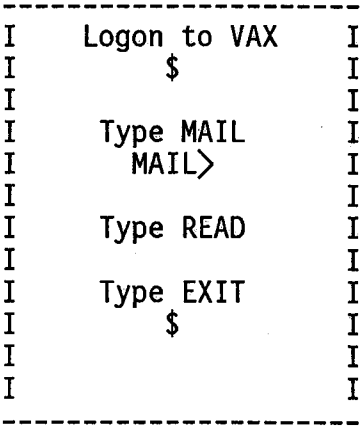
The message was sent at the time "CTRL/Z" was pressed. It was delivered to the "mailbox" of the account belonging to the receiver of the message. If the receiver happened to have been logged on at the time, he or she would have been notified right then that some new mail just arrived. If not, a message would be posted the next time that the receiver logged on.

Let's say that the receiver doesn't log on till the next day. Right after typing his password, he sees the message "You have new mail". He then types "MAIL" at the $ prompt, types "READ" at the MAIL> prompt or just presses <CR>, and the message is displayed on the screen. He then types "EXIT", and logs off the VAX.

To send a message



To read a message



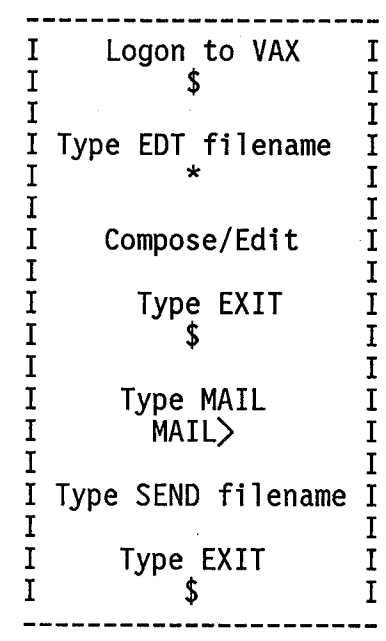
The prompt, "$" or "MAIL>", is shown when it changes.

That's really all there is to it.

. . .

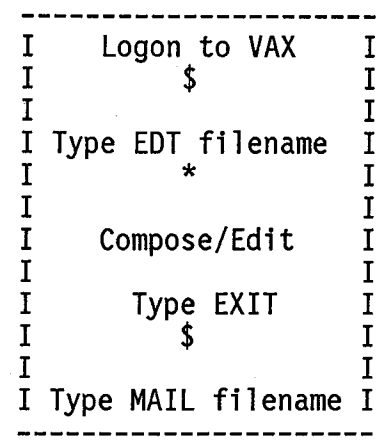
It turns out that many users prefer to compose longer messages outside of MAIL. They do this with the standard editor, EDT. This is often better because the message can be saved and edited. The send sequence changes a little bit:

To send a message using EDT



It actually isn't necessary to go into MAIL to send a message if you have composed it with EDT. You can send it from the $ prompt.

To send a message using EDT without entering MAIL



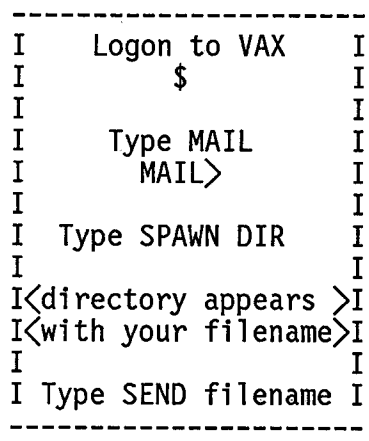
You will be prompted for the destination (where the message is to be sent). To avoid the prompt, type $ MAIL filename account <CR>".

. . .

One more scenario: You have composed a message outside of MAIL using EDT, and now you are inside of MAIL and want to send the

message. However, you have forgotten the filename. MAIL can give you a directory listing of your account without having to exit.

To get a directory listing without leaving MAIL



It turns out that "SPAWN" works with just about every other command you normally would type from the "$" prompt.

From within MAIL, typing "DIR" or "DIRECTORY" without "SPAWN" gives you a listing of the MAIL messages you have received (An important distinction: see the next page).

