PIP XVM
UTILITY MANUAL

DEC-XV-UPPUA-A-D

XVM Systems

digital

PIP XVM
UTILITY MANUAL

DEC-XV-UPPUA-A-D

digital equipment corporation · maynard. massachusetts

First Printing, December 1975

The postage prepaid READER'S COMMENTS form on the last page of this document requests the user's critical evaluation to assist us in preparing future documentation.

The following are trademarks of Digital Equipment Corporation:

DIGITAL	DECsystem-10	MASSBUS
DEC	DECtape	OMNIBUS
PDP	DIBOL	OS/8
DECUS	EDUSYSTEM	PHA
UNIBUS	FLIP CHIP	RSTS
COMPUTER LABS	FOCAL	RSX
COMTEX	INDAC	TYPESET-8
DDT	LAB-8	TYPESET-10
DECCOMM		TYPESET-11

CONTENTS

			PAGE
PREFACE			ix
CHAPTER	1	INTRODUCTION	
	1.1	PIP PROGRAM	1-1
	1.2	MANUAL ORGANIZATION AND USE	1-1
	1.3	WRITING CONVENTIONS	1-2
	1.4	PIP STARTUP PROCEDURES	1-2
CHAPTER	2	COMMAND STRING FORMATS AND BASIC OPERATIONS	
	2.1	PIP COMMAND STRING, GENERAL DESCRIPTION	2-1
	2.2	TYPES OF PIP COMMANDS	2-2
	2.2.1	Destination/Source Commands	2-2
	2.2.2	Single-Device Commands	2-3
	2.3	COMMAND STRING ELEMENTS	2-6
	2.3.1	Command String Delimiters	2-6
	2.3.2	Standard XVM/DOS I/O and Storage Devices	2-7
	2.3.3	Primary Operations	2-7
	2.3.4	Optional Functions	2-9
	2.3.5	Specifying UFD's	2-11
	2.3.6	Specifying Data Modes	2-11
	2.3.7	PIP UFD and File Protection Codes	2-13
CHAPTER	3	PIP OPERATIONS, DETAILED DESCRIPTIONS AND EXAMPLES OF USE	
	3.1	INTRODUCTION	3-1
	3.2	N: DIRECTORY SETUP OR INITIALIZATION OPERATION	3-1
	3.2.1	Create/Initialize Current UFD	3-1
	3.2.2	Setting up the UFD Protection Code	3-3
	3.2.3	Deletion of UFD's	3-4
	3.2.4	Initialization of DECtape Directories	3-5
	3.2.5	(S) Switch: Setting up DECtape Directories with ↑Q Areas	3-5
	3.3	L: DIRECTORY LIST OPERATION	3-6
	3.3.1	List UFD for Current or Specified UIC	3-7
	3.3.2	(M) Switch: List MFD	3-8
	3.3.3	(L) Switch: List Monitor SYSBLK	3-8
	3.3.4	(P) Switch: List UFD with File Protection Codes and RIB Pointers	3-9
	3.3.5	List DECtape Directories	3-10
	3.3.6	List Selected File	3-11
	3.4	T: FILE TRANSFER COMMANDS	3-13
	3.4.1	Required Data Mode Specifications	3-15
	3.4.2	System Device File Protection Codes	3-15
	3.4.3	File Transfers to Disk	3-16
	3.4.4	UFD to UFD File Transfers	3-17
	3.4.5	Device to Device File Transfers	3-18
	3.4.6	Transfer of Keyboard Inputs to Output Devices	3-19

			Page
	3.5	FILE TRANSFERS WITH OPTIONAL FUNCTIONS	3-21
	3.5.1	(G) Switch: Parity/Checksum Error Correction Facility	3-21
	3.5.2	(E) and (C) Switches: Tab-to-Space, Space-to-Tab Conversion	3-22
	3.5.3	(N) Switch: Directory Initialization During Transfer	3-23
	3.5.4	(W) Switch: Combining Files During Transfers	3-24
	3.5.5	Inputting and Combining Files from Paper Tape: (W) Switch	3-26
	3.5.6	Card Input and Card File Modification Operations: (Q), (C), (T) Switches	3-26
	3.5.7	(T) Switch: Delete Trailing Spaces	3-27
	3.5.8	(V) Switch: Vertical Forms Control on Output	3-28
	3.6	V: VERIFY OPERATION	3-28
	3.7	S: SEGMENT FILE OPERATION	3-30
	3.7.1	S, Segment File Command	3-30
	3.7.2	T Command Requirements for S Operations	3-30
	3.7.3	Source File to Multiple Paper Tapes Segmentation Operations	3-33
	3.8	D: DELETE FILE OPERATION	3-33
	3.8.1	Deletion of Files from UFD's	3-34
	3.8.2	Deletion of DECtape Files	3-36
	3.8.3	(X) Switch: Deletion of Truncated Files	3-36
	3.9	R: FILE RENAME OPERATION	3-36
	3.9.1	Renaming Files	3-37
	3.9.2	Setting File Protection Codes	3-38
	3.9.3	Setting Directory Protection Codes	3-38
	3.10	B: BLOCK COPY OPERATION	3-39
	3.11	C: COPY MASS STORAGE OPERATION	3-41
	3.11.1	Adding Files, Copy Operation	3-42
	3.11.2	Copy with Directory Initialization	3-43
	3.12	U: UPDATE STORAGE ALLOCATION TABLES OPERATION	3-44
CHAPTER	4	MIC PIP OPERATIONS	
	4.1	GENERAL PIP MIC OPERATIONS	4-1
	4.2	SPECIFIC MIC FUNCTIONS	4-1
	4.2.1	N Operation	4-1
	4.2.2	L, List Directory Operation	4-2
	4.2.3	Delete Truncated Files from System	4-2
	4.2.4	I, Initialize Operation	4-2
CHAPTER	5	PIP ERROR DETECTION PROCEDURES AND MESSAGES	
	5.1	INTRODUCTION	5-1
	5.1.1	User Command String Errors	5-1
	5.1.2	Operational Errors	5-2
	5.2	PIP ERROR MESSAGES	5-2
	5.3	CORRECTION AND RECOVERY COMMANDS	5-7
CHAPTER	6	QUICK REFERENCE TABLES	
	6.1	INTRODUCTION	6-1
	6.2	OPTIONS VERSUS PRIMARY OPERATIONS	6-1
	6.3	PIP COMMAND STRING FORMAT CHARTS	6-1
	6.4	PIP USER OPERATION TABLES	6-1

		Page
APPENDIX A	USE OF VT15 GRAPHICS DISPLAY SYSTEM	A-1
APPENDIX B	USE OF VP15A DISPLAY DEVICE	B-1
APPENDIX C	XVM/DOS TERMS AND ACRONYMS	C-1

FIGURES

			Page
Figure	2-1	Destination/Source Command String Format	2-4
	2-2	PIP Single Device Commands, General Format	2-5
	6-1	Destination/Source Command String Format	6-4
	6-2	PIP Single Device Commands, General Format	6-5

TABLES

			Page
Table	1-1	General Keyboard Command Characters	1-3
	2-1	Command String Delimiters	2-6
	2-2	PIP Command Device Mnemonics	2-7
	2-3	PIP Primary Operations, Summary	2-8
	2-4	PIP Optional Functions	2-9
	2-5	Data Modes and Data Mode Indicators	2-12
	3-1	Legal Data Mode and Function Switch Combinations for Transfer Operations	3-15
	3-2	Legal Combinations of Function Switches in Transfer Operations	3-21
	5-1	PIP Error Messages	5-3
	5-2	User Correction and Recovery Commands	5-7
	6-1	Available Options Versus Primary Operations	6-3
	6-2	Directory Operations	6-6
	6-3	List Operations	6-8
	6-4	File Modification Operations	6-10
	6-5	File Transfer Operations	6-12
	6-6	COPY Operations	6-14

LIST OF ALL XVM MANUALS

The following is a list of all XVM manuals and their DEC numbers, including the latest version available. Within this manual, other XVM manuals are referenced by title only. Refer to this list for the DEC numbers of these referenced manuals.

BOSS XVM USER'S MANUAL	DEC-XV-OBUAA-A-D
CHAIN XVM/EXECUTE XVM UTILITY MANUAL	DEC-XV-UCHNA-A-D
DDT XVM UTILITY MANUAL	DEC-XV-UDDTA-A-D
EDIT/EDITVP/EDITVT XVM UTILITY MANUAL	DEC-XV-UETUA-A-D
8TRAN XVM UTILITY MANUAL	DEC-XV-UTRNA-A-D
FOCAL XVM LANGUAGE MANUAL	DEC-XV-LFLGA-A-D
FORTRAN IV XVM LANGUAGE MANUAL	DEC-XV-LF4MA-A-D
FORTRAN IV XVM OPERATING ENVIRONMENT MANUAL	DEC-XV-LF4EA-A-D
LINKING LOADER XVM UTILITY MANUAL	DEC-XV-ULLUA-A-D
MAC11 XVM ASSEMBLER LANGUAGE MANUAL	DEC-XV-LMLAA-A-D
MACRO XVM ASSEMBLER LANGUAGE MANUAL	DEC-XV-LMALA-A-D
MTDUMP XVM UTILITY MANUAL	DEC-XV-UMTUA-A-D
PATCH XVM UTILITY MANUAL	DEC-XV-UPUMA-A-D
PIP XVM UTILITY MANUAL	DEC-XV-UPPUA-A-D
SGEN XVM UTILITY MANUAL	DEC-XV-USUTA-A-D
SRCCOM XVM UTILITY MANUAL	DEC-XV-USRCA-A-D
UPDATE XVM UTILITY MANUAL	DEC-XV-UUPDA-A-D
VP15A XVM GRAPHICS SOFTWARE MANUAL	DEC-XV-GVPAA-A-D
VT15 XVM GRAPHICS SOFTWARE MANUAL	DEC-XV-GVTAA-A-D
XVM/DOS KEYBOARD COMMAND GUIDE	DEC-XV-ODKBA-A-D
XVM/DOS READER'S GUIDE AND MASTER INDEX	DEC-XV-ODGIA-A-D
XVM/DOS SYSTEM MANUAL	DEC-XV-ODSAA-A-D
XVM/DOS USERS MANUAL	DEC-XV-ODMAA-A-D
XVM/DOS V1A SYSTEM INSTALLATION GUIDE	DEC-XV-ODSIA-A-D
XVM/RSX SYSTEM MANUAL	DEC-XV-IRSMA-A-D
XVM UNICHANNEL SOFTWARE MANUAL	DEC-XV-XUSMA-A-D

PREFACE

This manual describes and illustrates the features provided by the XVM Utility program PIP. This utility program operates only within the XVM Disk Operating System (XVM/DOS) monitor environment.

In the preparation of this manual it was assumed that the reader is familiar with the contents of the XVM/DOS USERS MANUAL and with the general operating procedures for the XVM equipment.

CHAPTER 1
INTRODUCTION

1.1 PIP PROGRAM

The PIP XVM (PIP) Utility Program enables the system user to perform the following major functions via keyboard commands:

a) Interchange information between system peripheral I/O devices, the system disk device and peripheral I/O devices; and between user file areas located on the system disk device.

b) Perform verification and modification procedures on information being transferred.

c) Initialize, list and modify file directories of directoried disk and other directoried devices.

This manual is primarily concerned with disk-oriented operations. PIP, however, may be used with all other standard XVM I/O and mass storage devices; limitations and differences in operation are indicated where applicable. There are specific operations on magtape which PIP does not perform, such as create and list a file directory. Users of magtape should also read the MTDUMP XVM Utility Manual to learn how to perform these special functions using the MTDUMP XVM Utility Program.

1.2 MANUAL ORGANIZATION AND USE

This manual is intended for users who are familiar with:

a) the general system operating procedures (i.e., use of equipment and system startup procedures);

b) the elements, structure, and use of the XVM/DOS monitor as described in the XVM/DOS Users Manual

Introductory information and detailed descriptions of PIP operations and their applications are given in Chapters 1 through 5. Chapter 6 contains quick-reference tables.

New users of PIP should familiarize themselves with the contents of Chapters 1 through 5; thereafter, they need only refer to Chapter 6 for concise information.

XVM/DOS terms used in this manual, their acronyms and descriptions, are presented in Appendix C.

1.3 WRITING CONVENTIONS

Table 1-1 lists a group of commonly used keyboard command and control characters together with (a) their functions as recognized by PIP and (b) their representations in listing and, in this manual, in text and examples.

1.4 PIP STARTUP PROCEDURES

Once a user has completed the system log-in procedures, PIP may be called into core by the entry of the name "PIP". When loaded, PIP outputs the following message on the console printer:

```
$PIP
PIP XVM Vxxnnn
>
```

followed by a right angle (>) "ready" symbol.

User commands are entered immediately after the ready symbol. Once an operation has been initiated, the user must not attempt to make any further entries until PIP prints the ready symbol. The only exception to this is when the user wishes to abort the current operation. The entry of:

a) CTRL P (↑P) aborts the current operation and returns control to PIP;

b) CTRL C (↑C) aborts the current operation and returns control to the monitor.

