

VM/CMS User Guide and Reference Manual

Corporate Computing Center
Engineering Services, Building 20CH

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INTRODUCTION

Welcome to the world of VM/CMS SP3.0. The purpose of the manual is to acquaint new users like yourself to VM/CMS and to give you a working knowledge of the utilities and services available to you.

This manual augments the recommended IBM manuals which are listed within and should be used in conjunction with these and the online HELP facility. Any further questions can be directed at the Engineering Services Group whose names and phone numbers are listed within also. We welcome any comments or suggestions you might have about this manual.

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WHAT IS VM?

VM is an operating system's operating system which uses the concept of Virtual Machines as opposed to Real Machines, to allow you to customize your working environment the way you see fit. This virtual machine is a subset of the real computer system, but every virtual machine has its own operating system, its own file system, disks, tape drives, and its own operator's console which is your terminal.

WHAT ARE THE PIECES OF VM/CMS AT CCC?

1. CMS is the Conversational Monitor System, a single-user operating system that will actually run your programs in your virtual machine. You may use CMS commands to do such things as create files, print files, and erase files.
2. CP is the Control Program component of VM, it does all the functions that deal with the Real Machine, such as all memory and paging functions, device I/O, and allocation of real devices to individual virtual machines. CP commands can be used by the operator and you to do virtual device definitions, query system status, and even debug your programs.
3. RSCS is the Remote Spooling Communications Subsystem, which allows VM users to send spool files to other users or systems. RSCS exists as a virtual machine which owns TP lines and channel to channel adapters. Someday it may even talk to MRJE.
4. TROLL is an econometrics package from M.I.T. which is used by economists and statisticians to simulate marketing and production conditions. It can be run as a IPLable operating system, or run from within CMS as a load module.
5. UTS is Amdahl's Universal Timesharing System, which the rest of the world knows as UNIX. Currently UTS is only available to the users of VM2. The latest release of UTS, version 5 is now installed on the VM2 machine. The implementation of UTS allows UNIX applications to run in a mainframe environment, instead of a minicomputer. Many users can be logged onto a single UTS virtual machine simultaneously.
6. MTS is the Michigan Terminal System. This system, running on VM2, supports a teleconferencing system for all engineers in the company. This teleconferencing system is called Confer.

ACCESS PROCEDURES

Methods of accessing the Data Center:

1. Leased line terminals. You can attach a multiplexor to each end of the line allowing up to 8 users simultaneous use of the same line.
2. Leased line MRJE. Some users prefer to submit their jobs through their local 3000 which has a leased line to the Computing Center. This eliminates the interaction that most of the packages provide.
3. Dial-up MRJE. For infrequent users of MRJE, it may be more cost effective to occasionally dial into the Computing Center.
4. Dial-up terminals. This method is generally more expensive than a leased line. It is only beneficial when usage from your site is very low. It is also slower than leased line terminals (1200 baud) and offers very little error correction

Pedro Access Procedures

If your line is connected to PEDRO, our local dataswitch, you will need to execute the following to connect you to the computer system.

1. Hit the carriage return twice to get PEDRO's attention
2. PEDRO will respond with "REQUEST P1?" or "REQUEST P2?"
3. Type in a valid system I.D. word and carriage return
Valid system I.D. words are listed below:
VM1S1 - VM1 through the 7171
must use even parity
VM1TWX - VM1 Through the 3705 - Line Mode. Terminal must be set at 1200 or 2400 baud, parity none, and half duplex or local echo on.
VM2S1 - VM2 through the Series/1
must use even parity
VM1TWX - VM2 through the 3705 - Line Mode. Terminal must be set at 1200 or 2400 baud, parity none, and half duplex or local echo on.
4. Terminal will display PAUSE and then either an error message or a CONNECTED TO xx-yy message.
5. If CONNECTED TO xx-yy message, hit carriage return again. See Appendix B for PEDRO messages and their meanings.
6. If the system I.D. word you entered at step 3 ended with the characters S1 then the Series/1 will prompt you to enter your terminal type, otherwise you will receive a period for a prompt.
7. Follow the logon procedures outlined below
8. At the end of your session logoff as usual

Logon Procedures

1. a. If you use a full-screen terminal (via VM1S1, VM2S1 or an IBM 3278 terminal) the first thing you will see is the VM/CMS Logon screen consisting of the HP logo. This screen contains the Engineering Hotline telephone number and it also tells you what machine you are running (VM1 or VM2) on.

b. If you use a line mode terminal (via VM1TWX or VM2TWX) the first prompt you will receive will be a period. Skip to step 3.
2. Press Return to clear the screen. (see ****NOTE**** below)
3. Type: Logon userid (logon can be abbreviated as L) and press return.
4. The system will prompt you with ENTER PASSWORD:
5. Now type in your CP LOGON password and press return.
6. The system may send you a few messages including the date and time of logon, whether or not you have any files in your virtual reader, printer, or punch. You will receive a ready message prompting you for further input. The short form of the message looks like "R;" and this is the default at this installation. When you connect via VM1TWX or VM2TWX you will receive a period as a prompt from VM.

Listed below is what a typical logon session would look like:

L DEMO

ENTER PASSWORD:

```
FILES: 001 RDR, NO PRT, NO PUN
LOGON AT 08:54:30 PST TUESDAY 01/08/85
VM/SP REL 3 10/26/84 17:27
R;
```

****NOTE****: any time this manual says press return it will be understood that if you are using an IBM terminal you use the enter key, and on HP terminals you are to use the return key.

There are certain advantages of logging your terminal on through the Series/1 (VM1S1 or VM2S1). One advantage is that it allows your HP terminal to emulate an IBM 3278 terminal. This facilitates the use of program function (PF) keys (PF keys are similar to softkeys). Another advantage offered by the Series/1 is full-screen editing. This allows you to display part of a file on your screen and to make alterations to your text you only need to move your cursor around the screen with the cursor keys to make the changes you want. Appendix A of this guide includes the keyboard definitions of most HP terminals that you would use. This tells you what key sequences map into the program function keys, etc.

Logoff Procedures

1. Type the command LOGOFF
2. The system will respond with a message that looks like the following:

```
TIME IS 15:07:48 PDT THURSDAY 11/10/83 CONNECT= 05:12:32 VIRTCPU=
000:36.39 TOTCPU= 001:22.55
```

GETTING YOUR ACCOUNT SETUP

Setting up a profile exec

Every time you logon to CMS your PROFILE EXEC, if you have one, will be executed. A PROFILE EXEC must have a filename PROFILE and filetype EXEC. It can contain the CP and CMS commands that you normally issue at the start of each session. A typical PROFILE EXEC may contain statements that describe the virtual console, initialize macro and text libraries, establish linkages to other virtual machines, set PF keys, and define synonyms for frequently used commands.

A PROFILE EXEC might contain statements similar to the following:

```
/* this is a sample profile exec written in REXX          */
/* a profile exec is executed every time a user logs on */
/* Set the PF keys */
'exec setpf'
/* define user synonyms */
'synonym mysyn'
/* Turn on the long form of the error messages */
'cp set emsg on'
/* ACCESS the CCCUTILS disk          */
'access 19c p'
exit
```

Where:

The first line in the file must be of the form /* comment */. This tells the exec processor which interpreter to use. In this case we are using REXX. SETPF is an exec that defines the PF key settings. SYNONYM MYSYN sets synonyms for frequently used commands. Access statements will provide access to other disks that you have already been linked to in your directory. Type HELP PROFILE to get a list of additional commands that others have found helpful in a profile exec. Setting the long form of the error message on will enable better error diagnostics. The ACCESS 19C P command will access the user to a CCC utility disk. Many CCC written utilities such as the USERS, and RMTUSERS

commands reside on this disk. More will be said about this disk later in this manual.

Setting up Program Function (PF) Key Definitions

If there are CP and CMS commands that you use frequently, you can set PF keys to execute those commands. Some examples of commands you might wish to use PF keys for are:

```
CP QUERY NAMES
CP QUERY RDR ALL
QUERY SEARCH
CP IND LOAD
```

To set program function keys (pf keys) to perform these functions, set up a file with filename SETPF and filetype EXEC. Enter these statements.

```
'CP SET PF1 RETRIEVE'
'CP SET PF2 IMMED CP QUERY NAMES'
'CP SET PF3 IMMED CP QUERY RDR ALL'
'CP SET PF4 IMMED QUERY SEARCH'
'CP SET PF5 IMMED CP IND LOAD'
```

The IMMED option specifies that the command is to be executed as soon as the PF key is pressed. By eliminating the IMMED option, when the PF key is pressed, the command will appear in the user input area at the bottom of your screen and will only be executed if you press return. If you are logged on and you forget how your PF keys are defined you can use the command QUERY PF.

When using an HP terminal, the PF keys are obtained by using the ESC key followed by the appropriate numeral. For example, PF1 would be used by pressing the ESC key and then pressing the 1 key. PF2 would be pressing the ESC key and then pressing the 2 key. PF12 would be the key sequence ESC - and PF13 would be ESC = . There are 24 PF keys. PF13-PF24 can be obtained by pressing the ESC key and then holding down the SHIFT key and pressing 1 - 0, _ and +. So PF14 would be the key sequence ESC @ and PF15 would be ESC # and so on.

Other PF keys can be used for clearing the screen and halting execution. To obtain what they are enter the command HELP SERIES1.

One of the more common user difficulties is typing errors. The RETRIEVE function provides a convenient and time-saving way of correcting errors without retyping the entire input line. This function is most efficiently used by defining a PF key for it. In your SETPF EXEC put the statement CP SET PF1 RETRIEVE. When you define a PF key for the RETRIEVE function, VM/SP will remember each input line entered at the terminal. When you press PF1,

VM/SP displays the latest input line and you can modify and re-enter the data. VM/SP remembers more than one input line. How many it will remember will depend on the length of the input line. When the PF1 key is pressed you will see the latest input line, to retrieve previous input lines press the PF1 key again. As the PF key is pressed again, VM/SP steps through the input lines displaying them one at a time.

It should be noted that if you connect through VM1TWX or VM2TWX you cannot use PF keys. This is a feature of connecting through the Series/1.

Setting up a Synonym file

The SYNONYM file must have filetype SYNONYM, the filename can be whatever you choose. To define your synonyms put the statement SYNONYM MYSYN in your profile exec, where MYSYN is the filename for your synonym file. A typical synonym file is listed below. All entries must be in upper case. In the first column you put the command you want to define a synonym for. The second column consists of the synonym and the third column defines the minimum number of characters you need to enter to execute the command.