Let's say that you want to send a quicky message, one that you type inside of MAIL. You also have one new message to read. The screen sequence would look something like this:

```
Welcome to PNLA VAX 11/780 Version V4.5

username: xxxxx                          <== you type this
password: yyyyy                          <== you type this

You have new mail.

$
$ MAIL                                   <== you type this
  You have 1 new message.
MAIL> SEND                               <== you type this

To:   MANAGE
Subj: Opportunities for new business     <== you type this
Enter your message below.  Press CTRL/Z to complete, CTRL/C to quit.
```

It sounds like the Tahitian housing authority is interested in having us meter their huts. Shall I visit them to demonstrate our logger?

```
CTRL/Z                                          <== you type this
<The message is sent>

MAIL> READ                                      <== you type this

#1  4-DEC-1986  16:23:16                              NEWMAIL
From:  PNLA::SYSTEM
To:    PNLA::DPTEAM
Subj:  Slowness

System response time has been degraded substantially ever since
you started running the reformatter full time.  Please give us
a break.

MAIL> DIRECTORY                                 <== you type this

                                                      MAIL

#    From          Date                       Subject
1    PNLA::SYSTEM  4-DEC-1986                 Slowness

MAIL>  EXIT                                     <== you type this

$  Lo                                          <== you type this
```

This is really all you need for a minimal working knowledge of MAIL. The remainder of this section goes into more detail and introduces some advanced commands. You might want to take a look at the command glossary at the end.

2.2.4 Entering and Leaving MAIL

To enter mail, type "MAIL <CR>" at the $ prompt. You will be notified if there are any messages waiting to be read and will see the MAIL> prompt. To leave mail, type "MAIL> EXIT <CR>" and you will be returned to the $ prompt. You can also exit by typing "MAIL> QUIT <CR>", or "CTRL/Z".

You might want to enter MAIL like this: "$ MAIL/EDIT". Then whenever you compose a message, the EDT editor will be invoked automatically. Some users put the line "$ MAIL :== MAIL/EDIT" into their LOGIN.COM file.

If you should ever seem to have become hopelessly entangled within MAIL and can't seem to get out with "EXIT", type a "CTRL/Y". This will return you to the $ prompt. Note: You don't want to do this as a routine exit since your mail file will not be updated with the changes you made during the session.

2.2.5 Obtaining a Directory of Messages

You can see a list of mail messages you have received by typing "MAIL> DIRECTORY <CR>". This will display message numbers along with sender's names (accounts), dates and subjects. A typical display might look like this:

NEWMAIL

#	From	Date	Subject
1	MANAGE	1-JAN-1987	Raises for ELCAP personnel
2	RESVER	2-JAN-1987	Verification
3	SPONSOR	5-JAN-1987	Richland Visit

The above directory listing pertains to messages in the "NEWMAIL" folder (see the section on folders, below). This is the directory listing you will see if you have any unread messages and if you have not selected another folder with the "SELECT" command. If you do not have any unread messages the listing will show you messages in the "MAIL" folder, that is, historical messages you have read but have not deleted.

The "DIRECTORY" command can be used with other qualifiers such as "/SINCE=" and "BEFORE=". An example command would be: "MAIL> DIRECTORY/SINCE=1-JAN <CR>".

For additional information on the directory command, type "MAIL> HELP DIRECTORY <CR>".

2.2.6 Reading Messages

The "READ" command allows you to read messages you have received. If you have any unread messages, typing "MAIL> READ <CR>" will display the first screen of the oldest unread message you have (Remember, unread messages are stored in the "NEWMAIL" folder). You can also type just <CR> from the "MAIL>" prompt: the effect is the same.

If you don't have any unread messages, "MAIL> READ <CR>" will display the first screen of the oldest message in your MAIL folder. To advance to the next screen, and the next message if there is one, type <CR> after you have finished reading each screen.

If you have issued a "DIRECTORY" command, you can type "READ" followed by the message number of the message you want to read. For example, "MAIL> READ 1 <CR>" would display the first screen of the message from MANAGE. Typing "MAIL> READ NEWMAIL 1 <CR>" would have the same effect. If you wanted to read mail from a different folder, you could substitute "MAIL" or "WASTEBASKET" for "NEWMAIL" and use the appropriate message number.