Table 1-1
General Keyboard Command Characters

ACTUATED KEY OR KEY COMBINATION	PRINTED RESPONSE & TEXT SYMBOLS	FUNCTION INITIATED BY ENTRY
RUBOUT	\	Causes deletion of the last entered character.
CTRL U	Response - @ Text - ↑U	Causes deletion of the last entered line.
CTRL P	↑P	Restarts PIP or continues on interrupted input or output operations on a non-directoried device
CTRL C	↑C	Causes control to be returned to the Monitor.
CTRL R	↑R	Enables processing to be resumed when a Device Not Ready (IOPS4) error has been corrected.
CTRL D	↑D	Terminates input from the console keyboard.
SHIFT O or UNDER BAR	← or	Divides PIP command string into Output and Input sections (see Section 2).
RETURN	Non-printing (Text symbol is))	Initiates a carriage return/ line feed operation. Normally used to terminate command strings.
ALT MODE	Non-printing (Text symbol is ⓢ)	Causes control to be returned to the Monitor on completion of the current operation. The monitor performs a carriage return/ line feed operation and announces itself.

CHAPTER 2
COMMAND STRING FORMATS AND BASIC OPERATIONS

This Chapter describes the basic PIP command string formats and the elements which comprise them. Included are lists and descriptions of the operations provided the user by PIP.

2.1 PIP COMMAND STRING, GENERAL DESCRIPTION

PIP command strings are limited to a maximum of 72 characters and a single console device input line and no provision is made for command string continuation lines. The items which may be specified in a PIP command string are:

Item	How Specified
1) Primary operation to be performed	Identified by an assigned single alphabetic character (e.g., T for Transfer). Refer to Table 2-3 for a description of each Primary Operation and its command character.
2) Any storage or I/O device(s) involved	Identified by an assigned 2 or 3-character alphanumeric mnemonic (e.g., DT for DECtape). Refer to Table 2-2 for a listing of the standard DOS system storage devices and the mnemonic assigned to each.
3) The names of any files involved	Identified by an assigned (user or system) 6-character filename plus a 3-character extension. Refer to the XVM/DOS User's Manual for descriptions of filenaming considerations.
4) Optional Functions (i.e., Data Modes and/or secondary operations) to be included	Identified by an assigned alphabetic character enclosed in parentheses e.g., (A). Refer to Table 2-4 for a description of each optional function and its assigned command character. One or more functions may be specified e.g., (A) or (AN).

Item	How Specified
5) Optionally defined Protection codes	Identified by a numeric normally enclosed in parentheses; only one code may be specified in a command. If an optional function is specified, the protection code and command character(s) should be placed within the same set of parentheses (e.g., (1) or (A1)). Refer to paragraph 2.3.7 for a description of protection codes.
6) Required User File Directory (UFD) Identification	UFD's in commands are identified by their assigned 3-character mnemonic (UIC) enclosed within angle brackets (e.g., <ABC>); refer to paragraph 2.3.5 for a detailed description.

2.2 TYPES OF PIP COMMANDS

There are two basic types of PIP commands:

a) Destination/Source commands, and
b) Single-Device commands.

These command categories are described, individually, in paragraphs 2.2.1 and 2.2.2.

2.2.1 Destination/Source Commands

Commands of this type are used to specify PIP operations which involve the transfer of data between two devices or device areas. Such commands consist of two sections separated by a ← delimiter:

[DESTINATION]←[SOURCE]

The elements within these sections specify where the data to be transferred is to be found [SOURCE] and where it is to go [DESTINATION] .

The major operation to be performed is always the first character in any PIP command string; optional operations may be specified in either section of this type of command. For example, in the following command string:

>T␣DK␣␣DESTFL␣SRC←DT1␣FILEA␣SRC↵

the destination section consists of:

[T␣DK␣DESTFL␣SRC].

The elements of this section specify:

a) T = a Transfer operation is to be performed

b) DK = the disk device is to receive the Transferred data

NOTE

When disk is specified, it represents the current UFD.

c) DESTFL␣SRC = the name of the disk file into which the Transferred data is to be written.

The SOURCE section of the above command string consists of:

[DT1␣FILEA␣SRC]

The elements of this section specify:

a) DT1 = the data to be transferred resides on the tape mounted on DECtape Unit #1

b) FILEA SRC = the name of the DT1 file which contains the data to be transferred.

Figure 2-1 illustrates the format of the most complex form of the destination/source type of command string. This figure also lists:

a) the PIP operations which require the format illustrated,

b) permitted device mnemonics,

c) permitted switch options.

2.2.2 Single-Device Commands

Commands of this type are used to specify PIP operations which involve only a single device and a file or set of files. Such a command must specify the operation to be performed and the device involved. Where needed, filenames and option switches may also be added to the command string. For example, the command:

>D␣DT1␣FILEA␣SRC)

specifies that:

a) a delete (D) operation is to be performed,

b) the device containing the item to be deleted is DECtape Unit #1 (DT1),

c) the item to be deleted is file FILEA SRC.

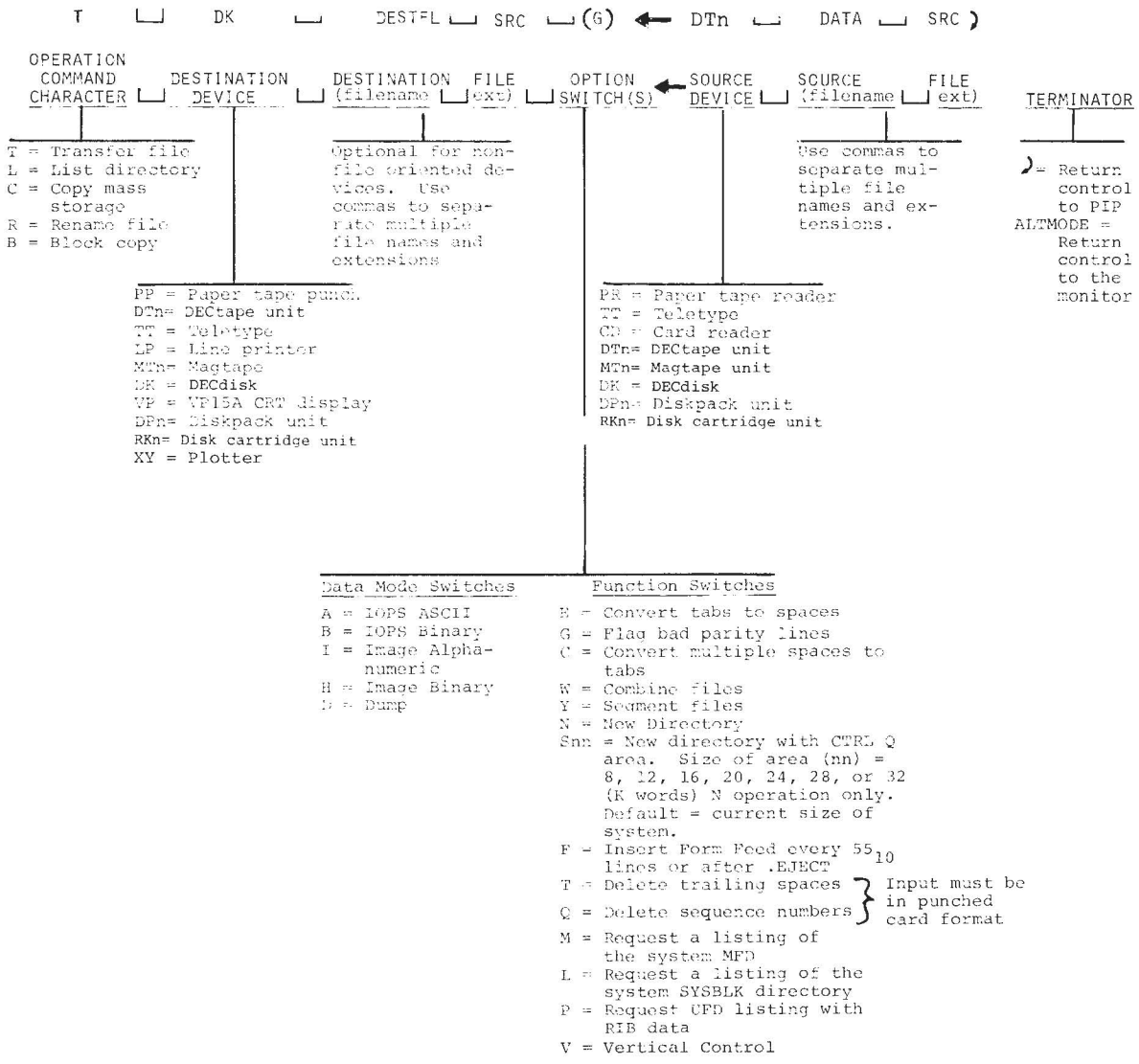


Figure 2-1
Destination/Source Command String Format

Figure 2-2 illustrates the format of the most complex form of a Single-Device PIP command. Also listed in Figure 2-2 are:

a) the operations which require the illustrated format,

b) permitted device mnemonics,

c) permitted switch options.

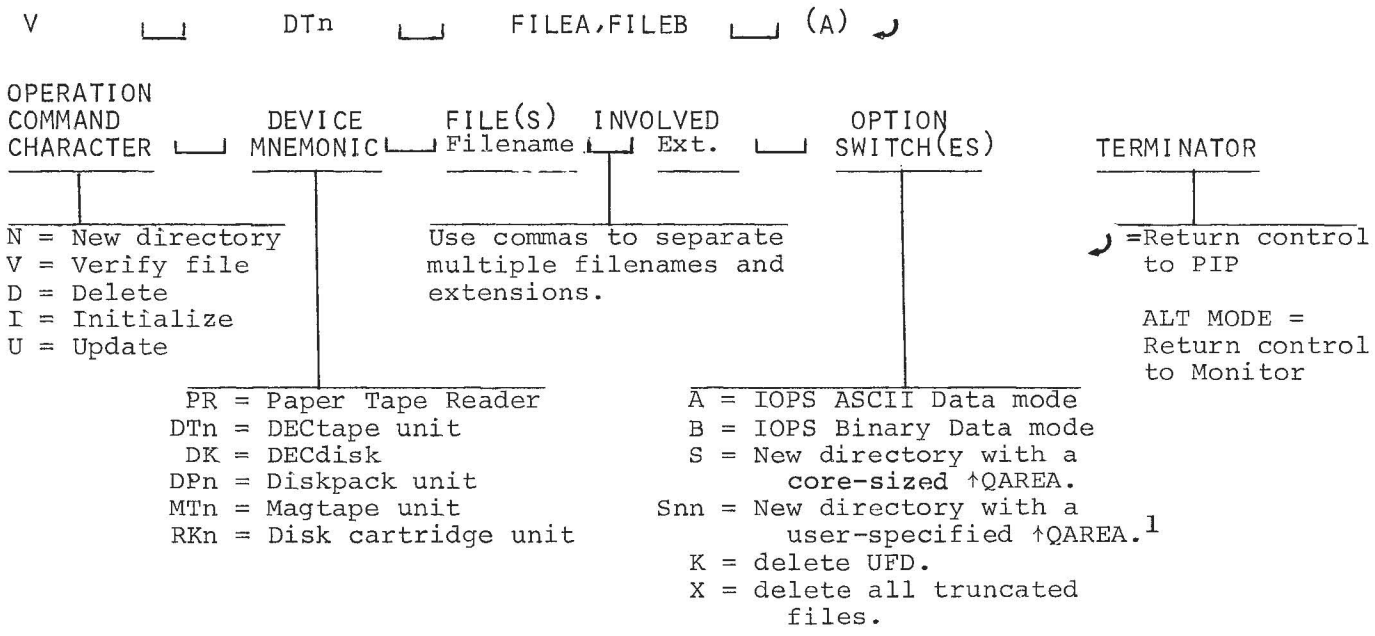


Figure 2-2
PIP Single Device Commands, General Format

[1] DECtape only

2.3 COMMAND STRING ELEMENTS

The basic elements which comprise the PIP command strings (i.e., delimiters, mnemonics, format requirements, etc.) are described in the following paragraphs. Also described are the major user capabilities offered by PIP, sub-functions which may be carried out within the context of major PIP operations, and how UFD's, data modes and protection codes are specified in PIP commands.

2.3.1 Command String Delimiters

Delimiters are flags which are set to separate elements of a command string. The delimiters used in PIP commands are listed and their uses described in the following table.

Table 2-1
Command String Delimiters

Use Delimiter:	To	In This Manner:
␣ (space)	Separate major command string elements	T␣DK␣FILE...
← (back arrow)	Separate destination and source sections of a command string	dest.←source
— (underbar)		T␣DK←DT1␣FILEA␣SRC
: (colon)	a) In RENAME command, separates UFD name from specified UFD protection code	<JAN:Ø>
	b) Separate device mnemonic and filename	DT1:FILEA
, (comma)	a) Separate filenames within a command string list	DT1␣FILEA,FILEB,FILEC
	b) Specify number of tapes or files involved in an operation when names are not needed	PR␣,,(READ 3 tapes)
; (semicolon)	Separate filename and filename extension or data mode option	DT1:FILEA,FILEB;SRC
< > (angle brackets)	Identify non-current UFD's	<JOE>
( ) (parentheses)	Identify option switches or specified protection codes	(A)
- (dash)	Separator to indicate a range of numbers	100-150

2.3.2 Standard XVM/DOS I/O and Storage Devices

The I/O and storage devices for which the XVM/DOS Monitor contains interfacing software are listed, together with their required command mnemonics, in the following table.