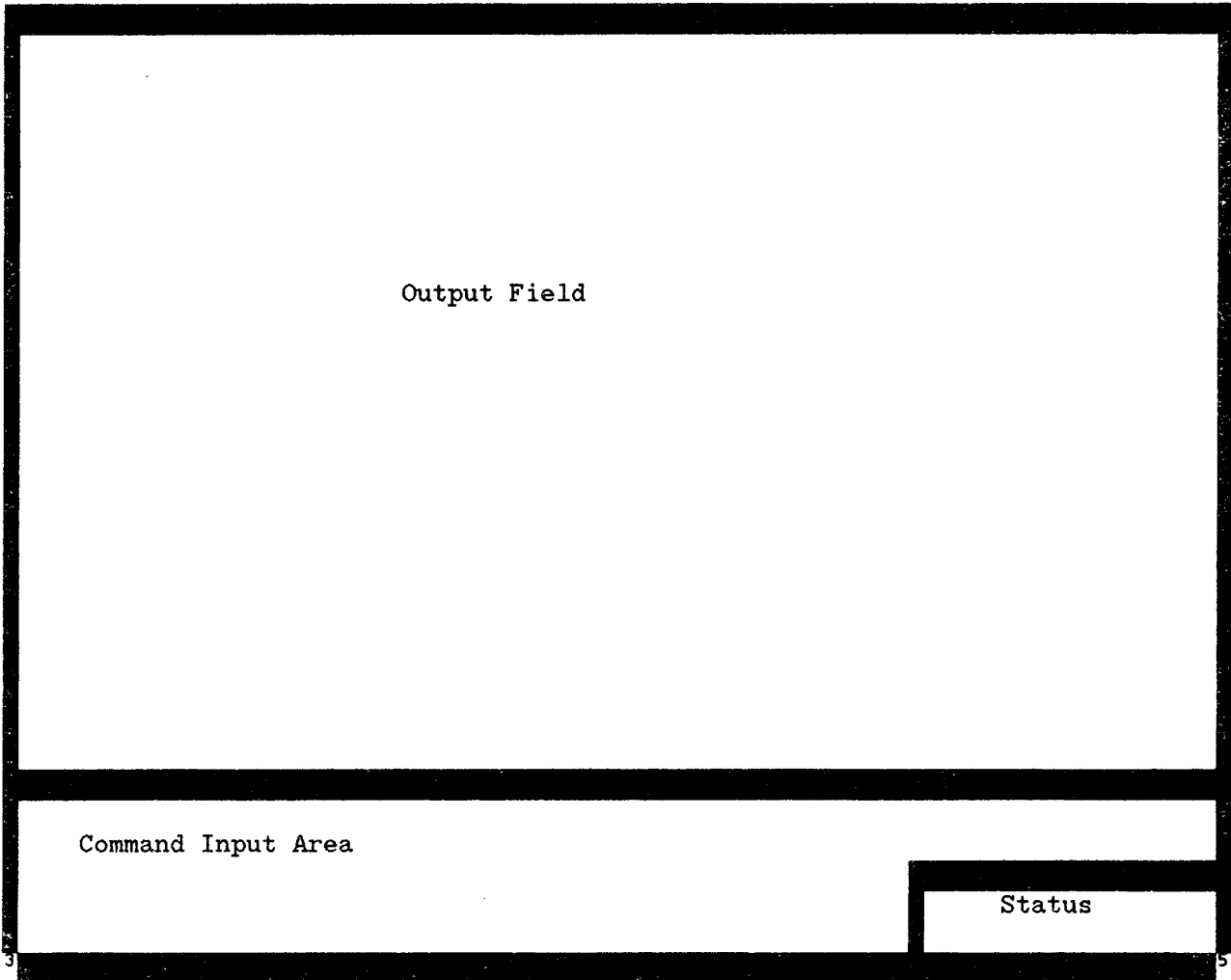
```
FLIST LISTF 2
ERASE ERA 3
RETURN RET 3
RECEIVE REC 3
PRINTOFF PRT 2
SCRIPT SCR 2
BROWSE BR 1
```

For example suppose you wanted to get a full-screen list of all files on your A-disk. The command would normally be FLIST. However with this synonym file the command LISTF would yield the same result. Synonyms can be defined for any CP or CMS command. To determine what synonyms are in effect for your VM session use the command SYNONYM. This will display all system and any user defined synonyms.

SYSTEM STATUS MESSAGES

The system supplies you with messages in addition to the ready message prompts. These messages provide system status and appear in the lower right hand corner.

- CP READ this means that the system is waiting for a CP command. This is the message you see when the system is prompting you for your password at logon time. If you are still receiving this message after you have typed in your password, you are probably being reconnected and need to type BEGIN. Typing IPL CMS will also work but will interrupt any processing on your account.
- VM READ the system is waiting for a CMS command or a program or exec is waiting for input from the terminal.
- RUNNING the system is processing or CMS is waiting for input.
- MORE.... Indicates that there is too much information to be displayed on one screen. You can press CLEAR DSPLY on HP terminals or on IBM terminals use CLEAR or ALT/PA2. To keep the screen from changing automatically press return. The status notice should change to HOLDING.
- HOLDING appears if another virtual machine on the system sends you a message or if you press return after you receive the MORE... notice. Use a clear key to see the next screen.
- NOT ACCEPTED appears if CMS is not enabled in the virtual machine. Many programs that are input sensitive will disable CMS for the duration of its execution. If you try to enter a command at your console while a program is running that has temporarily disabled CMS, then the message NOT ACCEPTED will appear. After a short wait this message should disappear. If the problem still persists, the command #CP IPL CMS should be able to get you out of the situation.



HELPOnline Help Facility

Once you are logged onto CMS you can issue the HELP command. The format of the HELP command is as follows:

HELP topic

e.g. HELP CCC
HELP PRINTOFF
HELP CCCUTILS

By simply typing HELP this will bring up a menu with a list of submenus that can be looked at. These submenus include:

CCC
CMS
CP
DEBUG
EXEC
EXEC2
REXX
XEDIT

Help is also available for the many error messages that come from CMS or CP. By issuing the command SET EMSG ON in your profile exec, you will receive the long form of the error messages with the error message number. You can then use the HELP facility to aid you in deciphering the error. For example if you issued the command:

LINK CCCUTILS 192 199 RR
you would receive the following:
DMKLNK107E CCCUTILS 192 NOT LINKED; NOT IN CP DIRECTORY
R(00107);

You could then issue the HELP command, HELP DMK107E to receive more information about this error. To determine the name of the HELP file take the first 3 characters of the error number and concatenate it with the last 4 characters of the error number.

Manuals

Listed below are some of the more useful IBM manuals.

Manual Number	Title
SC19-6209	VM/SP CMS Command and Macro Reference
SC19-6210	VM/SP CMS User's Guide
SC19-6211	CP Command Reference for General Users
SC24-5219	System Product: Exec2 Reference
SC24-5220	System Product Editor User's Guide (Xedit)
SC24-5221	System Product Editor Cmd. and Macro Ref.
SC24-5238	Interpreter User's Guide (REXX)
SC24-5239	Interpreter Reference (REXX)
SBOF-3820	Reference Card Summaries (CP, CMS, REXX, EXEC2, XEDIT)

Support Personnel

The people listed below work in the Engineering Services group and should be able to answer any questions that you may have about CMS, CP, etc.

Name	Telnet #	Mailstop	VM Userid
Dennis Case	1-857-4921	20CH	\$SDCASE
Yukon Fong	1-857-8986	20CH	\$SDFONG
Jeff Kurn	1-857-5525	20CH	\$SDKURN
Ellen Ritt	1-857-2351	20CH	\$SDRITT
Engineering Hotline	1-857-7244	20CH	VM1OPER

Some of the responsibilities of the Engineering Services group are:

1. Set up/maintain CMS, TROLL, MTS and UTS accounts.
2. Provide VM/CMS user support
 - Write a periodic VM/CMS Newsletter
 - Keep the HELP facility up-to-date
 - Write procedures to simplify the use of CMS

3. Coordinate CMS software support on the following packages:

- | | | | |
|----------------|------------------|------------------|-----------|
| 1. ASSEMBLER | 8. FORTRAN IV | 17. SCRIPT | 26. XEDIT |
| 2. APL 4.0 | 9. FORTRAN H EXT | 18. SIMSCRIPT | |
| 3. BATCH | 10. ISPF | 19. SMART | |
| 4. BEST/1 | 11. PASCAL/VS | 20. SNOBOL | |
| 5. C | 12. PL/I | 21. TROLL | |
| 6. EXEC, EXEC2 | 13. RSCS | 22. UTS (UNIX V) | |
| 7. EXPRESS | 14. REXX | 23. VMARCHIVE | |
| | 15. RIM | 24. VMBACKUP | |
| | 16. SAS | 25. VMSECURE | |

4. Help users acquire and set up new software under VM/CMS. This could include statistical, graphical, or CAD/CAM packages, or another language or application. This support should go through the following stages:

- Marketing analysis of other potential users
- Software selection
- Contract negotiation with the vendors.
- Telecommunications advice in conjunction with CCC Telecom group
- Installing the software on the system
- Training of users if requested

5. Traditional Liaison role

- Call meetings of users as needed
- Keep in constant touch with users to avert major problems
- Monitor user satisfaction
- Monitor usage trends
- Know when the users need computers for demonstrations etc.

6. Maintain the online DOWNTIME information

7. Consult with potential VM/CMS users as to the capabilities and limitations of the existing system

8. Monitor the status of existing VM/CMS software and development efforts

9. Investigate the impact of newly-available hardware and software on VM/CMS systems.

You are also encouraged to call the Engineering Hotline at 1-857-7244. The Hotline is staffed 24 hours/day from Sunday evenings at midnight through Saturday at 4:00 p.m.

CCCUTILS DISK

The CCCUTILS disk is where a number of CMS utilities are stored. These utilities make life easier for the VM/CMS user. All new users that are added to the system will automatically be linked to the CCCUTILS disk. To check and make sure that you are linked to the CCCUTILS disk issue the command QUERY VIRTUAL DASD. The output will look similar to the following:

```
DASD 190 3350 VPAGB5 R/O      49 CYL
DASD 191 3350 VM5102 R/W      20 CYL
DASD 19C 3350 VM5110 R/O      20 CYL
DASD 19D 3350 VPAGB4 R/O      28 CYL
DASD 19E 3350 VRES51 R/O      40 CYL
```

DASD 190,19E are the 2 system disks, 19D is the HELP disk, 191 is your own read/write disk, and the 19C is the CCCUTILS disk. If you do not have this line in your QUERY VIRTUAL DASD output issue the following command VMSECURE MAINT LINK CCCUTILS 191 19C RR. This will put a permanent link in your directory to the CCCUTILS disk. Once you have a link to the disk you need to access the disk.