You can use the "READ" command with qualifiers such as:

"/BEFORE=" -- works as it does with "DIRECTORY".
"/SINCE=" -- same idea.
"/NEW"   -- another way to read unread messages.

2.2.7 Composing and Sending Messages

Two methods are available to compose messages. The first is to use the EDT editor to write and save the message (or "file") externally to MAIL. Some experienced EDT users will prefer this method as it does not require the user to enter MAIL until he or she is ready to actually send the message (Even then, you don't have to actually enter MAIL. It is possible to send a message using a $ command line, as in the following: "$ MAIL filespec account").

A second method is to compose the message from within MAIL. You do this with the "SEND" command. In the simplest example, you type "MAIL> SEND <CR>". MAIL will then prompt you for the name of the account you are sending the message to, and the subject of the message. You then type the message, ending each line with a carriage return, and concluding the message with a "CTRL Z". The message is then sent.

On the screen, the sequence would look something like this:

```
MAIL> SEND
To:    MANAGE
Subject:  TIME OFF FOR MEDITATION
Enter your message below.  Press CTRL/Z to complete, CTRL/C to quit:


<Here you type the message>
.
.
.

<Here you press CTRL/Z to complete the message>
<The message is sent>
MAIL >
```

This method works fine for sending short, casual messages that don't need to be edited extensively. The limitations are that you can't save the message to send at a later time (unless you send it to yourself!) and it isn't even possible to "move back" a line to correct an error in the message text.

A better method is to invoke EDT from within MAIL. This requires that you know a little about EDT (See the CBI course), but the method is

much more powerful and is the only realistic option for composing messages longer than a paragraph or so from within MAIL. To use send with EDT, type "MAIL> SEND/EDIT <CR>". You will be prompted for the name of the account you are sending the message to, the subject, and will be placed in EDT "insert" mode. Simply type and edit your message, and press CTRL/Z at the end. Now in EDT line mode, type "EXIT" to send the message and return to the mail prompt. If you had wanted to save the message as a file, you could have typed "EXIT filename" or have used the EDT "WRITE" command, etc. You can send a copy to yourself with "MAIL> SEND/SELF".

If you had entered MAIL with the "$ MAIL/EDIT <CR>" command or use the ELCAP standard method of invoking mail described in Section 2.2.10, SEND by itself would automatically call up the EDT editor. You can also invoke EDT from within MAIL to edit and send a file that already exists. To do this type "MAIL> SEND/EDIT filename <CR>". Then proceed as in the paragraph above. If you merely want to SEND the file without editing it, use "MAIL> SEND filename <CR>".

It is possible to send a message to more than one user by: specifying multiple usernames at the "To:" prompt, separating each by a comma, or using a "mailing list", discussed in a subsequent section.

When you send a message to another user, his or her terminal will beep if he or she is logged on to the account, and the message "You have new mail." will appear on the screen. If the other user is not logged on, he or she will be notified at next login. In addition, when the mail recipient next enters the MAIL facility, a message similar to "You have 1 new message" will appear on the screen.

2.2.8 Replying to Messages

You can use the "REPLY" command or the "ANSWER" command to reply to a message you have just read. These work much like the "SEND" command, discussed above, except that the reply is directed automatically to the sender of the message that you just read.

REPLY and ANSWER may be used with /EDIT, to invoke the EDT editor. The command "MAIL> REPLY filename <CR>" may be used to send an existing text file in reply to a message. "MAIL> REPLY/SELF <CR>" gives you a copy.

2.2.9 Mailing Lists

Mailing or distribution lists are lists of accounts to which messages can be distributed. Each list is simply a text file containing account names. This saves you from having to send the message to each individual account.

If you have a distribution list in your account called TASKLEADERS.DIS,

you could answer the "To:" prompt of the "SEND" command with @TASKLEADERS, and the message would be sent automatically to each account listed in TASKLEADERS.DIS.

An example screen sequence would look like this:

```
MAIL>  SEND
To:    @TASKLEADERS
Subject:  NEW MEETING SCHEDULE
Enter your message below.  Press CTRL/Z to complete, CTRL/C to quit:

<Here you type the message>
.
.

<Here you press CTRL/Z to complete the message>
<The message is sent>
MAIL >
```

You can even have nested distribution lists, where one distribution list includes the names of one or more other distribution lists.