Table 2-2
PIP Command Device Mnemonics

Peripheral Device	Required Mnemonic
DECdisk (RF15)	DK
Diskpack (RPØ2)	DPn
Disk cartridge (RKØ5)	RKn
DECtape	DTn
Magnetic tape	MTn
Teletype	TT
Line Printer	LP
Card Reader	CD
Paper Tape Reader	PR
Paper Tape Punch	PP
Graphics Display	VT
XY11/XY311 Plotters	XY
Printer/Plotter	LV

NOTE

The letter n in the above table indicates "unit number". For example, DECtape unit #1 of a system is specified as DT1. If no unit number is specified in the mnemonic for a multi-unit device, the numeric Ø is assumed. For example, the mnemonic DP is equivalent to DPØ.

2.3.3 Primary Operations

The major capabilities provided by PIP are referred to as primary operations. Transfer, the user-directed interchange of files between storage devices, and List, the printing of user-specified user and monitor directories, are two examples of PIP primary operations. In a PIP command, the primary operation is identified by a single alphabetic letter entered as the first character of the command string. For example, in the command:

```
>T␣DK←DT1␣FILEA␣SRC↵
```

the letter "T" specifies the transfer operation (i.e., FILEA SRC is to be transferred from DT1 to the current UFD on DK).

All PIP primary operations are listed and described briefly in Table 2-3.

Table 2-3
PIP Primary Operations, Summary

The Primary OPERATION	is identified by the COMMAND CHARACTER	and performs the FUNCTION
TRANSFER	T	Transfer named data files between peripheral I/O devices.
VERIFY	V	Check a named file for parity or checksum errors.
SEGMENT	S	Divide a file into a specified number of segments (16 maximum) and store each segment as a separate named file.
LIST	L	Provide listings of system directories.
NEW DIRECTORY	N	Either clear an existing directory or, if one does not exist, establish a new one.
DELETE	D	Delete files from User File Directories.
RENAME	R	Rename files and change protection codes for the file or the UFD in which it is listed.
COPY, Mass Storage	C	Copy the contents of one mass storage medium onto another.
BLOCK COPY	B	Copy the contents of one or more selected data storage blocks contained by one device onto another medium. Block copy to the disk may be performed only by the MIC user.
INITIALIZE	I	Enable the system manager to clear all disk bit maps and restore the MFD to its original state. This command may be used only by the MIC user.
UPDATE	U	Update the monitor's Bad Allocation Table (BAT) and Storage Allocation Table (SAT) whenever defective storage blocks are detected on the disk.

2.3.4 Optional Functions

PIP primary operations may be executed alone or they may include one or more "optional functions".

The optional functions are used to specify parameters (such as data modes) and secondary operations (such as parity checks) which are to be carried out during the execution of the primary operations. An optional function is identified by an alphabetic letter enclosed in parentheses which is entered as a switch in a PIP command. Switch (A) which specifies that IOPS ASCII data is to be handled in the performance of the primary operation and switch (Y) which indicates that a file segmentation operation is to be performed during the primary operation are two examples of optional functions and their switches. The use of switch (A) in the following command:

```
>T␣DK←DT1␣FILEA␣(A)↵
```

specifies that the data contained by FILEA is in IOPS ASCII form. All PIP optional functions are listed and described in Table 2-4.

Table 2-4
PIP Optional Functions

OPTION	COMMAND CHARACTER	FUNCTION
IOPS ASCII Data Mode	(A)	
IOPS Binary	(B)	
Image Alphanumeric	(I)	Specifies the type of data (i.e., format) handled by the primary PIP operation.
Dump	(D)	
Image Binary	(H)	
Bad Parity & Checksum Check & Correction	(G)	Outputs error messages and the lines containing errors detected. Corrective actions are permitted.
Tab to Space Conversion	(E)	Causes all tabs found in the data handled to be expanded into a series of spaces.
Convert Multiple Spaces to Tabs	(C)	Causes each group of two or more spaces encountered during the primary operation to be contracted to a TAB.

Table 2-4 (Cont)
PIP Optional Functions

OPTION	COMMAND CHARACTER	FUNCTION
Segment Files	(Y)	Indicates that the file being transferred is to be segmented.
Combine Files	(W)	Combines two or more separate files into a single file.
Form Feed	(F)	Causes a form-feed and a RETURN character to be inserted after the detection of each .EJECT statement or after every 55_{10} lines.
Delete Trailing	(T)	Causes all trailing spaces to be deleted from alphanumeric data being handled during the primary operation.
Delete Sequence Numbers	(Q)	Used for punched card input, this option causes all input sequence numbers to be deleted.
Reserve QAREA with New Directory	(Snn)	Used for DECtape devices only, this option initializes any existing directory or establishes a new directory, and causes a CTRL Q area to be allocated on the device. The size of the allocated area may be specified (i.e., nn) by the user.
New Directory	(N)	Performs the same function as the N primary operation. It either clears an existing directory or, if one does not exist, establishes a new one.
List MFD	(M)	Enables standard UIC users to obtain a listing of all unprotected UFD's contained by the device (disk). The MIC user will obtain a listing of all UFD's contained by the device.
List SYSBLK	(L)	Enables the user to obtain a listing of the system SYSBLK directory.
List UFD with Auxiliary Data	(P)	Causes file RIB data to be added to a UFD listing.
Delete UFD	(K)	Removes UFD entry from MFD.
Delete All Truncated Files	(X)	Causes all truncated files contained by the current or specified UFD to be deleted.
Vertical Forms Control	(V)	Translates standard FORTRAN IV vertical form control characters to those that can be interpreted by the line printer handler.
File Protection Codes	(N)	Specifies a protection code if a code other than the default is desired for the output files.

2.3.5 Specifying UFD's

Whenever a user logs in to the XVM/DOS Monitor prior to calling PIP, he specifies a user identification code, e.g.,

```
$LOGIN RPK
```

This code (in this example, RPK) is taken to be the name of the UFD (User File Directory) used in operation to and from disk whenever a UFD is not specified in a command. It is called the default or current UFD.

Whenever a UFD which is not current is referenced in a PIP command string:

a) its UIC (identifying code) written within angle bracket delimiters (e.g., <xxx>) must be added to the command.

b) the UIC must be inserted immediately after the mnemonic representing the device on which its UFD resides.

For example, the command:

```
>T␣DK␣<JAN><-DT1␣FILEA␣SRC)
```

specifies that FILEA SRC on DECtape unit #1 is to be transferred to the non-current UFD "JAN" located on the disk device.

2.3.6 Specifying Data Modes[1]

PIP operations which involve the interchange of data require that the form of the data being handled (i.e., its data mode) be indicated in the initiating command string.

Data modes in PIP are specified either by the filename extension of the file being transferred or by an equivalent data mode option switch. The Data Mode indicators recognized by PIP are listed in the following table (Table 2-5).

The available PIP data mode switches and their uses are:

a. (A) IOPS ASCII Switch - Files containing data in IOPS ASCII form require the use of the PIP (A) data mode switch. ASCII files are identified by the extensions:
   1) SRC or
   2) a 3-character extension where the third character is numeric (e.g., 004).

b. (B) IOPS Binary Switch - Files containing data in IOPS Binary form must be handled using the (B) switch. The filename extension BIN is used to identify binary files.

[1] Refer to the XVM/DOS Users Manual for detailed descriptions of data modes.

c. (I) Image Alphanumeric Switch - The (I) switch is required during transfer of Image Alphanumeric files and, as the name Image implies, maintains the File data in its exact form as read from the source file. The (I) switch must specifically be used when copies of paper tapes in either HRM or RIM hardware reader modes (MACRO .ABS or .FULL paper tape) are required.

d. (H) Image Binary Switch - Binary files (extension BIN) to be maintained in their exact form must be transferred using the (H) data mode switch.

e. (D) Dump Mode Switch - Files containing data in an absolute binary form (extension ABS) must be handled using the (D) mode switch.

The specific combinataions of data mode switches and optional function switches which are permitted in each of the PIP primary operations are given in Section 3.

Table 2-5
Data Modes and Data Mode Indicators

		DATA MODES				
		IOPS ASCII	IOPS BINARY	DUMP	IMAGE ALPHA/ NUMERIC	IMAGE BINARY
FILENAME EXTENSIONS	SRC	✓				
	BIN		✓			
	ABS			✓		
OPTION SWITCHES	Numeric	✓				
	(A)	✓				
	(B)		✓			
	(D)			✓		
	(I)				✓	
	(H)					✓

Files that contain more than one data mode per file cannot be manipulated using PIP. The XY11 plotter handler, XYA., accepts consecutive write commands in a combination of both IOPS ASCII and IOPS BINARY modes. Further, a user program could create a mixed-mode file on a mass storage device.

DATA MODE SWITCHES VS. FILENAME EXTENSIONS

From Table 2-5 it can be seen that switch options (A), (B) and (D) specify the same data modes as filename extensions SRC, BIN, and ABS. Only one data mode indicator is needed in a command string; if the filename extension is given, its corresponding data mode switch is not required; conversely, the extension is not needed if the switch is given. To illustrate:

	THE COMMAND		IS EQUIVALENT TO:
a)	T␣DK␣FILEA←DT2␣OLDFIL␣SRC↵	a)	T␣DK␣FILEA←DT2␣OLDFIL␣(A)↵
b)	T␣DK␣FILEA←DT2␣OLDFIL␣BIN↵	b)	T␣DK␣FILEA←DT2␣OLDFIL␣(B)↵
c)	T␣DK␣FILEA←DT2␣OLDFIL␣ABS↵	c)	T␣DK␣FILEA←DT2␣OLDFIL␣(D)↵

Files with extensions used by PIP to determine data modes must not actually be of another mode. PIP will refuse to transfer the file if the data mode derived from the command string does not match that in the first header word of the file. For example, FILE1 BIN should be a file written in IOPS binary mode (Ø in bits 14-17 of the first header word). It should not have been written, for example, in IOPS ASCII (2 in bits 14-17) and then had its extension changed to BIN.

2.3.7 PIP UFD and File Protection Codes

In performing PIP operations which involve User Directories and/or the files which they contain, the user must be aware of the UFD and file protection codes involved. These codes determine the accessibility of the UFD's and of the files which they contain.

New Protection codes may be assigned by the user or, by default, by the system. Existing codes may be modified using PIP command R. (refer to Section 3).

UFD's may be assigned the following codes:

DIRECTORY PROTECTION CODES

Ø	unprotected:	any user may access, manipulate the contents, and delete an unprotected UFD.
1	protected:	only the user logged in under the UIC of the UFD (or the MIC) may write into a protected UFD.

NOTE

The Default value for UFD directory protection codes is always 1.

Files may be assigned any of the following protection codes:

FILE PROTECTION CODES

	PERMITTED OPERATIONS		
CODE	READ	WRITE	PROTECTION GIVEN
1	yes	yes	unprotected
2	yes	no	write protected
3	no	no	protected
none given	SYSTEM DEFAULT VALUE[1]		

NOTE

File protection codes are valid only when the UFD in which they are located is protected (code 1).

[1]The system default value for file protection codes is set by the system manager (MIC) during the initial configuration of the system (i.e., system generation).

CHAPTER 3
PIP OPERATIONS, DETAILED DESCRIPTIONS AND EXAMPLES OF USE

3.1 INTRODUCTION

This Chapter contains descriptions of the PIP operations which may be performed by the standard (UIC) DOS system user. The PIP operations unique to the system manager (MIC) are described in Chapter 4.

3.2 N: DIRECTORY SETUP OR INITILIZATION OPERATION

The New Directory, N, operation permits the user to:

a) create a new UFD for the currently logged-in UIC or a specified UIC,

b) initialize an established UFD for the current UIC or a specified UIC,

c) initialize and change the protection code of the UFD for the current or a specified UIC,

d) delete the UFD of the current or a specified UIC from the system (i.e., remove its name from the MFD),

e) initialize the directories of peripheral file-structured mass storage devices.

WARNING

Each time the N command is used, all of the files on the directory involved are DELETED. Care must be taken to ensure that needed files are not lost.

[1]Utility program MTDUMP must be used to initialize directories on Mag-tape units (NTn). Refer to the MTDUMP XVN Utility Manual for a description of MTDUMP and its use.

Each of the preceding functions and the command format required for its execution are described in Sections 3.2.1 through 3.2.5.

3.2.1 Create/Initialize Current UFD

The command:

```
>N␣␣DK↵
```

is used either to:

a) establish a User File Directory (UFD) for the current UIC, or

b) initialize (delete all files from) an existing UFD set up for the current UIC.

For example, if the current UIC is "GEP" the new or initialized UFD resulting from the above command has the format:

```
 24-NOV-75
DIRECTORY LISTING  (GEP)
  1147 FREE BLKS
     Ø USER FILES
     Ø USER BLKS
```

UFD's set up or initialized using the basic N command (i.e., N␣␣DK↵) are automatically assigned a default protection code of 1 (write operation permitted only to the current UIC).