To get access to the utilities you only need to issue the command 'ACCESS 19C P' This will access the CCCUTILS disk as your P disk. (The filemode can be changed to be whatever you want.) This ACCESS command is a likely candidate to put in your PROFILE EXEC.

Sample files for New Users

There are 4 files on the CCCUTILS disk that you can copy to your own disk. They are:

1. NEWUSER PROFILE should be copied to a file on your disk called PROFILE EXEC A. This file contains statements to ACCESS the CCCUTILS disk, set your PF keys, and define user synonyms.
2. NEWUSER PROFILEX should be copied to a file on your disk called PROFILE XEDIT A.
3. SETPF EXEC should be copied to a file on your disk called SETPF EXEC A.
4. MYSYN SYNONYM should be copied to a file on your disk called MYSYN SYNONYM A.
5. There is also a file PRACTICE FILE that can be used to aid you in learning the editor XEDIT.

One file of particular interest is the file UTILS INDEX. This contains a list of files on the disk, and what each file is. There are many handy utilities out on the disk that may be overlooked, so take a look at this file to find out what is available.

In the future this disk will become the home of any new execs or utilities that are developed by Engineering Services to better serve you. As new utilities are added, they will be publicized in the CMS newsletter. When new utilities are added the file UTILS INDEX will be updated also. If you have any utilities, execs, programs etc. that you would like to share with other VM users, please contact Ellen Ritt at 857-2351.

The following is a list of all utilities currently available on the CCCUTILS disk, along with a brief explanation of what each does. Additional information can be obtained via the HELP CCCUTILS command.

Utilities available

COMMAND NAME	PURPOSE/FUNCTION
ACTINFO	allows you to get billing information
ANYMAIL	tells you if you have any electronic mail from other VM users
BAT\$	allows you to submit jobs to the VM batch machine
DOWNTIME	displays scheduled downtime for CCC mainframes
FILE\$	utility for file transmissions to different systems
FORTUNE	gives a fortune for the day
IND\$	gives the machine load for the other VM machine
INFO	allows users to get information about other VM users
LINK\$	Combines the LINK and ACCESS commands into one command to get access to other minidisks (type LINK\$ for syntax)
LINKS	gives status of all RSCS links and PASSTHRU VM connections
MSG\$	full screen menu for message command (messaging facility)
MSGUTS	allows VM users to send message to UTS users on VM2
MSGME	a utility to allow VM users to send reminders to themselves
PRT\$	full screen menu for printoff (printing facility)
PRESS	an XEDIT macro used for compressing a userid names file
QD	gives you today's date and the phase of the moon
REMOTES	tells what MVS system each Remote 3000 is connected to
RMTUSERS	tells you who is logged onto the other VM machine
SPRFIND	allows global search through many files for a string
SUB\$	allows submission of batch jobs to VM, UTS and MVS to
TDISK	allocates a temporary minidisk for use during your session
TF	allows formatting of text while in xedit, a text flow utility
UTS\$	allows you to perform utilities dealing with UTS
USERS	tells you who is logged onto this VM machine
USERUTS	tells you who is logged onto the UTS virtual machine and what processes are executing
VMA	menu interface to the VMARCHIVE and VMBACKUP utilities

THE CMS FILESYSTEMCMS Files

As a CMS user you will want to create files and store them somewhere. Each CMS user is given one mini-disk, the A-disk, for file storage. Mini-disks are identified by a letter called the filemode (for the A-disk the filemode is A) and a 3 digit number known as the virtual address. The A-disk is usually the 191 disk. Mini-disks are accessed in read/write mode or read-only mode. You can have more than one mini-disk. Each mini-disk must have a unique filemode and virtual address. The commands LINK and ACCESS enable you to share mini-disks with other users. To find out what mini-disks you have access to, type in the command QUERY DISK.

The output from this command will look similar to the following:

LABEL	CUU	M	STAT	CYL	TYPE	BLKSIZE	FILES	BLKS USED-(%)	BLKS LEFT
ERITT	191	A	R/W	10	3350	1024	103	710-16	3790
ACCT	192	D	R/W	5	3350	1024	21	130-6	2120
UTILS	19C	P	R/O	20	3350	4096	128	278-12	2122
S-DISK	190	S	R/O	43	3350	1024	219	10353-54	8997
Y-DISK	19E	Y/S	R/O	40	3350	4096	305	1954-41	2846

All new users are linked to at least two other disks. The S-disk and the Y-disk. These two disks contain all of the system utilities and programs. These two disks are automatically accessed for you when you logon. There is a third disk that all new users added as of June 1, 1984 should be linked to. This is the CCCUTILS disk. The link to this disk is provided in your user directory. You will need to put the following statement in your PROFILE EXEC in order to ACCESS the data: ACCESS 19C P.

Sharing files with others

With the appropriate commands and read and write passwords, you can access files on other user's disks.

Before you do this you will need to know the following.

1. The virtual addresses and filemodes that you are presently using. Use the QUERY DISK command.
2. The other user's userid
3. The other user's virtual address for the disk you want to access
4. Any read or write passwords needed for the other user's disk.

The command to link to another user's disk is
 LINK (to) userid vaddr1 (as) vaddr2 RR (rr is read only mode)
 ACCESS vaddr2 mode

Suppose you want to link to my 191 disk and you know that my userid is DEMO and my read password is PASSWORD. You issue a QUERY DISK and find that you are already using virtual addresses 191, 192 and 193 with filemodes A,D, and E and system disks S and Y. The filemode and virtual address (vaddr2) must be unique. If you specify a filemode you are already using, the new disk will replace the other one. The first step is to use the LINK command. The words in parentheses are optional.

```
LINK (to) DEMO 191 (as) 194 RR
```

```
ENTER READ PASSWORD:
```

```
password
```

```
Then issue the ACCESS command.
```

```
ACCESS 194 C
```

You are now using a copy of my disk, if I make any changes to that disk while you are linked to it, your copy of the disk will not be updated. To receive any updates you can reaccess the disk with the command ACCESS 194 C. This will get you a fresh copy of the disk. This temporary access to my disk can be detached by the command "RELEASE 194 (DET" or it will be detached when you logoff.

If you find yourself linking to the same users every time you logon to the system you can put a link in your user directory via the VMSECURE MAINT LINK command. Once the link is in place you can put a ACCESS statement in your profile exec.

There is a utility on the CCCUTILS disk called LINK\$. This disk will link and access a user's disk as the next available filemode and virtual address. The format of the command is LINK\$ userid, where userid is the name of the user you would like to link to.

Transferring files between users

Users may share files by using the virtual devices that are assigned to each userid at logon time. Each userid has a virtual reader, punch and printer.

To send some files to another user's virtual reader use the following command:

```
SENDFILE filename filetype filemode userid AT sysid
```

where:

filename, filetype and filemode describe the file you wish to send. Pattern matching characters may be used to send more than one file.

userid is who you want to send the file to

sysid is the system name you wish to send the file to. This defaults to the system you are logged onto. (i.e. PAVM1 if you are logged onto VM1 and PAVM2 if you are logged onto VM2.)

By using SENDFILE you do not have to worry about what the logical record length of the file is, SENDFILE will use the appropriate command for you.

Examples: SENDFILE profile exec a demo at pavm2
 SENDFILE setpf exec a demo

Naming CMS Files

A CMS file is identified by: filename filetype filemode. The filename allows you to distinguish one file from another. The filetype allows you to group files with similar characteristics together. The filemode tells CMS which minidisk the file resides on. The filename and filetype can be from 1-8 characters and can be any of the following characters A-Z, 0-9,\$,#, and @. Certain filetypes have a special meaning to the operating system. For example a file with filetype EXEC means that when the name of the file is entered as a command in CMS, the statements in that file will be executed. Execs are like command files. A file with filetype FORTRAN is reserved for FORTRAN source code. A file with filetype SCRIPT is reserved for SCRIPT input files.

The filemode is one letter. This letter identifies the mini-disk where the file is stored. If you do not specify a filemode in most CMS commands, the filemode will default to A.

Creating and Editing Files

Files can be created and updated by using an editing facility. A CMS command is used to invoke the editor, and once in the editor it has its own set of subcommands. To create or edit an already existing file use the command format that follows:

```
XEDIT filename filetype filemode
```

If the file already exists then the editor will put you into that file, if the file does not already exist then the editor will put you into a newly created file. If you do not specify a filemode, it will default to A.

When you finish editing you can do one of three things.

1. You can use the QQUIT command which will exit you from the editor and not save any changes that you made to the file.
2. You can use the FILE command which will save all changes out on disk and exit you from the editor. FILE is equivalent to the two command sequence SAVE, QUIT.
3. You can use the SAVE command which will save all changes out on disk and let you remain in the editor.

4. You can use the QUIT command to exit the editor and not save the file to disk. This command will only work if you have not made any changes to the file. If you still want to quit even though you have made changes to the file, you will need to use the QQUIT command.

Refer to Appendix C for more information about Xedit, the editor.

File Management - commands

CMS commands are available to perform many tasks necessary for maintaining a collection of files.

The FLIST command displays a full-screen list of selected files. Once on FLIST the screen display can be controlled by the PF keys. Their definitions are displayed at the bottom of the screen. PF3 will get you out of FLIST. In FLIST, you can perform many CMS operations such as XEDIT, COPY, RENAME and ERASE by entering the command in the input area immediately to the right of each file-id on the screen. These same commands can be issued directly from the CMS environment also. You can also issue FLIST subcommands to sort the displayed data, or to enter a new FLIST level that displays another set of files. The format of the FLIST command is:

```
FLIST  fname ftype fmode
```

where:

fname ftype fmode specify the file(s) to be listed.
The default is * * A.

A pattern may be specified for the filename and/or the filetype. The special pattern characters recognized are the * (asterisk) and + (plus sign). An * is taken to mean "any number of any character" while the + is taken to mean "one of any character". Thus the following are some valid filename/filetype parameters:

Parameter	Meaning
ABC*	A 3-8 character name beginning with ABC.
*ABC	A 3-8 character name ending with ABC.
ABC+	A 4-character name beginning with ABC.
A++D	A 4-char. name beginning with A and ending with D.
+++	Any 3-character name.
*	All names (or types) are accepted.