2.2.10 ELCAP Distribution

A special username definition file is maintained for ELCAP personnel. It is found on the AVAX and each ELCAP MicroVAX in

ELCAP$INFORM:[LOGIN]ELCAPID.TXT.

The file allows ELCAP users to use person's names instead of personal project names (i.e., D3xxxx) when sending electronic mail. Most staff names are already in the file, which is maintained in alphabetical order. In most cases, the last name is used in the file. For cases in which two staff members have the same last name, the initial of the first name is appended to the last name (e.g., STOKESG for Gerry Stokes and STOKESR for Robert Stokes).

Each line of the file defines a symbol to stand for a personal project name. For example, "$ DEFINE LUCASS ELCAP3::[D39434]" enables users to send mail to LUCASS. You should edit the file and add your own name if it isn't already included.

To enable your account to pick up the names, edit your LOGIN.COM file and add a line that reads:

"$ MAIL :== @ELCAP$INFORM:[LOGIN]MYMAIL"

This also will cause MAIL to use EDT automatically when you compose messages, as if you had typed "$ MAIL/EDIT".

2.2.11 Saving and Printing Messages

MAIL messages that you receive are automatically stored in your mail file. The messages remain there until you delete them. No special commands are necessary to ensure that the messages remain stored for an indefinite period of time. From time to time, however, you may want to save a message in an external VMS sequential file (This is an ordinary text file that would show up in a directory listing from the "$" prompt). The file could then be edited, copied to another directory, or what have you.

Use the "EXTRACT" command to save a message to an external file. "MAIL> EXTRACT filename" will save the most recently read or specified message to "filename.TXT" in your current directory. Here is a sample screen sequence:

```
MAIL> DIRECTORY

                                                        MAIL

#     From      Date         Subject
1     MANAGE    1-JAN-1987   Raises for ELCAP personnel
2     RESVER    2-JAN-1987   Verification

MAIL> 1
MAIL> EXTRACT RAISES
MAIL> SPAWN DIR

 DIRECTORY DISK2:[xxxx]
 .
 RAISES.TXT
 .
 Total of xx Files, YY,ZZ Blocks.

 MAIL>
```

Note that MAIL appended ".TXT", the default suffix, to RAISES. You could have specified a different suffix in the EXTRACT command.

Printing messages is quite similar to extracting them. For example:

```
MAIL> 1
MAIL> PRINT
MAIL>
```

You can specify the queue:

```
MAIL> PRINT/QUEUE=LPA0:
```

Normally, messages don't actually start printing until you exit MAIL. You can make then start immediately with the "/PRINT" qualifier

```
MAIL> PRINT/PRINT
      Job mail (queue MAIL_QUEUE, entry nnn) started on QUEUE
```

You already know that MAIL normally saves received messages in the mail file (That file will be SYS$LOGIN:MAIL.MAI unless you have changed the default directory and file). Large messages, however, are saved externally to the mail file with filenames of the form:

MAIL $ nnnnnnnnnnnnnnnnnnnn.MAI

Do not delete these files or you will delete the messages contained in them.

2.2.12 Folders

Folders are partitions MAIL uses to separate messages that you have received. By default, MAIL has three folders, called "NEWMAIL", "MAIL", and "WASTEBASKET". NEWMAIL is used to store unread messages: when you are informed that "You have new mail.", the messages are in the NEWMAIL folder. Immediately after reading new messages, they are moved to the MAIL folder. The MAIL folder contains all messages that have been READ and have not been DELETEd. When you delete a message, it moves into the WASTEBASKET folder.

You can use the "DIRECTORY" command to get a list of folders: Type "MAIL> DIRECTORY/FOLDERS <CR>". Unless you have created your own folders, the display will look like this:

```
  NEWMAIL                    MAIL                    WASTEBASKET

MAIL>
```

If this FOLDER business sounds a little overwhelming, it need not be, as MAIL takes care of its own folders, and the beginning user can ignore most everything about folders if he or she keeps in mind that new messages are kept in one place and old messages are kept in another. On the other hand, folders can work to your advantage if you use them to organize your messages. For example, an ELCAP user might keep weekly schedules in a folder called "CALENDAR" and quarterly reports in a folder called "REPORTS". Many of the MAIL commands accept a folder name as a qualifier.