The current UIC can use the basic N command to set up UFD's under other UIC codes by specifying another UIC in the N command. For example, the current UIC "JAN" can set up a UFD under the UIC "ABC" with the command:

```
>N␣␣DK␣␣<ABC>↵
```

UFD's set up in the above manner are automatically assigned a protection code of Ø (unprotected).

Any unprotected UFD located on the disk being accessed may be initialized by the current user if he knows and specifies its UIC. For

example, an unprotected UFD with a UIC of "SCR" is initialized by the command:

```
>N␣DK␣<SCR>)
```

3.2.2 Setting up the UFD Protection Code

UFD protection codes may be specified in the N command to:

a) set a desired protection code for a new current or specified UFD,

b) change the protection code of an existing UFD.

The command formats used for these functions are:

a) `>N␣DK␣(X)`) for current UIC UFD.

b) `>N␣DK␣[AAA]␣(X)`) for specified UFD's.

where:

(X)	represents the desired protection code
[AAA]	represents the specified UIC.

The UFD protection codes are:

1	protected	write operations only permitted by the UIC or the system MIC.
Ø	unprotected	read/write operations permitted to all users.

The following are examples of the uses of the above N command formats:

a. The command:

```
>N␣DK␣(Ø)
```

creates or initializes the current UFD with a directory protection code of Ø (unprotected).

b. The command:

```
>N␣DK␣[ABC]␣(1)
```

creates (or initializes) the UFD "ABC" with a specified protection code of 1 (unprotected). Remember, if this type of command is used, the current user cannot access the specified UFD since it will be protected.

The R command, Section 3.9.3 should be used to change the protection code of an existing UFD unless the UFD is to be initialized (all files deleted).

3.2.3 Deletion of UFD's

The PIP N command permits the user to delete the UFD of the current UIC and specified unprotected (code Ø) UFD's from the system (i.e., remove their names from the MFD).

The "delete" function is set up by the addition of the "K" function switch to the basic N command, as follows:

a) >N␣DK␣(K)↵ deletes the UFD of the current UIC

b) >N␣DK␣<XXX>␣(K)↵ deletes the UFD of a specified UIC (<XXX>).

For example, assume the following Master File Directory (MFD) as being current:

```
   24-NOV-75                          <-- Current date
MFD DIRECTORY LISTING
  5753 FREE BLKS                      <-- Number of free device blocks
    47 USER FILES                     <-- Number of user files on device
   612 USER BLKS                      <-- Number of device blocks occupied
       NON(Ø)      Ø     Ø                  by files
ABL
XYZ    NON(Ø)      Ø     Ø            <-- Entries of Unprotected UFD's
\                  \
UFD UIC's          UFD protection code
```

NOTE

Listings of the current MFD as shown above are obtained using the PIP List (L) operation.

The commands:

```
>N␣DK␣<ABL>␣(K)↵
>N␣DK␣<XYZ>␣(K)↵
```

Delete the unprotected and non-current UFD's ABL and XYZ from the disk. Their deletion is illustrated by the resultant MFD:

```
24-NOV-75
MFD DIRECTORY LISTING
 5753 FREE BLKS
   47 USER FILES
  612 USER BLKS
```

3.2.4 Initialization of DECtape Directories

The directories of DECtape storage devices may also be initialized using the N command. The command format is:

>N device mnemonic and unit number↵

For example, the command:

>N␣DT1↵

initializes the directory of the tape mounted on DECtape unit 1.

NOTE

When a DECtape is initialized, the tape's File Bit Map blocks are cleared and the Directory Block is set up to indicate that only the File Bit Map and Directory Blocks are occupied.

3.2.5 (S) Switch: Setting up DECtape Directories with ↑Q Areas

The optional function switch (S) added to DECtape N commands both initializes the device directory and causes a CTRL Q area (↑QAREA) to be reserved on the DECtape for core ↑Q-dump operations as performed by the QDMP XVM utility program. The (S) switch is the only switch permitted in N DECtape commands. The basic command format is:

>N␣device mnemonic & unit number␣(S)↵

The (S) switch used:

a) alone — indicates that the size of the reserved ↑QAREA should be the same as the current system core size. For example, the command:

>N␣DT1␣(S)↵

in a system running in 16K of core establishes a 16K ↑QAREA (word locations) on the tape mounted on DECtape unit #1.

b) with a one or two digit number (i.e., (Snn)),

specifies the size of the ↑QAREA to be reserved on the tape mounted on the DECtape unit. For example, the command:

```
N  DT1  (S24)
```

causes a QAREA, 24K in size, to be reserved on the tape mounted on DECtape unit #1.

3.3 L: DIRECTORY LIST OPERATION

The List, L, operation enables the user to obtain copies of both disk and DECtape directories in:

a) punched tape form,
b) printed form, or
c) as a CRT display.

Copies of directories which contain only selected file entries may also be obtained.

The basic command format used in L operations is:

```
>L␣listing device←source device↵
```

where:

a) the listing device may be the:

   1) console teleprinter (TT)
   2) line printer (LP), (LV)
   3) paper tape punch (PP)
   4) optional CRT display devices (refer to Appendices A and B)
   5) XY plotter

b) the source device may be any directoried mass storage device within the system (i.e., DK, RKn, DTn, DPn). The exceptions are magtape directories which cannot be listed with PIP; MTDUMP must be used.

Three optional switches may be used within an L command; they are:

a) (M), list Monitor MFD table

b) (L), list Monitor SYSBLK table

c) (P), used only in UFD list operations, this switch causes additional file protection and file storage information to be included in the requested listing.

The various list operations which may be performed, the required L commands for each, and examples of the listings obtained are described in Sections 3.3.1 through 3.3.6.

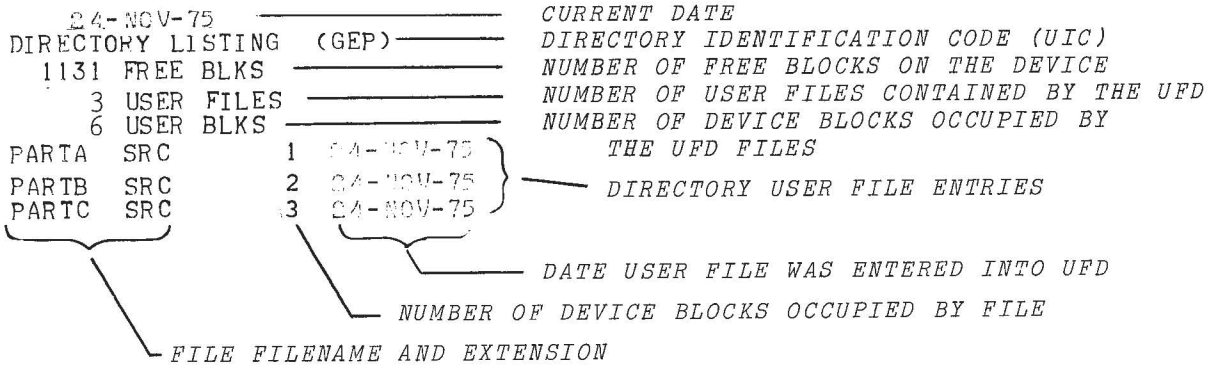
3.3.1 List UFD for Current or Specified UIC

The UFD for a current UIC located on a disk device may be listed using the basic L command format.

For example, assuming a current UIC of "GEP", the command:

```
>L␣LP←DK↵
```

produces a printout of the UFD with a format similar to the following:



The current user may also obtain a listing of any unprotected UFD in the system by specifying its identifying UIC in the L command. For example, the command:

```
>L␣LP←DK␣<JAN>↵
```

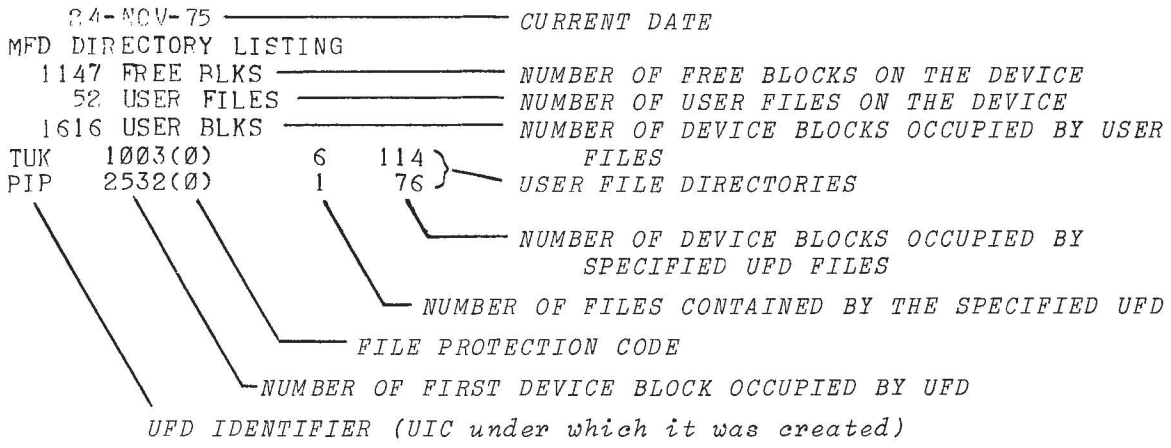
causes the printout of the unprotected disk UFD identified by the UIC "JAN".

3.3.2 (M) Switch: List MFD

A listing of a disk Master File Directory (MFD) may be obtained by the addition of the (M) switch to the L command. For example, a line printer listing of a DECdisk MFD is produced by the command:

```
>L␣LP←DK␣(M)↵
```

The listing produced would have a format similar to the following:



NOTE

MFD listings obtained by standard users (UIC's) list only the unprotected UFD entries. Only the system manager (MIC) can obtain a complete list of both protected and unprotected UFD's.

3.3.3 (L) Switch: List Monitor SYSBLK

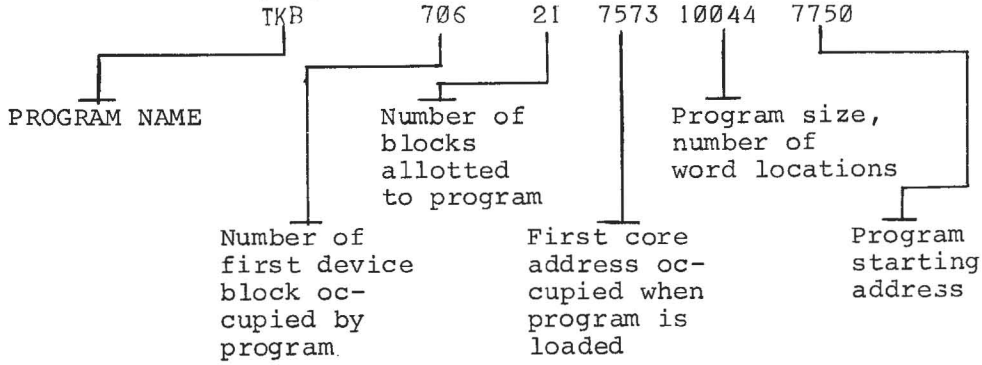
The addition of the (L) switch to a list command made to the disk device containing the operating system results in a printout of the system block (SYSBLK) table on the selected listing device. For example, assuming a DK system device, the command

```
>L␣LP←DK␣(L)↵
```

produces a listing of the system SYSBLK on the system line printer, with a format and contents similar to the following:

SYSBLK LISTING

NAME	FB	NB	FA	PS	SA
.SYSLD	0	40	100	17400	0
DOS15	40	33	1352	14526	1742
↑QAREA	101	200	5	77773	0
BOSS15	301	16	12411	71640	54020
EDIT	317	15	12001	5636	12002
EDITVP	334	17	10277	7340	10551
EDITVT	353	17	10302	7335	10553
PIP	372	35	1526	16111	1671
QFILE	427	2	17041	437	17045
MACRO	431	33	2630	15005	2630
CREF	464	5	15450	2137	15451
CHAIN	471	21	7600	10037	7600
F4	512	35	2176	15441	2323
DUMP	547	5	15300	2337	15300
DTCOPY	554	3	16662	755	16701
PATCH	557	10	12700	3453	12700
UPDATE	567	13	12370	5247	12371
SRCCOM	602	13	12674	4743	12777
STRAN	615	11	13607	4030	13671
89TRAN	626	11	13562	4055	13644
MTDUMP	637	12	13167	4450	13260
SGEN	651	35	5740	10163	6004
TKB	706	21	7573	10044	7750



SYSBLK supplies a complete listing of the language and utility programs contained by the system; the names listed in SYSBLK are the keyboard commands required to call (i.e., load) the listed program into core.