LISTFILE is a command used to obtain specified information about CMS files residing on accessed disks. The LISTFILE command does not display the information in full-screen mode as does the FLIST command, it simply lists the information on the screen. If you enter the LISTFILE command with no operands, a list of all files on your A-disk is displayed at the terminal.

If you want information about a specific subset of your files, you can use two special characters in the fn and ft operands. (Only an asterisk may be specified for filemode.) The special characters are * (asterisk) and % (percent), where: As many asterisks as required can appear anywhere in a filename or filetype. (Only one asterisk may be used for a filemode.) The % acts like the + does for FLIST.

LISTFILE * * A (ALLOC will give similar information about the files on your A disk as FLIST will. The format is: LISTFILE filename filetype filemode

RENAME is used to rename a file.
The format is: RENAME oldname oldtype oldmode newname newtype newmode

ERASE is used to erase a file from any disk to which you are linked read/write. The format is: ERASE filename filetype filemode

COPY is used to copy files.
The format is: COPY oldname oldtype oldmode newname newtype newmode

TYPE is used to display the contents of a file on your screen
The format is: TYPE filename filetype filemode.

PASSWORDS

The files that you store on your mini-disk are protected from unauthorized use by the use of read and write passwords and by using VMSecure rules. Before you can let other users access to your mini-disk, read and/or write passwords must be established or rules must be written. If no passwords are established and if no rules are written then no one will be able to link to your disk. A read password allows another user to read your files but not change existing files or to create new ones. A write password allows other users to read, write and change files. Do not confuse read and write passwords with your LOGON password.

CCC has instituted a policy whereby users must change their CP LOGON passwords every 90 days. This policy was set up due the increasing concern for security on the systems here at CCC. The VMSECURE system will allow users to perform a number of userid directory maintenance functions. If you issue the command VMSECURE, you will receive a menu of all the commands you are authorized to use. The menu is shown below.

The VMSECURE package provides users with directory maintenance capabilities plus additional capabilities relating to file system security.

The VMSECURE rules facility will allow you to explicitly state which users can have access to your minidisks (providing more security than simply using link passwords). You can also review who is linking to your disks in their directories. The VMSECURE menu facility will simplify the interface to the security system such that you will no longer need to memorize or lookup commands.

VMSECURE will tell you when you last logged on and from what terminal address. This will help you determine if someone else has been logging into your account.

VM users can get access to VMSECURE functions by typing in the command VMSECURE with no options. This command can only be used if you are using a fullscreen terminal. Fullscreen terminals are those who get access to VM via the VM1S1 connection or through remote 3278 IBM terminals. If you are using a TTY device (VM1TWX or X.25 connections) see the section on the MAINT subcommand. The MAINT subcommand can also be used by fullscreen terminals; this allows bypassing of the menu system.

After typing VMSECURE, when prompted, type your logon password and press enter (in this document when it says press enter, this means press return if you are on an HP terminal). This will display the USER selection menu shown below.


```
+-----+
Release 2.0 85/08/22          V M S E C U R E          (c) 1985, VM Software, Inc.

      * * * User Selection Menu * * *

      Userid: $OSUSER      Manager: ADMSTR

      +-----+
      | Selection:          For Device: 191          |
      +-----+

      Selections:

1 Logon Storage Size and Password      7 Define a Link to Another User's Minidisk
2 Minidisk Link Mode and Passwords     8 Review/Remove Links By Other Users
3 Virtual Machine Options               9 Account Number and Distribution Code
4 Logical Line Editing Symbols          10 Delete a Link to Another User's Minidisk
5 IPL System Name and Parameters        11 Review the Directory Entry
6 Screen Colors and Highlighting

+-----+
PA1: Cancel      PF1: Help      PF3: Quit      PF10: Print      PF12: End
+-----+
```

In the SELECTION field, type the number that corresponds to your selection. The selections and their uses are described briefly below:

1. Use Selection 1, Logon Storage Size and Password, to change the password or the default logon storage size associated with your userid. (** see Note C.)
2. Use Selection 2, Minidisk Link Mode and Passwords, to change the link mode for one of your minidisks and to change the read, write, and multiple passwords associated with the minidisk. (** see Note C.)
3. Use Selection 3, Virtual Machine Options, to select options associated with a userid and to enter a virtual CPUID to be associated with your userid.
4. Use Selection 4, Logical Line Editing Symbols, to change the terminal logical line editing symbols established by default when you log on to VM.
5. Use Selection 5, IPL System Name and Parameters, to define, change, or remove the name of the system loaded at logon as well as the parameters to be passed to that system.
6. Use Selection 6, Screen Colors and Highlighting, to change the colors and highlighting of 3279 color terminals.
7. Use Selection 7, Define a Link to Another User's Minidisk, to add a link to another user's minidisk.
8. Use Selection 8, Review/Remove Links by Other Users, to review or remove links that other users may have defined to your minidisk noted on the top of the menu screen.
9. Use Selection 10, Delete a Link to Another User's Minidisk, to delete a link to another user's minidisk in your directory entry.
10. Use Selection 11, Review the Directory Entry, to review your directory entry.

Notes:

- A. The default virtual device address, 191, displays in the FOR DEVICE field. A virtual device address is required for Selections 2, 7, 8, and 10. If a virtual device address other than 191 is desired, type that address in the field.
- B. Press ENTER to display the selected screen. When a screen is initially displayed, the cursor is positioned at the first non-blank data entry field. To perform a function, enter the data requested on the screen. Some fields on the screen may already have a value; these are default values provided where VMSECURE can anticipate the values you might want to enter. Default values can be overridden by placing the cursor at the field and entering the desired value. Some fields on the screen are left blank. In most cases, you do not have to fill in each field since VMSECURE can calculate the necessary values from data you have already entered. Most of the screens require that you enter at least one value. If VMSECURE determines that no fields were modified, the function is not performed and the menu is redisplayed.

*** When you have finished entering data, press ENTER. ***

If VMSECURE determines that you have left an essential field blank (that is, remaining values cannot be determined until a value is supplied for that field), the cursor is repositioned at that field. You must do one of the following:
- a. Enter a value to continue
 - b. Press PA1 to cancel the VMSECURE command
 - c. Press PF3 to quit the screen without performing the function.
- C. Logon passwords and link passwords will not be displayed on your screen for security reasons. When you change your link passwords via Selection 2 from the main menu, be sure and delete the password that is currently in the field. Use the EOF key or DELETE LINE key on your terminal. In the case where the old password is longer than the new one, if you do not blank out the field first, the end of the old password will be appended to your new password.

On-line help is available for all VMSECURE commands, either from the VMSECURE menu via the PF1 key or from CMS by typing HELP VMSECURE.

The MAINT subcommand for TTY devices

Users who get access to VM via the VM1TWX lines or through X.25 connections must use the MAINT subcommand for VMSECURE.

The format of the VMSECURE command becomes: VMSECURE MAINT function options where the functions are listed and discussed briefly below.

1. DEFINE vaddr1 vaddr2
Use the DEFINE function to change the virtual address of one of your minidisks to a new address. "vaddr1" specifies the existing virtual address of the minidisk, and "vaddr2" specifies the new address.
2. DELETE vaddr
Use the DELETE function to delete your directory link to another user's minidisk. "vaddr" specifies the virtual address of the directory link you wish to remove.
3. DISTRIB newdist
Use the DISTRIB function to change the distribution code associated with your spooled output.
4. HELP
Use the HELP function to display a brief list of the MAINT subcommand functions and their operands.
5. LINK ownerid ownervaddr yourvaddr mode
Use the LINK function to set up a directory link to another user's minidisk. Directory links are performed for you at logon. To define a directory link, you must know the appropriate minidisk password for the other user's minidisk and specify a virtual address not used by your virtual machine. If the Rules facility is installed, a rule must exist that allows you to link to the other user's minidisk.
6. MGRID
Use the MGRID function to determine who your directory manager is.
7. MINIDISK vaddr
Use the MINIDISK function to modify the link mode and read, write, or multiple passwords for your minidisks. "vaddr" specifies the virtual address of one of your minidisks.
8. PASSWORD
Use the PASSWORD function to change your logon password.
9. REVIEW
Use the REVIEW function to review all directory control statements in your directory entry. The REVIEW function provides information about existing directory links and all virtual addresses associated with your userid. This information is needed for the DEFINE, DELETE, LINK, MINIDISK, and RLINK functions.
10. RLINK vaddr
Use the RLINK function to review and optionally remove any directory links that other users may have defined to one of your minidisks. This function is particularly useful when you determine that data on your minidisk

should no longer be shared with other users. You should review any existing directory links to determine if the user should still have access to your minidisk. You must specify the virtual address for your minidisk.

11. STORAGE sizeK sizeM

Use the STORAGE function to change the amount of virtual storage your userid is set up with at logon. Virtual storage can be modified after logon with the CP DEFINE STORAGE command.

12. TERM keyword ON OFF char hex

Use the TERM function to modify the terminal logical line editing symbols set for your userid at logon. The symbols that can be modified are: line end, line delete, character delete, and escape character.

VMSECURE Rule writing

In addition to the capabilities already discussed in this memo, VMSECURE also provides users with the ability to write rules that control the access to virtual machines and minidisks.

A VMSECURE rule is statement in the rules database that specifies whether certain CP commands are to be accepted (ACCEPT) or rejected (REJECT).

You can specify rules for the following CP commands:

- . AUTOLOG
- . LINK
- . SPOOL
- . TRANSFER

The CP command you will be most concerned with is the LINK command which allows users to access each other's minidisks.

Creating Rules

To initiate the writing of a rule, use the command VMSECURE RULES. This will put you into XEDIT with a file called USERID USRRULES A0 where userid is your userid. After you are done editing your rules file, use the FILE command to leave the editor. This will save all of your changes to disk. If you wish to leave the editor without saving your changes use the QQUIT command.

All rules go through the following hierarchy of rule evaluation.

1. Explicit System rules - over ride rules are discussed below
2. Explicit Group rules - these are written by a group manager
3. User specified rules - these are written by the user
4. Default group rules - these are written by a group manager
5. Default system rules - default rules are discussed below

The general VMSECURE rule statement format is:

```
ACCEPT GROUPID AUTOLOG
REJECT USERID LINK <VADDR <MODE>><( OPTIONS...<)>>
      SPOOL
      TRANSFER
      TAG NODEID
```

OPTIONS:

```
-----
GROUP
LOGPASS
NOPASS
```

Some sample rules and explanations of what they do are listed below.