Proficient folder users will learn to use the commands:

COPY - Copies a message to another folder without deleting it from the current folder. Creates the destination folder if it does not already exist.

```
MAIL> 2                    <== selects the message to be copied
MAIL> COPY myfolder        <== selects the destination folder
```

```
Folder MYFOLDER does not exist.
Do you want to create it (Y/N, default is N)? Y <== you type "Y"
%MAIL-I-NEWFOLDER, folder MYFOLDER created      <== confirmation
```

MOVE - Just like COPY except that the message is deleted from the current folder. Creates the destination folder if it does not already exist.

FILE - Exactly like MOVE. The two are interchangeable.

SELECT - Selects the current folder. The following commands are affected:

COPY DELETE DIRECTORY EXTRACT FILE MOVE READ SEARCH

You also can use COPY and MOVE to create another mail file. The default mail file is MAIL.MAI. The following command copies a message to folder "newfolder" in a mail file called "MY.MAI":

```
MAIL> COPY NEWFOLDER MY.MAI
```

See "Customizing the MAIL environment" for instructions on how to access the new mail file.

2.2.13 Deleting Messages

The DELETE command is used to get rid of messages that you have received but do not want to keep any longer. You can delete one message at a time or all of the currently selected messages at once.

```
MAIL>
MAIL> DIRECTORY                    <== your currently selected messages

                                                          MAIL

#     From     Date          Subject
1     MANAGE   1-JAN-1987    Raises for ELCAP personnel
2     RESVER   2-JAN-1987    Verification

MAIL> 2                            <== selects message to be deleted
MAIL> DELETE                       <== gets rid of message from RESVER
MAIL> DELETE/ALL                   <== gets rid of the rest (message 1)
MAIL>
```

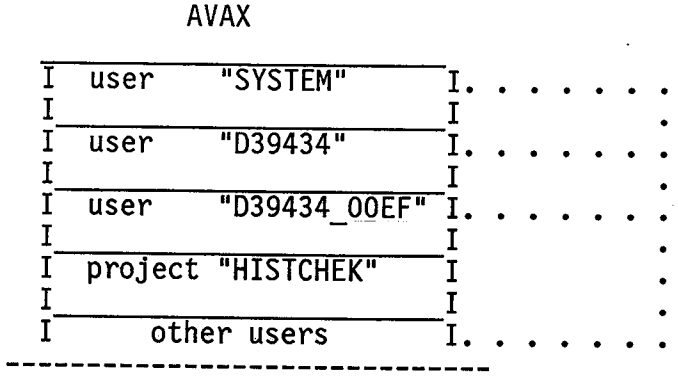
That's all a beginning user needs to know about DELETE.

It turns out that messages don't disappear until you EXIT MAIL or use the PURGE command. What happens is that messages are moved from the current folder to the WASTEBASKET folder when DELETE is

used, and the WASTEBASKET folder is emptied on EXIT or PURGE. This means that you can "recover" messages in WASTEBASKET by MOVEing or FILEing them back into another folder, usually MAIL, before you EXIT MAIL or use PURGE. Note: The QUIT command does not empty the WASTEBASKET folder.

2.2.14 Mail and Projects

Here is a diagram you've seen before:



Notice the existence of a user called "D39434_00EF". There is also a project called "HISTCHEK". What "D39434_00EF" represents is a "project cross-user name", or the link between user D39434 and project HISTCHEK. The "_00EF" is just a number and doesn't have any special significance to you. Another way of thinking about this is that user D39434 becomes user D39434_00EF as soon as he sets his project to HISTCHEK.

What does this have to do with electronic mail, you ask. It means that you need to give some thought to whether you want to send/reply to a user or a cross-user name. If you send to a cross-user name, that user won't know that new mail has arrived until setting project to that project, unless a forwarding address has been set to the user's personal account (This is easy to do: Just SET PROJECT, then enter MAIL. Then SET FORWARD Dnnnnn).

Mail messages are never sent or received from projects. This is why no dotted line is drawn to project HISTCHEK. It is recommended that you send mail to personal accounts (e.g. D39434) rather than project cross-user names (e.g. D39434-00EF).