3.3.4 (P) Switch: List UFD with File Protection Codes and RIB[1] Pointers

The optional switch (P) added to an L command causes file protection code, file starting block number, and RIB data to be added to each

[1]Retrieval Information Block, contains pointers to the non-contiguous file storage blocks (refer to the XVM/DOS Users Manual, for a complete description of this table).

file entry contained by the UFD. For example, assuming the UIC "JAN" to be current, the command:

```
>L␣␣LP←DK↵
```

produces the following printout:

```
    24-NOV-75 ———————————————————— CURRENT DATE
DIRECTORY LISTING  (JAN) ———————— UFD IDENTIFIER
  1125 FREE BLKS ———————————————— FREE DEVICE BLOCKS
     1 USER FILES ————————————————— NUMBER OF USER FILES
     2 USER BLKS ——————————————— NUMBER OF USER FILE DEVICE BLOCKS
CRDFL  BIN       2  24-NOV-75 ——— USER FILE ENTRY
```

To illustrate the use of the (P) switch, the command:

```
>L␣␣LP←DK␣␣(P)↵
```

produces the following printout:

NOTE

Only the information added by the (P) option is indicated.

```
    24-NOV-75
DIRECTORY LISTING  (JAN)
  1125 FREE BLKS
     1 USER FILES
     2 USER BLKS
CRDFL  BIN     2553(2)      2  24-NOV-75    2552       0
```

POINTER TO THE FIRST RIB WORD IN BLOCK

POINTER TO DEVICE BLOCK CONTAINING FILE RIB TABLE

CURRENT FILE PROTECTION CODE

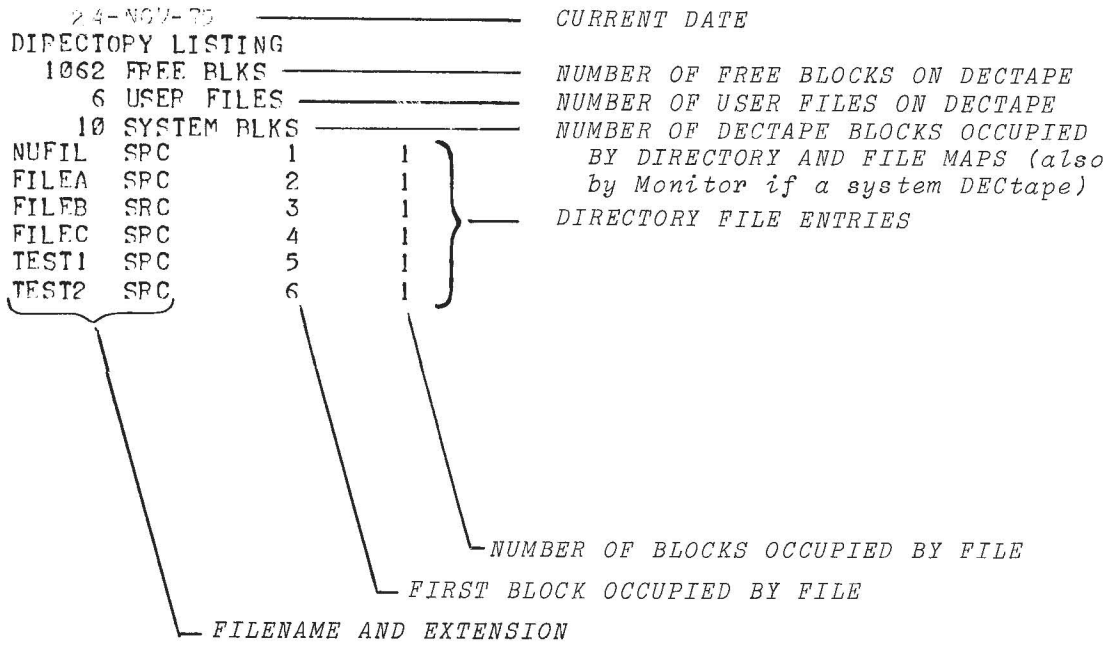
FIRST BLOCK OF FILE

3.3.5 List DECtape Directories

The directory of any DECtape storage device within a system can be listed using the basic L command. For example, the command:

```
>L␣␣TT←DT1↵
```

causes the directory of the tape mounted on DECtape Unit #1 to be listed on the console printer. Directory listings have a format similar to that of the following example:



Option switches (M) and (P) are illegal for devices other than disk devices (i.e., DK, RKn and DPn). The (L) switch, however, may be used with DECtape if the DECtape contains an ADSS operating system.

3.3.6 List Selected File

The directory entries of specific files or groups of files in a current UFD, a specified UFD, or a device directory may be listed selectively by adding elements to the L command.

To list the directory entry for a specific file, add its filename and extension to the L command. For example, assuming the following UFD to be current:

```
    24-NOV-75
DIRECTORY LISTING  (GEP)
  1131 FREE BLKS
     5 USER FILES
    15 USER BLKS
PARTA  SRC      1  24-NOV-75
PARTB  SRC      1  24-NOV-75
PARTC  SRC      1  24-NOV-75
CRDFL  BIN      2  24-NOV-75
TEST1  001     10  24-NOV-75
```

DIRECTORY HEADER

FILE ENTRY LIST

the command:

```
>L␣LP␣TEST1␣ØØ1←DK↵
```

produces the following line printer listing:

```
   24-NOV-75
DIRECTORY LISTING  (GEP)
  1131 FREE BLKS
     5 USER FILES
    15 USER BLKS
TEST1  ØØ1      10  24-NOV-75
```

NOTE THAT THE HEADER REMAINS UNCHANGED

DIRECTORY ENTRY OF SELECTED FILE

All files within a directory which have a common filename extension may be listed as a selected group. The required L command format is:

```
>L␣listing dev.␣#XXX←source dev.↵
```

where:

a) # indicates the function,

b) XXX is the common filename extension.

For example, assuming the UFD "GEP" to be current, the command:

```
>L␣LP␣#SRC←DK↵
```

produces the following line printer listing:

```
   24-NOV-75
DIRECTORY LISTING  (GEP)
  1131 FREE BLKS
     5 USER FILES
    15 USER BLKS
PARTA  SRC      1  24-NOV-75
PARTB  SRC      1  24-NOV-75
PARTC  SRC      1  24-NOV-75
```

NOTE THAT THE INFORMATION CONTAINED BY THE DIRECTORY HEADER IS UNCHANGED

LIST OF FILE ENTRIES WHICH HAVE THE COMMON EXTENSION "SRC".

The (P) optional switch may be used in "selected file(s)" L commands. For example, assuming the UFD "GEP" to be current, the command:

```
>L␣LP␣TEST1␣ØØ1␣(P)←DK)
```

produces the following line printer listing:

```
    24-NOV-75
DIRECTORY LISTING  (GEP)
  1131 FREE BLKS
     5 USER FILES
    15 USER BLKS
TEST1  001    2542(2)     10  24-NOV-75   2551      10
```

NOTE THE ADDITION OF THE FILE FIRST BLOCK NUMBER, PROTECTION CODE, POINTER TO THE FILE'S RIB AND FIRST RIB BLOCK.

Files may also be "selectively listed" from DECtape directories by using the device mnemonic and unit number (i.e., DTn) as the command "source device". The (P) option cannot be used in DECtape L commands.

3.4 T: FILE TRANSFER COMMANDS

The transfer of files between standard I/O devices is carried out by the "T" operation. During a basic T operation, data is read from a source device and is written into a named area (file) on a specified destination device. In addition to basic Read/Write transfers, PIP permits performance of more complex operations by the use of optional function switches. For example, transfer operations may include such optional functions as:

a. the correction of parity errors,

b. the conversion of tabs to spaces and vice-versa,

c. the segmentation of large files or the combination of small files into a single file to be performed as part of the T operation.

The T command string format is described in detail in Section 2. However, as a reminder, the basic elements are:

```
>T␣ [dest. device; mnemonic] ␣ [dest. file name] ␣ [ext.] ←[source device] ␣ [source filename] ␣ [ext] )
```

For example:

```
>T␣DK␣DESTFL␣BIN←DT1␣SOURCE␣BIN )
```

The following items should be observed when structuring a "T" command:

a. During transfers between directoried devices, the filename extension of the source file or an equivalent data mode switch must be given to ensure that PIP can find the source file. For example:

```
>T␣DK␣FILEA←DT1␣SOURCE␣SRC↵
```

b. During single file transfers, the destination file is named only if the name is to be different from that of the source file. For example:

1.
```
>T␣DK←DT1␣SOURCE␣SRC↵
```

results in the contents and name of DT1 file "SOURCE SRC" being added to the current UFD.

2.
```
>T␣DK␣NUFIL←DT1␣SOURCE␣SRC↵
```

results in the contents of DT1 file "SOURCE SRC" being transferred to the current UFD under the name "NUFIL SRC".

c. More than one file may be transferred in one T operation: the files, however, must be in the same data mode. In multi-file transfers, the listed filenames must be separated by commas; the common extension (BIN, ABS, or SRC) or an equivalent data mode switch is required only once in the series. For example:

```
>T␣DK␣TESTA,TESTB←DT1␣FILEA,FILEB␣SRC↵
```

transfers two files from DT1 into two differently names file areas of the current UFD, both with the extension SRC. Although an extension ending in a numeric (ØØ1, for example) will automatically imply IOPS ASCII, it cannot be used as a common extension for all files in the series by specifying it only once. For example:

```
>T␣DK␣TESTA,TESTB←DT1␣FILEA,FILEB␣ØØ1↵
```

transfers FILEA SRC to the disk as TESTA SRC and FILEB ␣ØØ1 as TESTB SRC.

d. During multiple file transfers in which the source names are to be retained on the destination device, commas must be used on the destination side of the command. The commas indicate to PIP the number of files involved; the number of commas used must be one less than the number of source files. For example, the command:

```
>T␣DK␣,, DT1␣FILEA,FILEB,FILEC␣SRC↵
```

effects the transfer of three files from DT1 to the current UFD. Note the use of two commas, one less than the number of source files specified.

e. Whenever optional switches are added to a T command, they may be placed on either side of the dividing symbol (i.e.,

```
>T␣DT␣(N)←DK␣FILEA␣(A)↵
```

3.4.1 Required Data Mode Specifications

In transfer operations, the form of the data being handled must be indicated in the command string either by a Data Mode Option switch or by the Filename extensions used.

The use of data mode switches or filename extensions in command strings is described in Section 2.3.6. The specific combinations of data mode switches and optional function switches permitted within the Transfer command are listed in Table 3-1.

Table 3-1
Legal Data Mode and Function Switch Combinations for Transfer Operations

DATA MODE SWITCHES	FUNCTION SWITCHES E	G	C	W	Y	N	S	F	T	Q
A	X	X	X	X	X	X	X	X	X	X
B				X		X	X			
I						X	X			
H						X	X			
D						X	X			

3.4.2 System Device File Protection Codes

During file transfer operations between disk storage devices or UFD's, the user may specify a protection code for the transferred file. (File protection codes are listed and described in Section 2.3.7.

For example, assuming that the UFD "JAN" is current:

```
24-NOV-75
DIRECTORY LISTING  (JAN)
  2263 FREE BLKS
     Ø USER FILES
     Ø USER BLKS
```

and that the system file protection code default value is 2, the following series of commands:

```
>T␣DK←DT1␣SEGA   (A)↵
>T␣DK←DT1␣SEGB   (A1)↵
>L␣LP←DK␣(P)↵
```

transfers files "SEGA" and "SEGB" from the tape mounted on DECtape unit #1 and lists the directory "JAN" with the applicable file protection and RIB data:

```
 24-NOV-75
DIRECTORY LISTING  (JAN)
  2260 FREE BLKS
     2 USER FILES
     2 USER BLKS
SEGA    SRC     1313(2)      1  24-NOV-75   1313      56
SEGB    SRC     1312(1)      1  24-NOV-75   1312      24
                  ↑
                  file protection code
```

As shown in the directory, file SEGA was assigned the default protection code while file SEGB was assigned the specified value (i.e., 1).

3.4.3 File Transfers to Disk

Files may be transferred to disk devices from any standard input or mass storage device within the system. An entry for each file transferred is listed in the current or specified UFD. Files may be transferred:

a) as a complete copy of the source file including the same filename;

b) with the same filename but a specified file protection code;

c) with a new name specified for the destination file.

Sample illustrations of the above functions appear below.

(A) `>T DK←DT1 TEST1 001` — *transfer file, keep same name and accept system default file protection code.*

(B) `>T DK←DT1 TEST2 002 (1)` — *transfer file, keep same name but specify desired file protection code.*

(C) >T DK DESTFL←DT1 TEST1 ØØ1 (1) *transfer file, rename file and specify desired file protection code.*

```
    24-NOV-75
DIRECTORY LISTING  (GEP)
  5717 FREE BLKS
     3 USER FILES
    33 USER BLKS
TEST1  ØØ1    1605(2)    1Ø  24-NOV-75   1650    1Ø
TEST2  ØØ2    1652(1)    13  24-NOV-75   1676    66
DESTFL SRC    1700(1)    1Ø  24-NOV-75   1716    1Ø
```

Filename extension *Protection code*

3.4.4 UFD to UFD File Transfers

Files may be read from:

a) unprotected UFD's (code Ø);

Example command:

>T␣DK␣←DK␣>JAN>␣TEST1␣(A)↵

b) protected UFD's (Code 1) if the file protection code of the desired file permits the operation;

Example command:

>T␣DK ← DK␣<JAN>␣FILEA␣(B)↵

c) the current UFD and written into another, unprotected (code Ø) UFD;

Example command:

>T␣DK␣<JAN> ← DK␣EXAMP␣(A)↵

d) one file of the current UFD into a second, differently named, file of the current UFD.

Example command:

>T␣DK␣NUFIL ← DK␣OLDFILL␣(A)↵

NOTE

UFD and file protection codes of input files need not be considered in transfer operations with the current UFD.