1. ACCEPT \$OSUSER LINK 191 RR (NOPASS
allows userid \$OSUSER to link r/o to my 191 disk with no password
2. REJECT * LINK 192 *
Reject any links from any user to my 192 disk
If you write a rule such as this one you will need to write a rule explicitly saying that you can access your own disk.
The rule would be ACCEPT userid LINK 192 * (NOPASS where
userid would be your userid.
3. ACCEPT \$OSUSER LINK 191 RR (LOGPASS
allows userid \$OSUSER to link r/o to my 191 disk with
their logon password
4. ACCEPT ENGSRV LINK 191 RR (GROUP NOPASS
Accept any links from any user in the ENGSRV group with no link
password

In the near future an announcement will be made about a VMSECURE rules writing class for users.

Explicit System Rules - Override rules

Override rules are rules at the system level such that no group or individual rule can override. These rules include:

- . no user can link multiwrite (MW) to another user's minidisk
- . VMBACKUP will be allowed to link to anyone's disk in order
to run the backup job

Default Rules

Default rules take effect when no rule exists for a particular command for your userid. The system default rules are as follows:

. If there is no rule for a minidisk access, links will only be allowed if a valid link password is given. This is the same as the security on the system before VMSECURE was installed. If you have no minidisk passwords, no links will be allowed to your disk.

. Autologs will only be allowed if the valid logon password is supplied.

. All spool and tag commands will be accepted.

Public Disks

Users can link to the following minidisks with no passwords

\$SYSTEM\$ 190 19D (HELP DISK) 19E (SHARED CMS EXEC'S AND MODULES)

BIPOLE 191

BMDP 191 192

CCCUTILS 191

CMSNEWS 191

COMPILER 192 (COBOL) 194 (FORTRAN) 198 (PL1)
398 (PL1) 199 (FORTRAN TO PL/1) 200 (BEST/1)
203 (SCRIPT) 205 (PL/1 F)

EXPRESS 191

PASCAL 191 192

SASMAINT 201 (79.6) 192 (LISREL) 206 (82.3)

SIMSCPT 191

TEX 191 192

YCALC 191

VIRTUAL DEVICES: RDR, PRT, AND PUN

At logon time, the system notifies you of any files in your virtual reader, printer or punch. You may receive a message looking like the following:

L DEMO

ENTER PASSWORD:

FILES: 002 RDR, NO PRT, NO PUN

LOGON AT 11:03:35 PDT THURSDAY 10/20/83

8M VM/CMS 2.10 08/04/83

R;

To see what the rdr file is and where it came from, issue the command: Q RDR ALL

The response will look similar in format to the following:

```
ORIGINID FILE CLASS RECORDS CPY HOLD DATE TIME NAME TYPE
DIST
VMSECURE 0468 G PUN 0000014 001 NONE 10/20 04:45:25 WARNING
NOTICE 68BIN
SUPPORT 0489 A PUN 0000012 001 NONE 10/19 03:32:20 SUPPORT NOTE
7BIN
```

(similar commands exist for PRT and PUN; Q PRT ALL, Q PUN ALL)

If you are not running in line mode, (VM1TWX or VM2TWX) the easiest way to see exactly what is in your reader is to use the RDRLIST command. Simply enter RL (or RDRLIST). Once in RDRLIST there are PF keys that allow you to look at the file (PEEK - PF2), read the file onto disk (RECEIVE - PF9), or purge the file (DISCARD - PF11). If you try to use PF9 and the file already exists on your A disk, you will need to use PF6 RECEIVE (REPLACE). This will replace the file on your A disk with the one that is in your reader.

If you find files in your virtual printer there are two things you can do with them. 1. You can send them to a real printer using the PRINTSPL command which is discussed later in this manual. 2. You can look at them by transferring them to your virtual rdr. The command to do that is: TRANSFER PRT ALL TO *. Then you can follow the instructions above for looking at rdr files.

If there are files in your virtual punch, the only thing you can do is transfer them to your rdr via the command: TRANSFER PUN ALL TO *.

To delete any of these virtual rdr, prt, or pun files, the PURGE command is available. The format of the PURGE command is:

```
PURGE rdr all
      prt fileid (4 digit number)
      pun
```

Use all to get rid of all files, or use the file's spoolid to delete just one particular file.

REMOTE PRINTING - GETTING HARDCOPY OUTPUT

Printing files here at CCC is a bit complicated and confusing but some execs have been written to simplify the procedure. There are 2 methods by which to print files. There is some information you need to know before you can print anything.

1. The filename filetype and filemode of the file you wish to print
2. What remote printer you want to print it on. You need to know the remote number. Once you know the remote number you need to know which MVS machine your remote is attached to.

The following is a list of all MRJE lines and to which MVS system they are attached to.

This list is continually updated.

MVS1	MVS2
----	----
1 2 3 4 5 6 7 8 9 10	11 STANFORD PARK
12 13 14 15 16 17 18	19 CSY
21 22 23 24 26 27 29	20 HP LABS 3U
30 31 33 34 36 37 40	25 CSY
41 42 44 45 46 50 51	28 HPDA
52 54 55 57 58 59 62	32 HPDA
63 64 76 77 78 79 80	35 POD
81 82 83 84 85 86 87	38 CICO
88 89 90 91 92 93 94	39 CSY
96 97 99 101 102 103	43 LABS 3L
106 107 108 116 117	48 LABS BLDG.25
	49 OED
	53 CICO
	56 SANTA CLARA
	60 DSD
	61 CSY
	65 LABS 3L
	70 LABS 25L

If you are linked and accessed to the CCCUTILS disk, you can receive this list on-line by typing the command REMOTES.

Once you have all this information you are ready to print your file by one of the following two methods.

1. Use the PRINTOFF EXEC.

PRINTOFF is used to print files. PRINTOFF sends files through RSCS to an MVS machine, which then prints the file on a remote printer. The user must specify the remote number and the MVS machine the remote is connected to. PRINTOFF has a parameter file, called "PRINTOFF NAMES", which allows you to set up some

commonly used parameters to printoff. It also allows you to set up the default parameters for PRINTOFF.

The format of the PRINTOFF command is:

PRINTOFF	<filename> <filetype> (<filemode>) (Options
	Options:
	USE <8char-string>
	DEST <8char-string>
	FORM <4char-string>
	DIST <8char-string>
	BIN <8char-string>
	COPY <3digit-number>
	CC <input type="checkbox"/> NOCC
	HEADER
	UPCASE
	LINECOUN <2digit-number>
	MEMBER <8char-string>
	HEX

where:

- <filename> is the filename. This field is required.
- <filetype> is the filetype. If this field is omitted a file type of LISTING is used.
- <filemode> is the filemode. If this field is omitted a file mode of * is used.
- USE <8char-string> specifies the name of the entry in the PRINTOFF NAMES file to use for the parameters.
- DEST <8char-string> specifies the destination (e.g. RMT46,LCL1,EPOC, etc.).
- FORM <4char-string> specifies the form (e.g. ELIT, PICA, etc.).
- DIST <8char-string> specifies the distribution string. This should be your bin number if your print DEST is a CCC printer. This field will print in block letters on the header page.
- BIN <8char-string> is the same as DIST.
- COPY <3digit-number> specifies the number of copies to be printed, max=999, default is 1. You will get a header page for each copy.
- CC specifies that the file contains carriage control.

NOCC specifies that the file does not contain carriage control.

HEADER specifies to print header page, only valid with CC. This parameter is passed to the PRINT command and has nothing to do with the header printed in block characters.

UPCASE specifies that lower case letters are to be translated to upper case.

LINECOUN <2digit-number> specifies the number of lines printed on each page. Default is 55.

MEMBER <8char-string> specifies the member name to be printed from the library. * for all members.

HEX specifies to print the file in HEXADECIMAL format.

Responses

PRINTOFF will respond by telling you where it is sending the file and all the parameter values that were used. If you do not want to get these messages from PRINTOFF you should edit your PRINTOFF NAMES file and put in the string <SUPPRESS=MESSAGES> (the angle brackets must be included.) This can appear anywhere in the file except in column one.

PRINTOFF NAMES File

The PRINTOFF NAMES file contains parameters for PRINTOFF. The format of this file is as follows:

```
<entry-name> <parameters>
                <parameters>
**
```

Only entry names can begin in column 1, and they must begin in column 1. The entry name must be all caps. Entries are terminated by "***", all lines between the <entry-name> and the "***" are used as parameters to PRINTOFF. Other lines are treated as comments. There is no limit to the number of entries in this file. If there is an entry named DEFAULT it will be used for the default settings for PRINTOFF. This way you can set up your most commonly used parameters in the DEFAULT entry to avoid having to enter the parameters when you use the PRINTOFF command. When you set up your own file you should edit the system copy on the Y-Disk, make your changes to it and save it on your A-Disk.

Usage Notes:

1. PRINTOFF will look for the first PRINTOFF NAMES file in the search list. If you want to use your own it must be on a

disk searched before any other disk with a PRINTOFF NAMES file on it.

Examples

The following are examples of PRINTOFF requests:

- a. PRINTOFF FILENAME FILETYPE FILEMODE(COPY 2 FORM PICA DEST EPOC DIST 123BIN CC
- b. PRINTOFF FILENAME FILETYPE FILEMODE (USE LISTING

Below is what the LISTING entry in the PRINTOFF NAMES file would look like:

```
LISTING AT PAMVS1 COPY 2 DEST EPOC FORM PICA DIST 123BIN CC
```

These two commands will produce the same result.

2. Use the PRINTSPL COMMAND

PRINTSPL is used to print spool files that are on a user's virtual printer. PRINTSPL sends files through RSCS to an MVS machine, which then prints the file on a remote printer. You must specify the remote number and the MVS machine the remote is connected to. PRINTSPL has a parameter file, called "PRINTOFF NAMES", which allows you to set up some commonly used parameters to printoff. It also allows you to set up the default parameters for PRINTSPL.

The format of the PRINTSPL command is:

PRINTSPL	<spool-id> (Options
	Options:
	USE <8char-string>
	DEST <8char-string>
	FORM <4char-string>
	DIST <8char-string>
	BIN <8char-string>
	COPY <3digit-number>

For more help on the PRINTSPL command type HELP PRINTSPL.

VMARCHIVE

Archiving and Recalling CMS files from archival storage

Many users have the requirement to save files indefinitely on offline (tape) storage. VMARCHIVE provides you with the ability to store CMS files which are no longer needed online and to recall those files when they are needed. It is recommended that users take the time to archive files at certain checkpoints after important events such as project completion or cancellation.