2.2.15 Customizing the MAIL Environment

The command "SET" is used to tailor the MAIL environment and to set certain defaults that apply to other commands. The complementary command "SHOW" displays the characteristics of the MAIL environment.

SET and SHOW take the following qualifiers:

COPY_SELF SEND [NOSEND]

Typing "MAIL> SET COPY_SELF SEND <CR>" results in a copy of each message you send being sent to your account. NOSEND is the default. Typing "MAIL> SHOW COPY_SELF <CR>" shows you the present setting of COPY_SELF.

. . .

FILE

By default, your mail file is MAIL.MAI. You can create a different mail file with the COPY or MOVE command (See "folders"). You can set the currently active mail file with the FILE qualifier. Typing "MAIL> SET FILE filename <CR>" does this.

. . .

FOLDER

You can set your current folder with "MAIL> SET FOLDER foldername <CR7". The folder must be one of the default folders "NEWMAIL", "MAIL", or "WASTEBASKET", or a folder you created with COPY or MOVE.

. . .

MAIL_DIRECTORY

Normally your mail file, "MAIL.MAI", resides in your login directory (The root directory in your account). You can specify that it be placed in a subdirectory, one that you created with the VMS command "$ cre/dir [.subdirectory_name]", with the MAIL_DIRECTORY qualifier. You would type "MAIL> SET MAIL_DIRECTORY [.subdirectory_name] <CR>".

. . .

PERSONAL_NAME

This qualifier lets you specify a name that is to be appended to the end of the "From: " field at the beginning of messages you send. It enables receivers to identify which person sent a message, without having to read the body of the message or memorize payroll numbers. You would type: "MAIL> SET PERSONAL_NAME "my name" <CR>".

. . .

All of the above qualifiers, of course, can be used with SHOW. To see all of the environment settings, type "MAIL> SHOW/ALL <CR>".

Advanced users can customize the MAIL environment in other ways. For example, you can define a single keyboard key to represent a MAIL command with "DEFINE KEY". You can also use DEFINE to assign a destination to a string, for example:

"MAIL> DEFINE LUCASS PNLA::D39434 <CR>".

If you are using a DEC-Type terminal or terminal emulator, you can use the keypad keys. The keypad keys are pre-defined:

PF1 GOLD	PF2 HELP FOLDER	PF3 EX/MAIL EXTRACT	PF4 ERASE SELECT MAIL
7 SEND SEND/EDIT	8 REPLY REPLY/EDIT	9 FORWARD FORWARD/EDIT	--- READ/NEW SHOW NEW
4 CURRENT CURRENT/ED	5 FIRST FIRST/EDIT	6 LAST LAST/EDIT	, DIR/NEW DIR/MAIL
1 BACK BACK/EDIT	2 PRINT PRINT/PRINT	3 DIR DIR/STAR	ENTER
0 NEXT NEXT EDIT		FILE DELETE	SELECT:

Please refer to the MAIL reference in the appendix for help in using these advanced features.

2.2.16 Glossary of MAIL Commands

ANSWER - Sends a reply to the sender of the message you just finished reading. Can also send a file in reply, if you specify ANSWER filename. Works the same as REPLY.

COPY - Copies a message from one folder to another. Can also create another mail file.

DELETE - Deletes message you just read or the message number that is specified. The message is moved to the WASTEBASKET folder.

DIRECTORY - Displays a directory of messages or folders, including message numbers, sender's name, date, and subject.

EXIT - Empties the WASTEBASKET folder and leaves the MAIL facility. CTRL/Z does the same thing.

EXTRACT - Places contents of one or more messages in an external sequential VMS file.

FILE - Same as MOVE, see below.

FIRST - Displays the first message in the current folder.

FORWARD - Sends a copy of message just read to another user.

MAIL - From within MAIL, works like SEND, see below.

MOVE - Copies a message from one folder to another and deletes from the first folder. Can also create another mail file.

NEXT - Skips to the next message.

PRINT - Prints a message on the default line printer.

QUIT - Leaves the MAIL facility but does not empty the WASTEBASKET folder.

READ - Displays messages. You can specify folder and message number.

REPLY - Works the same as ANSWER.

SEARCH - Searchs current folder for the message containing "text string".