Files may be written into:

a) unprotected UFD's (code Ø);

Example command:

>T␣DK␣<JAN> ← DK␣TEST1␣(A)↵

b) the current UFD or a specified file within the current UFD.

Example command:

>T␣DK␣TEST1 ← DK␣<JAN>␣PATCH␣(A)↵

In addition to the above, transfer operations may be carried out between files of the current UFD including the creation of a new file from another file within the UFD. For example, assuming the following UFD as current:

```
    24-NOV-75
DIRECTORY LISTING  (GEP)
  1500 FREE BLKS
     3 USER FILES
    24 USER BLKS
TEST1   001     5214(2)     10  24-NOV-75    5232      10
TEST2   002     5234(2)     13  24-NOV-75    5257      66
CONTS   SRC     5261(2)      1  24-NOV-75    5212       0
```

The command:

```
>T␣DK␣COUNTS␣SRC←DK␣CONTS␣(1)↵
```

creates a new file "COUNTS SRC" from file "CONTS SRC", giving the new file a protection code of 1.

The operation performed results in the following UFD:

```
    24-NOV-75
DIRECTORY LISTING  (GEP)
  1476 FREE BLKS
     4 USER FILES
    25 USER BLKS
TEST1   001     5214(2)     10  24-NOV-75    5232      10
TEST2   002     5234(2)     13  24-NOV-75    5257      66
CONTS   SRC     5261(2)      1  24-NOV-75    5212       0
COUNTS  SRC     5265(1)      1  24-NOV-75    5263       0
```

New file *Specified Protection code*

The capability of performing transfer operations within current UFD's simplifies these operations and enables the user to take full advantage of the interactive speeds of disk devices.

3.4.5 Device to Device File Transfers

The read/write transfer of files between non-disk mass storage devices and/or I/O devices is performed using the same types of commands as described in the preceding paragraphs. Protection codes and user passwords (UIC's), however, are not required since these items are unique to disk file structures. Typical examples of device to device command strings are:

a) DECtape 2 to DECtape 1 transfer:

```
>T␣DT1␣NEWFIL←DT2␣OLDFIL␣(A)↵
```

b) Papertape Reader to DECtape 1 transfer:

```
>T␣DT1␣NEWFIL␣SRC (A)/(I) ←PR↵
```

NOTE

When inputting information from paper tape, it is recommended that the (I) data mode switch be used if the contents of the tape are unknown.

c) DECtape 1 to Line Printer (listing):

```
>T␣LP←DT1␣NEWFIL␣(A)↵
```

3.4.6 Transfer of Keyboard Inputs to Output Devices

The PIP transfer "T" command may be used to transfer console terminal keyboard (device TT) entries (line by line) to output devices as they are typed. This capability is useful in the creation of ASCII source paper tapes or the entry of personal comments at the beginning or end of line printer listings. The user, however, should consider that the text editorial and correction features provided by PIP are minimal and that the service program EDIT provides complete editorial functions.

Once started, transfer operations of this type must be terminated by a CTRL D (↑D entry). The CTRL D entry must be made on a separate line, since any data on the same line as CTRL D will be deleted from the output.

Examples:

a) To punch a paper tape via keyboard entries, use:

```
>T␣PP␣(A)←TT↵
```

b) To enter data directly from the keyboard into the current UFD, use the following (note that a file is named in the command to receive the keyboard inputs):

```
>T DK KEYBD←TT (A)
```

Keyboard-to-Disk Transfer Command

```
THIS IS AN EXAMPLE OF THE MANNER IN WHICH DATA CAN
BE ENTERED INTO A FILE ON THE DISK DIRECTLY
FROM THE CONSOLE KEYBOARD.
THE EDITORIAL COMMANDS FOR CHARACTER RUBBOUT
AND LINE DELETION MAY BE USED IN THIS MODE OF
OPERATION. FOR EXAMPLE
        .TITAL\\LE  EXANP\\MP
A CTRL D ENTRY MUST BE MADE TO TERMINATE
THE KEYBOARD ENTRY MODE OF OPERATION.
↑D
```

Inputs from Keyboard

```
>T TT←DK KEYRD SRC
```

File to Teleprinter Command

```
THIS IS AN EXAMPLE OF THE MANNER IN WHICH DATA CAN
BE ENTERED INTO A FILE ON THE DISK DIRECTLY
FROM THE CONSOLE KEYBOARD.
THE EDITORIAL COMMANDS FOR CHARACTER RUBBOUT
AND LINE DELETION MAY BE USED IN THIS MODE OF
OPERATION. FOR EXAMPLE
        .TITLE  EXAMP
A CTRL D ENTRY MUST BE MADE TO TERMINATE
THE KEYBOARD ENTRY MODE OF OPERATION.
```

Teleprinter listing of File KEYBD SRC

Note the change in the .TITLE line as compared with the previous example where rubouts were used.

3.5 FILE TRANSFERS WITH OPTIONAL FUNCTIONS

As stated in Section 3.4, PIP option Function Switches may be included in "T" commands to provide the use of a broad variety of secondary operations during file transfers. The legal switches and switch combinations permitted in T commands are given in Table 3-2.

Table 3-2
Legal Combinations of Function Switches in Transfer Operations

	E	G	C	W	Y	N	S	F	T	Q
E		X		X	X	X	X	X		
G	X		X	X	X	X	X	X	X	X
C		X		X	X	X	X	X	X	X
W	X	X	X			X	X	X	X	X
Y	X	X	X			X	X	X	X	X
N	X	X	X	X	X				X	
S	X	X	X	X	X				X	
F	X	X	X	X	X				X	X
T		X	X	X	X	X	X	X		X
Q		X	X	X	X			X	X	

The operations provided by the use of switch functions are described in Sections 3.5.1 through 3.5.8.

3.5.1 (G) Switch: Parity/Checksum Error Correction Facility

During data mode (A) or (B) File Transfer operations, PIP checks the parity and checksum of the file(s) involved. If an error is detected, PIP interrupts the transfer and outputs on the console printer the message:

```
PARITY ERR
```

or

```
CKSUM ERR
```

depending on the error found. During (A) mode transfers, each parity error message output is followed by a listing of the line containing the error. Such errors detected during a Transfer without the (G) switch cannot be corrected.

However, the addition of the (G) switch to (A) mode commands provides the user with the following options when a parity or checksum error is found:

a. Accept the line containing the error as it is, by entering a ↵ (RETURN);

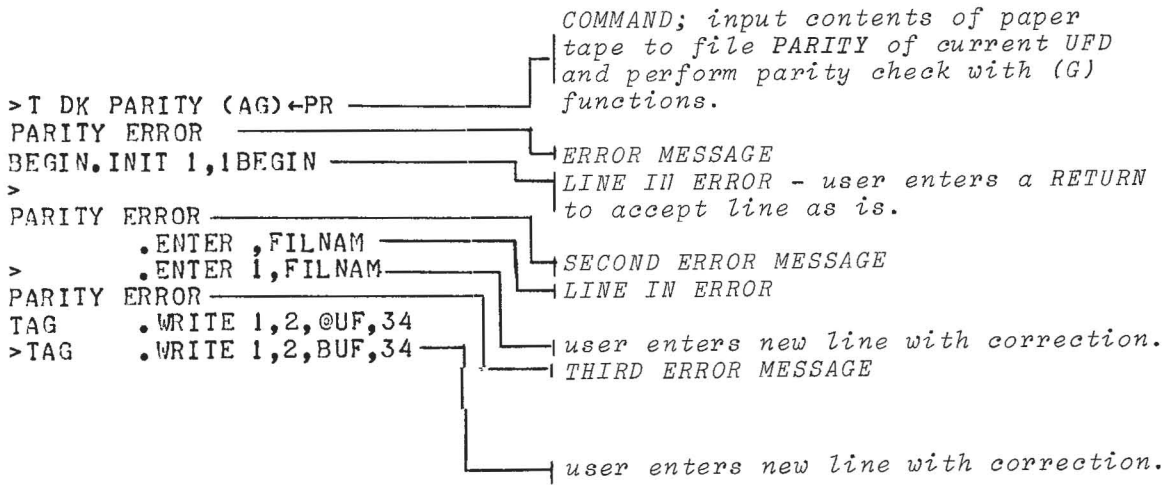
   (PIP does not pass the parity error even if the line is accepted; it will change the incorrect parity bit to ensure even parity)

b. Delete the line containing the error by typing D and proceed;

c. Replace the line by typing in a new correct line which is terminated by ↵;

d. Abort the transfer by typing CTRL P (P) to restart PIP or CTRL C (C) to return to the Monitor.

The (G) switch may only be used in IOPS ASCII data mode (A) operations. The following is a typical example of the use of the (G) switch:



3.5.2 (E) and (C) Switches: Tab-to-Space, Space-to-Tab Conversion

Listing devices may or may not have tabbing mechanisms; therefore, it is sometimes necessary to convert file tab and space delimiters to meet the needs of the listing devices.

a) (E) Switch - the addition of switch (E) to a "T" command string causes all Horizontal Tab codes in the transferred file to be converted to the number of spaces required to achieve the same spacing of the printed material as would be obtained if a Tab were present.

The (E) switch may only be used in data mode (A) transfer. Following is a typical example of a T command incorporating an (E) switch:

```
>T␣TT←DT1␣FILEA␣(AE)↵
```

b) (C) Switch - the addition of switch (C) to a "T" command string causes any group of two or more continguous spaces to be converted to a Horizontal Tab code in the transferred file according to the following rule:

i) a tab character is output for each tab-stop position which is reached or exceeded by the group of spaces.

ii) any spaces occurring after the last tab stop position, which was reached by the group of contiguous spaces, are output.

The effect of this operation is that a printout of the resulting file will look as if the C switch had not been invoked. The file itself is, however, shorter as the spaces have been corrected to tabs, and output should be faster depending on the output device.

Note that any group of spaces which fails to reach at least one tab stop position will result in the output of just that set of spaces without any tab characters. Note further, that any group of spaces ending at a tab stop position will result in the output of tab characters without any spaces.

The (C) switch may only be used in data mode (A) operations.

The following is a typical example of a T command incorporating a (C) switch:

```
>T␣TT←DT1␣FILEA␣(AC)↵
```

3.5.3 (N) Switch: Directory Initialization During Transfer

In addition to being a Primary PIP operation, the New Directory N command may also be used as an optional function to be carried out in the context of other operations. The (N) option may be used to initialize directories on both disk and DECtape mass storage devices.

Switch (N), when used in a transfer to disk operation, initializes the UFD associated with the current user.

Used in a transfer to a non-existent UIC, the (N) switch causes a UFD to be set up under the specified UIC. The transferred file then appears as the first entry in the new UFD.

Transfers made to DECtape devices by T commands containing the (N) switch initialize the DECtape directory and write the transferred file(s) onto the tape.

The following example illustrates the use of the (N) switch in T commands.

Assuming the file TEST1 ØØ1 to be present in the current UFD, the command:

```
>T␣DK␣<XYZ>←DK␣TEST1␣ØØ1␣(N)↵
```

sets up a new UFD under the UIC "XYZ" and transfers the file TEST1 ØØ1 into the new UFD as its first entry as follows:

```
    24-NOV-75
DIRECTORY LISTING  (XYZ)
  1465 FREE BLKS
     1 USER FILES
    10 USER BLKS
TEST1  ØØ1       10  24-NOV-75
```

UFD's established in this manner are automatically given a UFD protection code of "0", that is, unprotected.

3.5.4 (W) Switch: Combining Files During Transfers

The (W) combine file switch, when incorporated into a T command, enables the user to read two or more files from a source device and write them, in the indicated sequence, into a single file on the destination device.

The (W) switch may be used with data mode switches (A), IOPS ASCII and (B), IOPS Binary.

During (W) operations, PIP pauses and outputs a ↑P (when input is from a non-directoried device) at the console teleprinter after each file is transferred. The user must respond with a ↑P entry to continue the transfer operation.

For example, the command:

```
>T␣DT1␣COMTST←DT2␣TEST1,TEST2,TEST3␣(BW)↵
```

results in the binary files TEST1, TEST2, and TEST3 being written into the file COMTST on device DT1. With a source file, the pseudo-operators .EOT or .END which occur at the end of all but the last of the files being combined are deleted to enable the resultant file to be processed as a single continuous file.

The following is an example of a combine files (W), transfer operation:

```
    24-NOV-75
DIRECTORY LISTING  (GEP)
  6163 FREE BLKS
     2 USER FILES
     2 USER BLKS
SEGA    SRC        1  24-NOV-75
SEGB    SRC        1  24-NOV-75
```

LISTING OF CURRENT UFD

```
>T DK EXAMP SRC (AW)←DK SEGA SRC,SEGB SRC
```

COMBINE FILES COMMAND

```
    24-NOV-75
DIRECTORY LISTING  (GEP)
  6162 FREE BLKS
     3 USER FILES
     3 USER BLKS
SEGA    SRC        1  24-NOV-75
SEGB    SRC        1  24-NOV-75
EXAMP   SRC        1  24-NOV-75
```

LISTING OF CURRENT UFD SHOWING NEW FILE "EXAMP" CREATED BY COMBINING FILES "SEGA" AND "SEGB".

```
        .TITLE EXAMP
        .IODEV 1,2
BEGIN   .INIT 1,1,BEGIN
        .ENTER 1,FILNAM
        .EOT
```

LISTING OF FILE "SEGA"

```
TAG     .WRITE 1,2,BUF,34
        .EOT
```

LISTING OF FILE "SEGB"

```
        .TITLE EXAMP
        .IODEV 1,2
BEGIN   .INIT 1,1,BEGIN
        .ENTER 1,FILNAM
TAG     .WRITE 1,2,BUF,34
        .EOT
```

LISTING OF NEW FILE "EXAMP"

In the new file, EXAMP, the .EDT which was at the end of file SEGA has been omitted.