VMARCHIVE allows users to:

- . submit archive requests
- . recall archived files
- . obtain information on archived files and the VMARCHIVE system
- . perform miscellaneous other functions

An ISPF interface has been written for VMARCHIVE and VMBACKUP to simplify the use of these utilities. The VMA command will link you to all the appropriate disks and allow you to run the application. The ISPF interface is menu driven with data entry panels. PF1 can be used at any point in the dialog for help information. There is also a tutorial available. PF3 can be used to get back to the previous panel. By using this application you will not need to know the format of the archive or backup commands, you just need to know the information about the files you are concerned with.

VMBACKUP

CMS File Backup/Restore Procedures

The backup procedures and retention periods of CMS file backups are as follows:

- 1). Monthly - full dumps are done on the 1st Friday of the month. Retention period is 1 year.
- 2). Weekly - full dumps are done every Friday. Retention period is 2 months.
- 3). Daily - incremental dumps are done on Saturday through Thursday. Retention period is 2 weeks.
- 4). Full pack dumps for disaster recovery will be done on the 3rd Thursday and Friday of each month.

The incremental CMS file backups (#3) will be the source for most of the user file restores.

When a user needs a VM/CMS file restored, he/she should use the VMA command. It should be noted that only data that has been on your minidisk during the last year can be restored. For example, if on January 1, 1985 you delete a file from your disk. You will only be able to restore the file if you request it before January 1, 1986.

TAPEREQ

User Tape Mount Request Procedures

Use the TAPEREQ command to request that the operator mount a specific tape for your VM session. Two modes are available: the NOWAIT mode (the default), which frees your session so you can do other work while you are waiting, and the "WAIT" mode, which puts your VM session into a wait state until the tape is ready.

The format of the TAPEREQ command is:

TAPEREQ	tape#	vaddr	accmode	waitmode
	181	R/O	NOWAIT	

where:

- tape# is your tape number you wish to mount. This parameter is required.
- vaddr is the virtual address you wish to have the tape mounted and attached to. 181 is the default.
- accmode is the access mode you need. R/O is used when you will only be reading the tape. R/W is used when you intend to write to the tape. R/O is the default.
- waitmode is an optional parameter that causes the request program to not return control until the tape is completely ready. This should be used while running disconnected, so the following commands that will use the tape will not be executed until the tape is ready.

Please note:

This command will send a message to the operator and store the request in a system control block. If and when the requested tape is ready, the program will tell you so, and delete the mount request in the system control block.

By issuing the command multiple times, two things will be accomplished; 1) a message will be sent each time to the operator to remind him to mount the tape, and 2) when the tape IS ready, the program will tell you so.

If the operator cannot fulfill the request (i.e. no tape drives available, or the requested tape cannot be found) he will cancel the request, and the "TAPEREQ" program will immediately notify you. If you use the "WAIT" option, and either change your mind or get tired of waiting, you can cancel the mount by hitting enter.

WHAT THE COSTS ARE TO RUN VM/CMS

The rates for fiscal year 1985 are as follows:

<u>Service Category</u>	<u>Rate</u>
VM1 (V8) CPU time	\$ 22.10/CPU Minute
VM2 (V6) CPU time	\$ 20.00/CPU Minute
Session connect time	\$ 4.00/hour
DISK I/O	\$.28/1000 EXCPs
Disk Storage (3350s)	\$.15/track/per/day
Tape Use	\$ 5/Mount plus \$5/hour

Appendix A

SERIES/1 KEYBOARD DEFINITIONS

Series/1 Keyboard Definitions HP120/125/2621b/2622/2623/2624/2626/2627

IBM Function	IBM Key(s)	HP Key(s): Preferred	Alternate
ENTER	ENTER	RETURN	
PF1	PF1 (ALT-1)	ESC 1	
PF2	PF2 (ALT-2)	ESC 2	
PF3	PF3 (ALT-3)	ESC 3	
PF4	PF4 (ALT-4)	ESC 4	
PF5	PF5 (ALT-5)	ESC 5	
PF6	PF6 (ALT-6)	ESC 6	
PF7	PF7 (ALT-7)	ESC 7	
PF8	PF8 (ALT-8)	ESC 8	
PF9	PF9 (ALT-9)	ESC 9	
PF10	PF10 (ALT-0)	ESC 0	
PF11	PF11 (ALT--)	ESC -	
PF12	PF12 (ALT-=)	ESC =	
PF13	PF13	ESC ! (exclamation)	DEL 1
PF14	PF14	ESC @	DEL 2
PF15	PF15	ESC #	DEL 3
PF16	PF16	ESC \$	DEL 4
PF17	PF17	ESC %	DEL 5
PF18	PF18	ESC ^ (carat)	DEL 6
PF19	PF19	ESC (DEL 7
PF20	PF20	ESC *	DEL 8
PF21	PF21	ESC (DEL 9
PF22	PF22	ESC)	DEL 0
PF23	PF23	ESC _ (underscore)	DEL -
PF24	PF24	ESC +	DEL =
PA1	PA1 (ALT-PA1)	ESC ESC ,	
PA2	PA2 (ALT-PA2)	ESC ESC .	
PA3	PA3	ESC ESC /	
DUP	DUP	ESC :	
NEWLINE	newline symbol	CTRL-A	
BACK SPACE	back space symbol	BACK SPACE	
BACK TAB	back tab symbol	ESC TAB	
CURSOR UP	cursor up symbol	cursor up symbol	ESC A
CURSOR DOWN	cursor down symbol	cursor down symbol	ESC B
CURSOR RIGHT	cursor right symbol	cursor right symbol	ESC C
CURSOR LEFT	cursor left symbol	cursor left symbol	ESC D
CURSOR HOME	cursor home symbol	home up symbol	ESC h
ERASE EOF	ERASE EOF	CLEAR LINE	ESC M
ERASE INPUT	ALT-ERASE INPUT	ESC CLEAR LINE	ESC ESC M
CLEAR	ALT-CLEAR	CLEAR DISPLAY	ESC J
enter INSERT	insert char symbol	INS CHAR (beeps)	ESC Q
exit INSERT	RESET	INS CHAR (no beep)	ESC Q
DELETE CHAR	delete char symbol	DEL CHAR	ESC P

OTHER SEQUENCES AFFECTING SERIES/1 OPERATION (NO HOST ACTION)

REFRESH DISPLAY	CTRL-G	FREEZE DISPLAY (XOFF)	CTRL-S
FLUSH INPUT BUFFER	CTRL-X	RESUME DISPLAY (XON)	CTRL-Q

NOTES: The "A" strap is forced ON; for the 125 cursor-type keys to work in local computer mode, it must be turned OFF.

Series/1 Yale IUP Keyboard Definitions for HP 2382

IBM Function	IBM Key(s)	HP Key(s):Preferred	Alternate
ENTER	ENTER	RETURN	
PF1	PF1 (ALT-1)	ESC 1	
PF2	PF2 (ALT-2)	ESC 2	
PF3	PF3 (ALT-3)	ESC 3	
PF4	PF4 (ALT-4)	ESC 4	
PF5	PF5 (ALT-5)	ESC 5	
PF6	PF6 (ALT-6)	ESC 6	
PF7	PF7 (ALT-7)	ESC 7	
PF8	PF8 (ALT-8)	ESC 8	
PF9	PF9 (ALT-9)	ESC 9	
PF10	PF10 (ALT-0)	ESC 0	
PF11	PF11 (ALT--)	ESC -	
PF12	PF12 (ALT-=)	ESC =	
PF13	PF13	ESC ! (exclamation)	DEL 1
PF14	PF14	ESC @	DEL 2
PF15	PF15	ESC #	DEL 3
PF16	PF16	ESC \$	DEL 4
PF17	PF17	ESC %	DEL 5
PF18	PF18	ESC) (carat)	DEL 6
PF19	PF19	ESC (DEL 7
PF20	PF20	ESC *	DEL 8
PF21	PF21	ESC (DEL 9
PF22	PF22	ESC)	DEL 0
PF23	PF23	ESC _ (underscore)	DEL -
PF24	PF24	ESC +	DEL =
PA1	PA1 (ALT-PA1)	ESC ESC ,	
PA2	PA2 (ALT-PA2)	ESC ESC .	
PA3	PA3	ESC ESC /	
NEWLINE	newline symbol	CTRL-A	
BACK SPACE	back space symbol	BACK SPACE	
TAB	tab symbol	TAB	
BACK TAB	back tab symbol	ESC TAB	
CURSOR UP	cursor up symbol	cursor up symbol	ESC A
CURSOR DOWN	cursor down symbol	cursor down symbol	ESC B
CURSOR RIGHT	cursor right symbol	cursor right symbol	ESC C
CURSOR LEFT	cursor left symbol	cursor left symbol	ESC D
CURSOR HOME	cursor home symbol	home up symbol	ESC h
ERASE EOF	ERASE EOF	CLEAR LINE	ESC M
ERASE INPUT	ALT-ERASE INPUT	ESC CLEAR LINE	ESC ESC M
CLEAR	ALT-CLEAR	CLEAR DISPLAY	ESC J
enter INSERT	insert char symbol	INSERT CHAR (beeps)	ESC Q
exit INSERT	RESET	INSERT CHAR (no beep)	ESC Q
DELETE CHAR	delete char symbol	DELETE CHAR	ESC P

OTHER SEQUENCES AFFECTING SERIES/1 OPERATION (NO HOST ACTION)

Refresh Display CTRL-V Freeze Display (XOFF) CTRL-S
 Flush Input Buffer CTRL-X Resume Display (XON) CTRL-Q
 The 2382 keys "CLEAR LINE", "CLEAR DISPLAY", "INSERT CHAR", and "DELETE CHAR" are "soft-keys". Displayable by pressing "AIDS" and then "edit keys" (f8).