SELECT - Selects a folder as the current folder.

SEND - Allows you to compose and send a message. Optionally invokes the editor.

SET - Allows you to set a number of MAIL "environment" parameters. These let you "tailor" the MAIL facility.

SHOW - Shows MAIL "environment" parameters.

SPAWN - Executes a VMS command from within MAIL

2.3 INTERACTIVE COMMUNICATIONS (PHONE)

PHONE is a useful facility when, for example, you can't get ahold of someone by ordinary voice telephone but happen to know that the person is logged on to one of the networked nodes. In this case, provided that you both are using DEC-supported terminals or emulators, you can dial up the person with PHONE and carry on a split-screen "conversation". It is possible to get fancy and conduct conference calls, put people on "HOLD", and even "REJECT" an incoming call if it isn't convenient to accept it at the moment.

2.4 ENTERING PHONE

Simply type "$ PHONE <CR>". Your terminal's screen will clear and you will see a display similar to the following:

```
                    VAX/VMS Phone Facility                  14-JAN-1987
%
```

The cursor will be to the right of the percent sign. At this time, PHONE is idle, waiting for you to enter a command. Let's ask for HELP...

```
                    VAX/VMS Phone Facility                  14-JAN-1987
% HELP<CR>
Press any key to cancel the help information and continue.
```

HELP

The HELP command allows you to obtain information about the PHONE facility. To obtain information about an individual command or topic, type HELP followed by the command or topic name:

```
HELP topic
```

Additional information available

```
ANSWER      Characters      DIAL    DIRECTORY    EXIT    FACSIMILE    HANGUP
HELP        HOLD            MAIL    REJECT       Switch_hook          UNHOLD
```

HELP inside of PHONE is quite useful and you probably won't need to refer to the reference manual.

2.4.1 Who Can Be PHONEd?

Simply stated, any interactive user logged on to your system or a networked system can be PHONEd, provided that you both have DEC-supported terminals. Certain exceptions exist, and common courtesy dictates that you not PHONE a user you know to be engaged in a task that shouldn't be interrupted.

You can find out who is available on your system by using the "$ WHO" command outside of PHONE, or from within PHONE you can use the "DIR" command.

```
                        VAX/VMS Phone Facility                  14-JAN-1987
% DIR<CR>
Press any key to cancel the directory listing and continue.

-------------------------------------------------------------------------

Process Name        User Name       Terminal        Phone Status
RADER_0112          D3A393_0085     VTA32:          available
LUCAS_0138          D39434          OPA0:           available
```

You PHONE User names, not process names. Thus, in the above instance, D39434 could place a call to D3A393_0085.

You can also use DIR to find out who is on other networked systems. An example command would be: "DIR ELCAP1<CR>".

All the examples so far have been from the PHONE command prompt (that is, the "%" on the command line). When you are actually engaged in a conversation, your cursor will move down into the top conversation window on the screen. The top window shows what you type; the bottom shows what the other party types. Here is an example screen in the middle of a conversation:

```
                        VAX/VMS Phone Facility                  14-JAN-1987
%

-------------------------------------------------------------------------
                        ELCAP3::D39434

Hi Dawn.  Do you have any idea why DISK0: only has 7 blocks free?


-------------------------------------------------------------------------
                        ELCAP3::D3A393_0085.

Not really.  You might check with the rest of DPTEAM to see if the
REFORMATTER got caught in a loop or something.
```

During a conversation, either party can type at any time. Each window will independently scroll when it is necessary to display more of the conversation.

2.4.2 Initiating a Call

To call someone, go into PHONE with "$ PHONE<CR>". Then type "% DIAL Username<CR>" (The percent is not required, unless you are already in the middle of a conversation). Optionally, Username may be prefixed with a node name, as in "% DIAL ELCAP3::D39434<CR>".

If the party is logged on, that user's terminal will "ring" until he or she ANSWERs or REJECTs the call, or until you press any key, thereby terminating the call attempt (In effect, you are hanging up).

2.4.3 Answering or Rejecting a Call

When someone places a call to you, your terminal will repeatedly display the message: "Someone is phoning you". This will continue until you enter PHONE ("$ PHONE <CR>"), and either ANSWER or REJECT the call, or the caller hangs up. To answer the call, simply type "% ANSWER <CR>" (The percent sign is not required unless you are already engaged in a conversation). To reject the call and stop the ringing, type "% REJECT <CR>", and leave PHONE with "% EXIT <CR>".