3.5.5 Inputting and Combining Files from Paper Tape: (W) Switch

The (W) option with a transfer operation permits the user to input files from separate paper tapes and to combine the files into a single named file on a specified destination device.

The procedure required is:

1) The first tape to be read should be loaded into the paper tape reader (PR).

2) The user must specify in the command string the number of paper tapes to be read. This is done by following the source device mnemonic (i.e., PR) by N-1 commas (,) where N is the total number of tapes to be read. For example, the command:

   >T␣DT1␣NUFILE␣(AW)←PR␣,,,,↵

   specifies that five (5) paper tapes (4 commas) are to be read in IOPS ASCII data mode and combined into a single file (NUFILE SRC) located on DECtape unit #1.

3) The termination of the command string causes the first paper tape to be read. PIP pauses after each tape is read to permit the user to place the next tape in the reader. A pause is indicated by the printing of "↑P" at the console printer.

4) Until the last tape is read, the user must enter CTRL P (↑P) after loading each new tape to continue the input operation. PIP determines which is the last tape to be read from the number specified in the command string and terminates the operation after the last tape is read.

3.5.6 Card Input and Card File Modification Operations: (Q), (C), (T) Switches

The transfer operation may be used to input source files from punched cards. The format of the data being input from cards may be modified by adding one or more of the following switches to the T command:

1) (Q) Switch - The addition of a (Q) switch causes the information input from card columns 73 through 80 (card sequence numbers) to be deleted. This switch may be used only in an (A) data mode transfer operation and only on information which is in a card format. That is, the Q switch may be used during the transfer of files, the contents of which are still in card format, as well as during the input of data from the card reader. Examples of the command strings used are as follows:

   a) To modify input from card reader

      T␣DT1␣FILEA␣(AQ)←CD↵

   b) To modify file data format during storage device transfer operations:

      T␣DT1␣FILEA←DT1␣SOURCE␣(AQ)↵

2) (C) Switch - The (C) switch (spaces-to-tabs) may be combined with the (Q) switch to further modify the contents of files being input or transferred. The following is an example of a command string containing both the (C) and (Q) switches:

   T␣DT1␣FILEA←DT2␣SOURCE␣(AQC)↵

3) (T) Switch - The (T) switch (delete trailing spaces) may be combined with the (Q) switch to further modify the contents of files being input or transferred. The following is an example of a T command string:

   T␣DT1␣FILEA←DT2␣SOURCE␣(AQT)↵

NOTE

The Q switch cannot be used to modify the contents of files which have been previously modified by the use of either or both the (C) and (T) switches since the contents would no longer be in a card format.

3.5.7 (T) Switch: Delete Trailing Spaces

The (T) option switch may be added to transfer commands used to input data from a card reader or to transfer files containing data in a punched card format (i.e., 80-character ASCII data groups). The use of the (T) switch causes PIP to locate and insert a RETURN (↵) character immediately after the last non-blank character in each file (or input) card-format data group. The (T) switch thus deletes the trailing spaces which result from inputting the unused portions of the original punched card sources.

3.5.8 (V) Switch: Vertical Forms Control on Output

The (V) options switch may be added to transfer commands to translate the first character of each record to a special character which, when interpreted by the line printer (LP) handler, the terminal handler (TT) or by the VP15A handler (VP) will produce forms control functions. The translation will occur according to the FORTRAN conventions shown below:

Character Found	Translated To	Meaning to LP Handler
'1'	FF, 14_8	Ship to top of form
'+'	DLE, 20_8	Overprint
'0'	DC1, 21_8	Double space
anything else	LF, 12_8	Single space

If, for example, a FORTRAN program writes a listing file to disk rather than to the line printer (which might be temporarily out of service), the file may be transferred at a later time to the printer as follows:

```
+T LP←DK .TMØØ OTS(AV)↵
```

3.6 V: VERIFY OPERATION

IOPS ASCII or Binary files may be checked for parity and checksum errors by using the PIP Verify V operation.

Data mode switches (A) IOPS ASCII and (B) IOPS Binary are the only optional PIP switches permitted with V operations.

The Verification command string requires:

a) the V operation control character;

b) the mnemonic of the device containing the file to be examined;

c) the filename and extension of the file being checked;

d) data mode switch (A) or (B). As in the T command, the mode switches may be dropped if the extensions SRC or BIN are used; conversely, these extensions may be dropped when the mode switches are indicated. A 3-character extension where the last character is numeric also defaults (A). Note that in multiple file verifications, all files must be of the same data mode (i.e., all IOPS ASCII or all IOPS Binary).

COMMAND STRING EXAMPLES:

a) the command:

V␣DK␣FILEA␣(A)↵

will verify the file FILEA SRC listed in the UFD of the current user (UIC).

b) the command:

V␣PR␣(B)↵

verifies the contents of an IOPS Binary paper tape mounted in the paper tape reader.

c) the command:

V␣DT3␣FILEA,FILEB,FILEC␣(A)↵

verifies three ASCII files contained on DECtape unit 3.

If either a parity or a checksum error is detected during a Verify operation, the message:

"PARITY ERR"

or

"CHKSUM ERR"

is output at the console printer by PIP.

A Verify, V, operation is interrupted only for the printing of error messages, it continues the verify operation until the entire file has been examined.

During verification of IOPS ASCII files (mode (A)) the line containing each detected error is printed at the console printer immediately after the error message printout. The following is an actual example of the error message/error line printout obtained during the verification of an ASCII file.

```
 V PR  (A)
PARITY  ERROR
START    WØ  ----------------------
PARITY ERROR
         JMP   TE -----------------
PARITY ERROR
@=1 -------------------------------
PARITY ERROR
TELP      Ø -----------------------
```

Lines in the file which contain a detected error (the four lines marked above)

Read Section 3.5.1 for a method of correcting lines with parity errors in IOPS ASCII files.

3.7 S: SEGMENT FILE OPERATION

PIP provides commands which enable a single IOPS ASCII file located on either a directoried device (e.g., DT, DK, DP, RK, MUT) or a paper tape to be segmented into, up to 16 individual files or tapes. The PIP segmentation operation is initiated by an S (segment file) command followed immediately by a T (transfer) command containing a (Y) option switch.

NOTE

The (Y) switch may only be used with data mode switch (A), (IOPS ASCII).

3.7.1 S, Segment File Command

The S command enables the user to specify up to 16 "segmentation points" within a file that is to be segmented.

A segmentation point is defined as a group of from 1 to 5 characters which identify a specific line within a file. The characters of a segmentation point must appear in the FIRST five character positions of a line.

Each segmentation point indicates to PIP that all lines of the file from the beginning of the file or the preceding segmentation point, up to but not including the current segmentation point, are to be transferred as a single file.

The format of the S command string is as follows:

S␣SEG1,SEG2,...,SEG15,SEG16

As shown above, commas must be used as delimiters between the specified segmentation points.

3.7.2 T Command Requirements for S Operations

The T command used in file segmentation operations must:

a) contain a (Y) switch;

b) name a corresponding destination file for each segment of the source file;

NOTE

The number of destination filenames required in a T command is equal to the number of S command segmentation points plus 1.

c) contain the source device mnemonic and source filenames and extensions.

d) immediately follow the S command.

During S operations:

a) PIP examines the file line-by-line for the segmentation points specified in the S command.

b) As each segmentation point is found, PIP appends the .EOT pseudo-op to the defined segment and transfers it to the corresponding destination file.

Assuming the following file present in the current UFD:

```
        .TITLE EXAMP
        .IODEV 1,2
BEGIN   .INIT 1,1,BEGIN
        .ENTER 1,FILNAM
TAG     .WRITE 1,2,BUF,34
        .CLOSE 1
        .EXIT
BUF     L1-./2*1000+2; 0
        .ASCII 'HEJ!'<175>
L1=.
FILNAM  .SIXBT 'DTIO DAT'
        .END BEGIN
        .EOT
```

the manner in which file EXAMP may be divided into three segments, with each segment a separate named file, is shown in the following example:

```
>S BEGIN,TAG
```

SEGMENTATION S AND T COMMANDS

```
>T DK PARTA,PARTB,PARTC (AY)←DK SEGEX SRC
↑P
↑P
↑P
↑P
```

```
>L TT←DK
```

LIST CURRENT UFD

```
    24-NOV-75
 DIRECTORY LISTING  (GEP)
   1510 FREE BLKS
      4 USER FILES
      4 USER BLKS
 PARTA   SRC        1  24-NOV-75
 PARTB   SRC        1  24-NOV-75
 PARTC   SRC        1  24-NOV-75
 SEGEX   SRC        1  24-NOV-75
```

LIST SEGMENT A

```
>T TT←DK PARTA (A)

        .TITLE EXAMP
        .IODEV 1,2
        .EOT
```

```
>T TT←DK PARTB (A)
```

LIST SEGMENT B

```
BEGIN   .INIT 1,1,BEGIN
        .ENTER 1,FILNAM
        .EOT
```

```
>T TT←DK PARTC (A)
```

LIST SEGMENT C

```
TAG     .WRITE 1,2,BUF,34
        .CLOSE 1
        .EXIT
BUF     L1-./2*1000+2; 0
        .ASCII 'HEJ!'<175>
L1=.
FILNAM  .SIXBT 'DTIO DAT'
        .END BEGIN
        .EOT
```

3.7.3 Source File to Multiple Paper Tapes Segmentation Operations

The segmentation of a file and the outputting of each segment onto separate paper tapes is performed in a manner similar to that described in Sections 3.7.1 and 3.7.2. The use and format of the S command is the same, but the T command differs as follows:

> No destination filenames need be used in the T command; however, a series of commas must then be used to indicate the number of paper tapes required.

For example, the commands needed to segment file EXAMP (refer to previous example) onto 3 paper tapes are:

```
>S BEGIN,TAG↵
>T␣PP␣,,␣(Y)←DK␣EXAMP␣SRC↵
```

The operations performed by PIP when outputting file segments onto paper tape are similar to those described in Section 3.7.2.

When a file is segmented and the segments are output onto paper tapes:

1) An .EOT pseudo-operation is appended to the end of each segment except for the last.

2) With the exception of the last output tape, PIP pauses after each segment tape has been punched and causes a ↑P (CTRL P) message to be printed at the console printer. The pause permits the user to remove each tape before the next one is punched.

3) The user must enter CTRL P (↑P) to continue the segmentation operation after each pause.

4) When the last tape is punched, control is returned to PIP from the segmentation operation.

3.8 D: DELETE FILE OPERATION

The Delete operation enables the user to delete files from user directories. The basic command format is:

```
>D␣device containing file(s)␣filename␣extension ↵
```

for example:

```
>D␣DK␣FILEA␣SRC ↵
```

More than one filename may be listed in a D command; however, they must be separated by commas. For example:

```
>D␣DK␣FILEA␣SRC,FILEB␣SRC,FILEC␣SRC↵
```

NOTE

The complete name (filename and extension) of the file(s) must be specified exactly as entered in the directory from which they are to be deleted. If more than one file in a directory has the same name, PIP will delete the first file of the specified name which it finds.

One option switch, (X), is permitted in the Delete command. This switch deletes all truncated files from the current or a specified (unprotected) UFD. The following are examples of the use of the (X) switch:

a) `>D␣DK␣(X)↵` for current UFD;

b) `>D␣DK␣<AAA>␣(X)↵` for specified UFD.

3.8.1 Deletion of Files from UFD's

When a file is deleted from a UFD, its entry is removed from the user directory and the quantities given in the Directory listings (i.e., FREE BLKS, USER BLKS and USER FILES) are adjusted to reflect the deletion.

Files are deleted from the current UFD by using the basic D command. For example, assuming the following directory as current:

```
   24-NOV-75
DIRECTORY LISTING  (JAN)
  5751 FREE BLKS
     2 USER FILES
    11 USER BLKS
TEST1  ØØ1       1Ø  24-NOV-75
MIN    SRC        1  24-NOV-75
```

the command

```
>D␣DK␣TEST1␣ØØ1↵
```

results in the deletion of the file "TEST1 ØØ1" as illustrated in the following listing of JAN:

```
    24-NOV-75
DIRECTORY LISTING  (JAN)
  5761 FREE BLKS
     1 USER FILES
     1 USER BLKS
MIN     SRC        1  24-NOV-75
```

More than one file may be deleted from a directory during a D operation. The deletion of four files by a single D command is shown in the following:

```
>L TT←DK

    24-NOV-75
DIRECTORY LISTING  (GEP)
  2251 FREE BLKS
    10 USER FILES
    10 USER BLKS
SEGB    SRC        1  24-NOV-75
SEGA    SRC        1  24-NOV-75
EXAMP   SRC        1  24-NOV-75
TTYFL   SRC        1  24-NOV-75
PARTA   SRC        1  24-NOV-75
TTYFLB  SRC        1  24-NOV-75
PARTB   SRC        1  24-NOV-75
PARTC   SRC        1  24-NOV-75
```

Original UFD

```
>D DK SEGB SRC,SEGA SRC,TTYFL SRC,TTYFLB SRC
```

Delete Command

```
>LTT←DK

    24-NOV-75
DIRECTORY LISTING  (GEP)
  2255 FREE BLKS
     4 USER FILES
     4 USER BLKS
EXAMP   SRC        1  24-NOV-75
PARTA   SRC        1  24-NOV-75
PARTB   SRC        1  24-NOV-75
PARTC   SRC        1  24-NOV-75
```

Revised UFD

NOTE

The protection code assigned each individual file is overridden by the UFD protection code. If the UFD is unprotected (code Ø) any file it contains may be deleted by other users of the system regardless of the protection code of the individual file.