Series/1 Keyboard Definitions for HP 2621a,2621p

IBM Function	IBM Key(s)	HP Key(s): Preferred	Alternate
ENTER	ENTER	RETURN	
PF1	PF1 (ALT-1)	ESC 1	
PF2	PF2 (ALT-2)	ESC 2	
PF3	PF3 (ALT-3)	ESC 3	
PF4	PF4 (ALT-4)	ESC 4	
PF5	PF5 (ALT-5)	ESC 5	
PF6	PF6 (ALT-6)	ESC 6	
PF7	PF7 (ALT-7)	ESC 7	
PF8	PF8 (ALT-8)	ESC 8	
PF9	PF9 (ALT-9)	ESC 9	
PF10	PF10 (ALT-0)	ESC 0	
PF11	PF11 (ALT--)	ESC -	
PF12	PF12 (ALT-=)	ESC =	
PF13	PF13	ESC (exclamation)	DEL 1
PF14	PF14	ESC @	DEL 2
PF15	PF15	ESC #	DEL 3
PF16	PF16	ESC \$	DEL 4
PF17	PF17	ESC %	DEL 5
PF18	PF18	ESC) (carat)	DEL 6
PF19	PF19	ESC (DEL 7
PF20	PF20	ESC *	DEL 8
PF21	PF21	ESC (DEL 9
PF22	PF22	ESC)	DEL 0
PF23	PF23	ESC (underscore)	DEL -
PF24	PF24	ESC +	DEL =
PA1	PA1 (ALT-PA1)	ESC ESC ,	
PA2	PA2 (ALT-PA2)	ESC ESC .	
PA3	PA3	ESC ESC /	
NEWLINE	newline symbol	CTRL-A	
BACK SPACE	back space symbol	BACK SPACE	
TAB	tab symbol	TAB	
BACK TAB	back tab symbol	ESC TAB	
CURSOR UP	cursor up symbol	(see note) CNTL-A	ESC A
CURSOR DOWN	cursor down symbol	(see note) CNTL-B	ESC B
CURSOR RIGHT	cursor right symbol	(see note) CNTL-C	ESC C
CURSOR LEFT	cursor left symbol	(see note) CNTL-D	ESC D
CURSOR HOME	cursor home symbol	(see note)	ESC h
ERASE EOF	ERASE EOF	(see note)	ESC M
ERASE INPUT	ALT-ERASE INPUT	ESC CLEAR LINE	ESC ESC M
CLEAR	ALT-CLEAR	(see note)	ESC J
enter INSERT	insert char symbol	(see note) (beeps)	ESC Q
exit INSERT	RESET	(see note) (no beep)	ESC Q
DELETE CHAR	delete char symbol	(see note)	ESC P
RESET	RESET	CTRL-G	

OTHER SEQUENCES AFFECTING SERIES/1 OPERATION (NO HOST ACTION)

REFRESH DISPLAY	CTRL-V	FREEZE DISPLAY (XOFF)	CTRL-S
FLUSH INPUT BUFFER	CTRL-X	RESUME DISPLAY (XON)	CTRL-Q

NOTES: Do not use the 2621A/P cursor-type keys; they do not transmit.

Series/1 Keyboard Definitions for HP 2641

IBM Function	IBM Key(s)	HP Key(s) Preferred	Alternate
ENTER	ENTER	RETURN	
PF1	PF1 (ALT-1)	LF 1	
PF2	PF2 (ALT-2)	LF 2	
PF3	PF3 (ALT-3)	LF 3	
PF4	PF4 (ALT-4)	LF 4	
PF5	PF5 (ALT-5)	LF 5	
PF6	PF6 (ALT-6)	LF 6	
PF7	PF7 (ALT-7)	LF 7	
PF8	PF8 (ALT-8)	LF 8	
PF9	PF9 (ALT-9)	LF 9	
PF10	PF10 (ALT-0)	LF 0	
PF11	PF11 (ALT--)	LF -	
PF12	PF12 (ALT-=)	LF =	
PF13	PF13	LF CLEAR TAB	LF ESC 2
PF14	PF14	LF RESET TAB	LF ESC 1
PF15	PF15	LF CLEAR DISPLAY	LF ESC J
PF16	PF16	LF ROLL UP	LF ESC S
PF17	PF17	LF cursor-up	LF ESC A
PF18	PF18	LF NEXT PAGE	LF ESC U
PF19	PF19	LF cursor left	LF ESC D
PF20	PF20	LF cursor home	LF ESC h
PF21	PF21	LF cursor right	LF ESC C
PF22	PF22	LF ROLL DOWN	LF ESC T
PF23	PF23	LF CURSOR DOWN	LF ESC B
PF24	PF24	LF PREV PAGE	LF ESC V
PA1	PA1 (ALT-PA1)	LF LF ,	
PA2	PA2 (ALT-PA2)	LF LF .	
PA3	PA3	LF LF /	
DUP	DUP	LF :	
FIELD MARK	FIELD MARK	LF ;	
NEWLINE	newline symbol	CTRL-A	
BACK SPACE	back space symbol	BACK SPACE	
TAB	tab symbol	TAB	
BACK TAB	back tab symbol	LF TAB	
CURSOR UP	cursor up symbol	cursor up symbol	ESC A
CURSOR DOWN	cursor down symbol	cursor down symbol	ESC B
CURSOR RIGHT	cursor right symbol	cursor right symbol	ESC C
CURSOR LEFT	cursor left symbol	cursor left symbol	ESC D
CURSOR HOME	cursor home symbol	home up symbol	ESC h
ERASE EOF	ERASE EOF	CLEAR LINE	ESC M
ERASE INPUT	ALT-ERASE INPUT	LF CLEAR LINE	LF ESC M
CLEAR	ALT-CLEAR	CLEAR DISPLAY	ESC J
enter INSERT	insert char symbol	INS CHAR (beeps)	ESC Q
exit INSERT	RESET	INS CHAR (no beep)	ESC Q
DELETE CHAR	delete char symbol	DEL CHAR	ESC P
RESET	RESET	CTRL-G	

OTHER SEQUENCES AFFECTING SERIES/1 OPERATION (NO HOST ACTION)

REFRESH DISPLAY	CTRL-V	FREEZE DISPLAY (XOFF)	CTRL-S
FLUSH INPUT BUFFER	CTRL-X	RESUME DISPLAY (XON)	CTRL-Q

Series/1 Keyboard Definitions for HP 2640/2642/2644/2645/2647/2648

IBM Function	IBM Key(s)	HP Key(s) Preferred	Alternate
ENTER	ENTER	RETURN	
PF1	PF1 (ALT-1)	ESC 1	
PF2	PF2 (ALT-2)	ESC 2	
PF3	PF3 (ALT-3)	ESC 3	
PF4	PF4 (ALT-4)	ESC 4	
PF5	PF5 (ALT-5)	ESC 5	
PF6	PF6 (ALT-6)	ESC 6	
PF7	PF7 (ALT-7)	ESC 7	
PF8	PF8 (ALT-8)	ESC 8	
PF9	PF9 (ALT-9)	ESC 9	
PF10	PF10 (ALT-0)	ESC 0	
PF11	PF11 (ALT--)	ESC -	
PF12	PF12 (ALT-=)	ESC) (carat)	
PF13	PF13	ESC CLEAR TAB	ESC ESC 2
PF14	PF14	ESC SET TAB	ESC ESC 1
PF15	PF15	ESC CLEAR DSPLY	ESC ESC J
PF16	PF16	ESC ROLL UP	ESC ESC S
PF17	PF17	ESC cursor up	ESC ESC A
PF18	PF18	ESC NEXT PAGE	ESC ESC U
PF19	PF19	ESC cursor left	ESC ESC D
PF20	PF20	ESC cursor home	ESC ESC h
PF21	PF21	ESC cursor right	ESC ESC C
PF22	PF22	ESC ROLL DOWN	ESC ESC T
PF23	PF23	ESC cursor down	ESC ESC B
PF24	PF24	ESC PREV PAGE	ESC ESC V
PA1	PA1 (ALT-PA1)	ESC ESC ,	
PA2	PA2 (ALT-PA2)	ESC ESC .	
PA3	PA3	ESC ESC /	
FIELD MARK	FIELD MARK	ESC ;	
NEWLINE	newline symbol	CNTL-A	
BACK SPACE	back space symbol	BACK SPACE	
TAB	tab symbol	TAB	
BACK TAB	back tab symbol	ESC TAB	
CURSOR UP	cursor up symbol	cursor up symbol	ESC A
CURSOR DOWN	cursor down symbol	cursor down symbol	ESC B
CURSOR RIGHT	cursor right symbol	cursor right symbol	ESC C
CURSOR LEFT	cursor left symbol	cursor left symbol	ESC D
CURSOR HOME	cursor home symbol	home up symbol	ESC h
ERASE EOF	ERASE EOF	DELETE LINE	ESC M
ERASE INPUT	ALT-ERASE INPUT	ESC CLEAR LINE	ESC ESC M
CLEAR	ALT-CLEAR	CLEAR DISPLAY	ESC J
enter INSERT	insert char symbol	INS CHAR (beeps)	ESC Q
exit INSERT	RESET	INS CHAR (no beep)	ESC Q
DELETE CHAR	delete char symbol	DEL CHAR	ESC P
RESET	RESET	CNTL-G	

OTHER SEQUENCES AFFECTING SERIES/1 OPERATION (NO HOST ACTION)

REFRESH DISPLAY	CNTL-V	FREEZE DISPLAY (XOFF)	CNTL-S
FLUSH INPUT BUFFER	CNTL-X	RESUME DISPLAY (XON)	CNTL-Q

NOTES: The "A" strap must be physically set on for 2640/2644.

Appendix B

PEDRO MESSAGES

All PEDRO users have been moved to the new dataswitch. We have found the following about the operational characteristics of the new equipment. For example:

A FOOLPROOF way to always get the "REQUEST?" prompt is to enter a carriage return, wait one second, and enter another carriage return. The prompt will appear about two seconds after you enter the second return.

At the "REQUEST?" prompt, backspace doesn't work at this time, but will be resolved in the future. If you make a typing error at the prompt, hitting the space bar after the error will return you to the prompt.

If you find that you have accessed the switch ("REQUEST?" prompt) at the wrong speed for your needs, simply enter the ESC key. This tells the switch that you really didn't mean it. Then change speed and access the switch again.

Here are some common messages and their meanings:

XX-XX IS4000	Welcome message. XX-XX is your PEDRO port address. (doesn't change)
REQUEST?	Access Prompt. Enter the system name you want.
USER ID?	Enter your location code if this prompt appears
PAUSE	The switch is trying to connect you.
CONNECTED TO YY-YY	You are connected to your system. Wait two seconds and hit return. YY-YY is the PEDRO port address of the system port you are connected to.

There are certain circumstances that will prevent you from being connected to the system you requested. Here are the "failed to connect" messages with an explanation:

RESTRICTED ADDRESS Your terminal can't call this system.
INCOMPATIBLE ADDRESS Your terminal is set for the wrong speed.
DESTINATION BUSY The system is full, try again later.
QUEUED TO GRP:CCC PRI:D POS:E
 The system is full, but you are waiting in line.
 CCC is usually the system number, D is your
 priority, usually 3, and E, your position
 in line. Hit return.