When you ANSWER a call, your cursor will move into the bottom conversation window and you can begin to type immediately.

2.4.4 Entering a Command While Conversing

If you are in the middle of a conversation and wish to do something at command mode, simply type a percent sign and the cursor will move back up to the command line. Then you can type "DIR" or whatever command is desired. You can put a conversation on "HOLD" and leave PHONE temporarily to do something else.

You can even DIAL another user or ANSWER an incoming call. This is how you set up a conference call. A separate conversation window will open up for each party. Following completion of the command, the cursor will move back to your conversation window.

2.4.5 Hanging Up

While engaged in a conversation, you can hang up by typing <CTRL Z> or by typing "% HANGUP <CR>" (the percent sign is required here).

2.4.6 Leaving PHONE

Do this by typing EXIT at the command line.

3.0 MICROCOMPUTER TERMINAL EMULATION FACILITIES

Persoft VT/240 (Software package for IBM PC and compatibles)
Optimation VT 125 (Software package for HP Series 200/220/300)

These are the recommended terminal emulation packages. Each can be used to log onto a VAX or a MicroVAX. Both handle VT100-family sequences and TEKTRONIX 4010-family graphics displays and each can be used to upload or download files to or from any of the VAX or MicroVAX systems. Please refer to the current manufacturer's user documentation for the package you wish to use.

A few words about file transfers here might help get you started. Files, both text and binary, can be moved between a microcomputer and a VAX or a MicroVAX in either direction. The transfer protocol might or might not involve an error-checking scheme, which causes retransmission of data blocks when an error is detected. If no error-checking protocol is available, the user will have to monitor the quality of the transmission and/or check the integrity of the destination file.

When using Persoft VT/240 to transfer files, special VAX software is used to enable an error-free communications protocol between the PC and the VAX. This ensures that the text or binary files match on each end of the transfer. Refer to "Learning to use VAXPC" (available from the Information System Department) for guidance on using the protocol and configuring your emulator.

The Optimation software uses no error checking, and the user should take care that no errors creep into the destination file. Only text files (no non-printing characters except for end-of-line sequences) should be transferred using the Optimation software. The Optimation documentation describes the process of uploading or downloading a file. In general, on the VAX end, you will "$ TYPE" a file to the HP microcomputer when downloading. When uploading, you can open a new file with "$ CREATE filename". Things will probably work out best if the Optimation emulator is using "Full XON-XOFF" protocol and your VAX terminal is configured with "$SET TERM/TTSYNC/HOSTSYNC".

Another emulator used by ELCAP personnel is Microsoft Windows Terminal on the PC. For proper operation with VMS or MicroVMS, pull down the terminal menu and select "ANSI". After logging into the VAX, type "$SET TERM/DEV=UNK/ANSI". This is necessary so that EDT keypad mode and other operations which normally use hardware scrolling will work correctly. Windows Terminal is capable of transferring files but it is recommended that you use VT/240 with its special protocol to do so.

APPENDIX A

LIST OF REFERENCES

List of References

VAX/VMS Mail Utility Reference Manual
Order Number: AA-Z421A-TE
September, 1984
Digital Equipment Corporation
Maynard, Massachusetts

VAX/VMS Phone Utility Reference Manual
Order Number: AA-Z427A-TE
September, 1984
Digital Equipment Corporation
Maynard, Massachusetts

VAX/VMS User's Manual
Order Number: AI-Y517A-TE
April, 1986
Digital Equipment Corporation
Maynard, Massachusetts

Learning to Use VAXPC
Author: PM Peterson, Information Systems Department
July, 1985
Document for "Internal Use Only"

These manuals are available at all PNL VAX computing centers.

APPENDIX B

WHOM TO CONTACT WITH QUESTIONS

Whom to Contact with Questions

AVAX system manager (AVAX questions only)
Wendy Howden 375-2784

Telecommunications problems
Garth Driver 375-2359

Mailing lists
Fran Kupfer 375-3817

Author of this guide
Steve Lucas.....375-2036