ENTER C<ontinue> or Q<uit>

 You can continue in queue, by entering a C,
 and will be connected to the first available
 port, or you can quit by entering a Q, which
 will disconnect you from PEDRO. Be sure to
 enter a carriage return after the C or the Q.

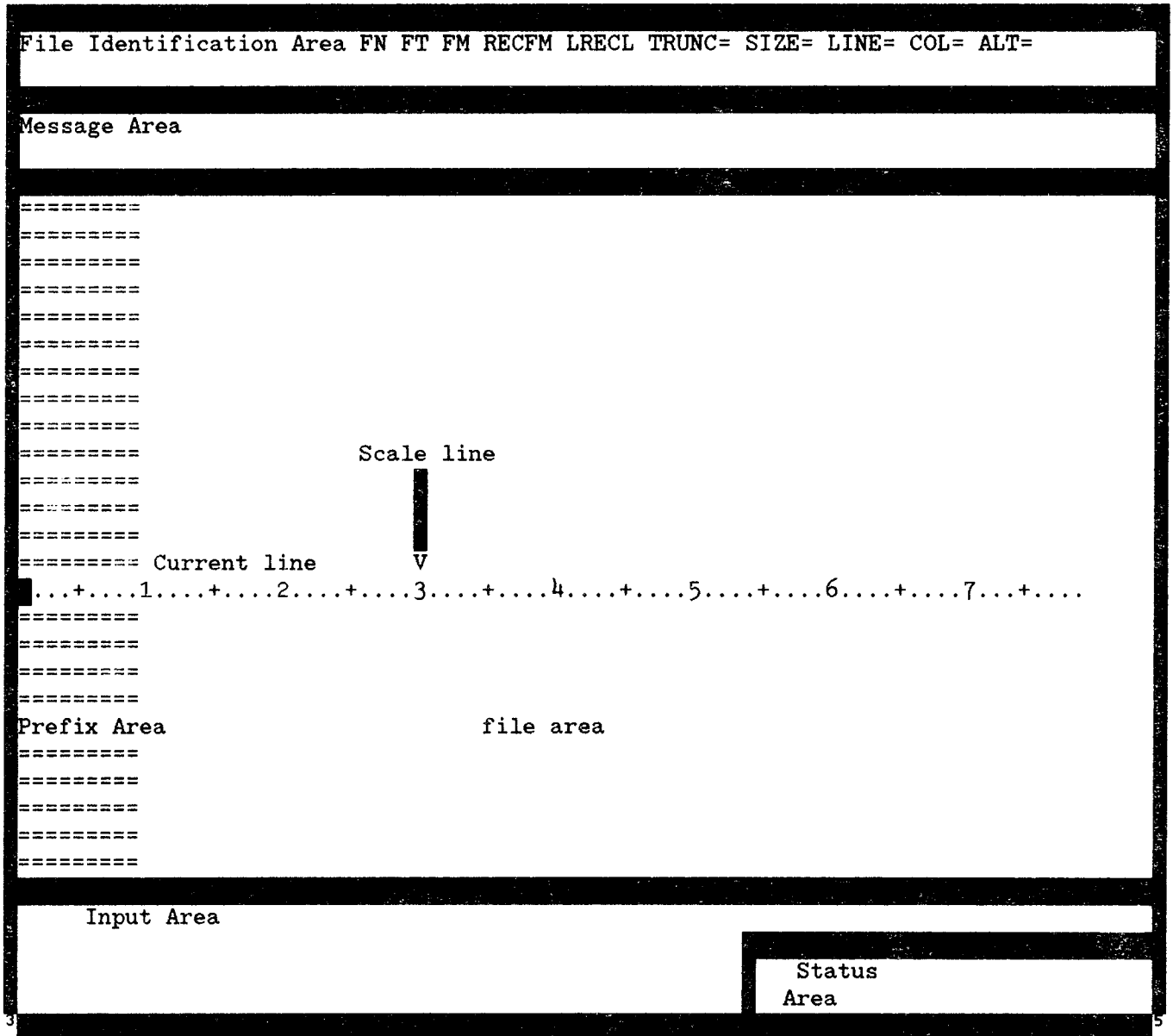
DESTINATION UNAVAILABLE Check your typing. (remember, no backspace)
DESTINATION DISABLED Your system is down. Try again later.

If you get any of these failed to connect messages and feel that you should not have, please call Systems Support at 857-2062. They will have the most current system status. Systems Support will also act as first point of contact for PEDRO problems, and will be able to help you faster if you provide them with your terminal port (XX-XX from above) and system port (YY-YY from above) if known.

Appendix C

XEDIT COMMANDS

Format of a CMS file:



Default Screen Layout

The file identification area tells you the filename, filetype, filemode logical record length and record format, truncation column (TRUNC=), number of logical records (SIZE=), current line and column pointer position (LINE= COL=), and the number of alterations made to the file (ALT=).

The message area displays XEDIT and user informational and error messages.

The file area is used to display data contained in the file.

The status area is used to display messages such as

- 'XEDIT n FILE' the number of files being edited in parallel
- 'INPUT MODE' when XEDIT is in input mode
- 'BLOCK INCOMPLETE' when there is an incomplete block specification using a prefix command.
- 'COPY/MOVE PENDING' when using a prefix command to move or copy a block of lines but you have not specified the location for insertion with "P" or "F".

With various XEDIT SET commands, you can change the layout of the screen to look the way you want it to.

- SET PREFIX ON LEFT/RIGHT - the prefix area can be on the left or right or off completely.
- SET PREFIX OFF
- SET CURLINE ON N - set the current line on screen line N from the top of the screen (do not confuse screen line with the line numbers in the file.
- SET SCALE ON N - moves the scale to screen line N from the top of the screen. The scale is useful to help highlight the current line of the file.
- SET CMDLINE TOP/BOTTOM - set the command line on the bottom or top of the file.

Prefix Area

The prefix area is filled with equal signs by default. If you issue the command SET NUM ON the equal signs will become line numbers starting with 00001 and incrementing by one. When any lines are inserted or deleted, the line numbers are recalculated automatically. Special commands, called prefix commands, can be used in the prefix area. These prefix commands are used to manipulate complete sets of lines. The following prefix commands are the most commonly used:

```
A ..... add lines
C ..... copy lines
CC .... copy a block of lines
D ..... delete lines
DD .... delete a block of lines
F ..... following (target for block copy/move)
I ..... insert lines
M ..... move lines
MM .... move blocks of lines
P ..... previous (target for block copy/move)
" ..... duplicate lines
"" .... duplicate blocks of lines
/ ..... reposition current line
```

Multiple prefix commands can be entered at one time. When the enter key is depressed, the prefix command interpreter will execute all the commands.

```

+-----
|a====      add one line here
|=d====     delete this line
|=3a====    add 3 lines here
|=a3====    add 3 lines here
|=d2====    delete 2 lines starting here
|=====
|=====
|= "====    duplicate this line once
|=2"====    duplicate this line twice

+-----
|00031
|dd032      delete from this line
|00033
|00034
|000dd      to this line

+-----
|=====
|m2 ==      move 2 lines starting here
|=====
|=====
|=f=        following this line

+-----
|=====
|==/=       make this line the current line
|=====
|=====

+-----
|= ""====   duplicate from this line
|=====
|= ""====   to this line
|=====
|=====    duplicated lines will go here
|=====

+-----
|=====
|=cc====    copy from this line
|=====
|=====
|=cc====    to this line
|=====
|=p====     preceding this line

```

Examples of commands to move through an XEDIT file
 (XEDIT commands are in " ")

edit a file that does not exist
 "XEDIT NEW FILE A":

```
current line |===== * * * TOP OF FILE * * *
              |...+...1...+...2...+...3...+...4...+...5...+...
              |===== * * * END OF FILE * * *
```

"I": insert some new lines

```
-----
              |* * * TOP OF FILE * * *
              |...+...1...+...2...+...3...+...4...+...5...+...
current----> |abcdef
line         |cdecde
              |fghfgh
              |abcdef
              |=====> * * * INPUT ZONE * * *
```

"NEXT":

```
-----
current----> |===== * * * TOP OF FILE * * *
line         |===== abcdef
              |...+...1...+...2...+...3...+...4...+...5...+...
              |===== cdecde
              |===== fghfgh
              |===== abcdef
              |===== * * * END OF FILE * * *
```

"DOWN":

```
-----
current----> |===== * * * TOP OF FILE * * *
line         |===== abcdef
              |===== cdecde
              |...+...1...+...2...+...3...+...4...+...5...+...
              |===== fghfgh
              |===== abcdef
              |===== * * * END OF FILE * * *
```

"SET NUM ON":

```
-----
current----> |00001 * * * TOP OF FILE * * *
line         |00002 abcdef
              |00003 cdecde
              |...+...1...+...2...+...3...+...4...+...5...+...
              |00004 fghfgh
              |00005 abcdef
              |00006 * * * END OF FILE * * *
```

"BOTTOM":

```

-----
00001 * * * TOP OF FILE * * *
00002 abcdef
00003 cdecde
00004 fghfgh
current----> 00005 abcdef
line          ...+...1...+...2...+...3...+...4...+...5...+...
00006 * * * END OF FILE * * *
```

"TOP":

```

===== * * * TOP OF FILE * * *
current---->
line          ...+...1...+...2...+...3...+...4...+...5...+...
===== abcdef
===== cdecde
===== fghfgh
===== abcdef
===== * * * END OF FILE * * *
```

"/abc":

```

-----
00001 * * * TOP OF FILE * * *
current----> 00002 abcdef
line          ...+...1...+...2...+...3...+...4...+...5...+...
00003 cdecde
00004 fghfgh
00005 abcdef
00006 * * * END OF FILE * * *
```

"=":

```

-----
00001 * * * TOP OF FILE * * *
00002 abcdef
00003 cdecde
00004 fghfgh
current----> 00005 abcdef
line          ...+...1...+...2...+...3...+...4...+...5...+...
00006 * * * END OF FILE * * *
```

Other Useful XEDIT commands and their functions

Command	Purpose/function
Backward	scroll back 1 screen
FOrward	scroll forward 1 screen
Change /string1/string2/ target p	change string1 to string2 in the file from the current line to the target line, p times in each line.
Change /string1/string2/ * *	this will change every occurrence in the file.
Help	displays the XEDIT help menu
LEft n	view data n columns to the left of column 1 on the screen
Right n	view data n columns to the right of column 1 on the screen
Up n	move the view of the file up n lines
Down n	move your view of the file down n lines
FILE	end editing session and write file on disk. (SAVE and QUIT)
QUIT	end editing session
SAVE	write file on disk, stay in XEDIT.

Appendix D

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