3.8.2 Deletion of DECtape Files

When a file is deleted from a DECtape directory, all references to the file are removed from the directory and the File Bit Map blocks.

The command format is the same as that described for the basic operation. For example, to delete a file from device DT1, use the command:

```
>D␣DT1␣filename␣extension↵
```

D will also delete (that is make inactive) files on magtape.

3.8.3 (X) Switch: Deletion of Truncated Files

The use of the (X) optional switch in a "D" command deletes all truncated files contained by the current UFD or any specified non-current UFD (unprotected). For example, assuming the following UFD as being current:

```
                24-NOV-75
DIRECTORY LISTING  (GEP)
  5372 FREE BLKS
     2 USER FILES
     3 USER BLKS
SEGEX  SRC        3   24-NOV-75
.TFIL1 EDT*       0   24-NOV-75
```

the command:

```
>D␣DK␣(X)↵
```

causes the truncated file ".TFIL1 EDT*" to be deleted from the UFD. The resulting UFD appears as:

```
                24-NOV-75
DIRECTORY LISTING  (GEP)
  5436 FREE BLKS
     1 USER FILES
     3 USER BLKS
SEGEX  SRC        3   24-NOV-75
```

3.9 R: FILE RENAME OPERATION

The PIP R operation enables the system user to:

a) Change filenames within current UFD's, specified UFD's and DECtape and magtape directories;

b) change the protection code for the current or specified UFD's;

c) change the protection codes of files within the current or specified UFD's.

The basic format for the R command is:

R directory device new name ext directory device old name ext

The "directory device" must be the same on both sides of the backarrow (←). This is the device which contains the file to be operated upon by the R command.

3.9.1 Renaming Files

Files within the current UFD or located in DECtape directories may be renamed using the basic R command. For example, assuming the following UFD to be current:

```
    24-NOV-75
DIRECTORY LISTING  (GEP)
  5436 FREE BLKS
     1 USER FILES
     3 USER BLKS
XMPLE  SRC       3  24-NOV-75
```

Original UFD

The filename "XMPLE" is changed to "SEGEX" by the following:

```
>R DK SEGEX SRC ←DK XMPLE SRC

>L TT←DK
    24-NOV-75
DIRECTORY LISTING  (GEP)
  5436 FREE BLKS
     1 USER FILES
     3 USER BLKS
SEGEX  SRC       3  24-NOV-75
```

Revised UFD

Note that the file creation date also changes.

Truncated files cannot be renamed. If an attempt is made to do so, an IOPS 1Ø error results.

Files on DECtape and magtape are renamed using the same command format as shown for disk (UFD) files.

3.9.2 Setting File Protection Codes

R commands may be used to change both the name and protection codes for disk files. The format for this function is:

>R␣device␣new name␣ext←device␣old name␣ext␣(#)

where (#) is the specified file protection code (see Section 2.3.7 for codes).

For example, assume that the revised UFD of the preceding example is still current, the file protection code of file "SEGEX SRC" is changed from 2 to 1 in the following manner:

```
>R DK SEGEX1 SRC←DK SEGEX SRC (1)
```

R command

```
>L TT←DK (P)
    24-NOV-75
 DIRECTORY LISTING  (GEP)
  5436 FREE BLKS
     1 USER FILES
     3 USER BLKS
 SEGEX1 SRC    2201(1)      3  24-NOV-75   2205      74
```

UFD listing showing new file protection code and new file names.

3.9.3 Setting Directory Protection Codes

R commands may specify a new protection code for the current or a specified UFD. The following command format is required for this function.

>R␣disk␣[XXX:Z]

where:

1) XXX is the 3-character UIC of the UFD involved

2) : is the required delimiter for this function

3) Z is the protection code to be assigned to the specified UFD: Ø = unprotected; 1 = protected.

For example:

```
>L TT←DK (M)

    24-NOV-75
MFD DIRECTORY LISTING
  2255 FREE BLKS
    43 USER FILES
   515 USER BLKS

>R DK <GEP:Ø>

>L TT←DK (M)

    24-NOV-75
MFD DIRECTORY LISTING
  2255 FREE BLKS
    43 USER FILES
   515 USER BLKS
GEP   1ØØ3(Ø)      4     4
```

Original MFD indicates that no unprotected UFD's are in the system

Revised MFD showing the unprotected UFD "GEP"

The standard protection rules apply here: a user cannot change the protection code of a UFD that is protected if that UFD is not current. Note, however, that a non-current unprotected UFD can be changed to protected and thus become unaccessible to the renaming user.

3.10 B: BLOCK COPY OPERATION

The PIP B operation enables the user to copy the contents of selected storage blocks or ranges of blocks from one device into specified blocks of another similarly structured device. For this operation the user must specify:

1) the destination device and the storage blocks which are to receive the copied information,

2) the source device and the specific blocks which are to be copied.

The command format required is:

```
>B␣Dest.Dev.␣␣List of Rec. Blocks←Source Dev.␣List of Blocks to be copied↵
```

The blocks to receive data and those which are to be copied are identified by their respective octal numbers.

A series of non-consecutive blocks (either source or destination) is specified by listing their octal numbers, in sequence, separated by commas (required delimiter). For example:

```
>B␣DT1␣5Ø,55,6Ø←DT2␣1Ø1,1Ø7,2ØØ )
```

specifies that the contents of blocks 1Ø1, 1Ø7 and 2ØØ on DT2 are to be copied into blocks 5Ø, 55, and 6Ø of DT1 (i.e., 1Ø1 to 5Ø, 1Ø7 to 55, and 2ØØ to 6Ø).

A series of consecutive blocks (either source or destination) may be specified as a range of numbers. The range is specified by listing the first and last block numbers of the series separated by a dash (-), the required delimiter. For example:

```
>B␣DT1␣5Ø-55←DT2␣1ØØ-1Ø5 )
```

specifies that blocks 1ØØ, 1Ø1, 1Ø2, 1Ø3, 1Ø4 and 1Ø5 of DT2 are to be copied into blocks 5Ø, 51, 52, 53, 54 and 55 of DT1.

When data is to be copied from and written into the same blocks on both source and destination devices, only one set of block numbers is required. For example:

```
>B␣DT1␣1,3-5←DT2 )
```

and

```
>B␣DT1←DT2␣1,3-5 )
```

specify that blocks 1, 3, 4 and 5 are to be copied from DT2 into blocks 1, 3, 4 and 5 of DT1.

UIC block copy operations are permitted between the following devices:

a)	Disk Area to DECtape	permitted for the UIC user.
b)	DECtape to DECtape	permitted for any system user. Option switches (N) and (S) may be included in B commands for this type of operation.

In all block copy operations, the data transferred (copied) is automatically verified.

3.11 C: COPY MASS STORAGE OPERATION

The PIP C operation provides the system user with the ability to:

a) add the contents of one device to that of another device

b) copy the complete contents of one directoried device onto another similarly-structured device.

The format for the C command is:

>C␣destination device←source device↵

The following option switches may be added to the C command:

a) (N) New Directory switch

Permits destination device directory to be initialized during C operation. Note that this switch is illegal to magtape.

b) (S) Initialize with QAREA switch

Initializes the directory of the destination DECtape and establishes a QAREA on the tape prior to the copy operation.

c) (H) Image Mode switch

H mode copy is a total replacement operation in that each block on the destination device is replaced by the corresponding block of the source device. This form of copy, therefore, may be used only between the following like devices: RK to RK, DP to DP, DT to DT; it is most useful for copying DECtapes. As each block is written onto the destination device, a word-by-word comparison is made between the destination block and source block to ensure accuracy. If an error occurs, the number of the block containing the error is output on the console printer and the copy continues. Once the copy operation is complete the blocks which contain errors may then be recopied using the Block Copy (B) function; this eliminates having to repeat the entire device copy operation.

All available free core is used during H Mode Copy operations; the more core that is available the faster the copy operation. It is therefore advantageous, prior to calling PIP, to assign only those handlers needed for the copy operation using the A (Assign) monitor command. For example, the fastest possible copy operation between DECtapes is achieved by assigning handler DTE to all positive .DAT slots.

3.11.1 Adding Files, Copy Operation

The use of the basic C command results in files being copied from the source device and added to the contents of the destination device. For example, the command:

```
>C␣DT1←DT2↵
```

causes the files on DT2 to be added to the contents of DT1. Truncated files on the disk are not transferred during a copy. The basic copy (i.e., add-on) operation is permitted between:

	DEVICES	OPERATION PERFORMED
a)	Tape to Disk	integrates all DECtape or magtape files into the current UFD. A typical command is: `>C␣DK␣←DT1↵`
b)	Disk to Tape	integrates all files contained by the current UFD onto the specified magtape or DECtape. A typical command is: `>C␣DT1←DK↵`
c)	UFD to UFD	copy operations (i.e., the integration of files) may be carried out between the current UFD and an unprotected UFD. For example, the command: `>C␣DK␣<JAN>←DK↵` adds the files of the current UFD to the UFD "JAN". Copy operations may also be performed between the current UFD and a protected UFD; however, truncated files and files with a protection code of 3 are not copied.
d)	DECtape to DECtape	integrates all files from the source device onto the destination device. A typical command is: `>C␣DT1←DT2↵` NOTE If the destination device cannot store all of the input files, all possible files are copied and an error message printed at the console teleprinter.

Assuming a current UFD containing the file "XMPLED SCR", the following is an example of a basic copy (i.e., C) operation:

```
   24-NOV-75
DIRECTORY LISTING
  1066 FREE BLKS
     1 USER FILES
    10 SYSTEM BLKS
EDTST  SRC       1      2
```

DTØ DIRECTORY BEFORE COPY OPERATION

```
>C␣DT0←DK)
```

COPY CONTENTS OF CURRENT UFD ONTO DTØ

```
   24-NOV-75
DIRECTORY LISTING
  1062 FREE BLKS
     2 USER FILES
    10 SYSTEM BLKS
EDTST  SRC       1      2
XMPLED SRC       2      4
```

DTØ DIRECTORY AFTER COPY OPERATION

A technical note on the copy command: all transfers are done in Dump mode regardless of the true mode of the file. Therefore, PIP can transfer, under one copy command, files of different data modes.

3.11.2 Copy with Directory Initialization

Switches (N) and (S) may be added to C commands to initialize the directory of the destination device (illegal to magtape).

The (N) switch is used in the following manner:

a) Copy to System Device Operations

When added to a basic C command, the (N) switch either initializes the UFD for the current or specified UIC or, if no UFD exists, creates a new UFD.

For example, the command:

```
>C␣DK<JAN>␣(N)←DT1)
```

first initializes the UFD for UIC "JAN" or, if none exists creates one. Then the files contained by DT1 are incorporated into the UFD for "JAN".

b) DECtape to DECtape copy

When added to a DECtape to DECtape C command, the (N) switch initializes the directory of the destination device before the copy operation is carried out.

The (S) switch is permitted only for DECtape copy operations. This switch initializes the directory of the destination DECtape and establishes a QAREA on the tape prior to the copy operation.

When the (S) switch is used alone, the ↑QAREA reserved on the initialized device has the same size as the core available in the system. For example, the command:

```
>C␣DT1␣(S)←DT2 )
```

will:

a) initialize the directory of DT1,

b) reserve a ↑QAREA on DT1 equivalent in size to the core contained by the system,

c) copy the contents of DT2 onto DT1.

Two digits may be added to the (S) switch (i.e., (Snn) to indicate in 4K (i.e., 4Ø96-word) units the size of the ↑QAREA to be reserved). This size is normally specified in 8K units starting at 24K (minimum XVM/DOS core requirement). For example, the command:

```
>C␣DT1␣(S32)←DT2 )
```

initializes the directory on DT1, causes a 32K ↑QAREA to be reserved on DT1 and copies the contents of DT2 onto DT1.

3.12 U: UPDATE STORAGE ALLOCATION TABLES OPERATION

It is possible for areas on disk devices to be faulty or damaged in such a manner that they cannot be read from or written on. When a faulty area is detected, the Monitor outputs an error message which describes the condition and lists the block number of the bad area.

On the detection of faulty read/write disk areas, the current user must delete the current file where the error was indicated, then utilize the PIP UPDATE operation to:

a) Cause the system Storage Allocation Table (SAT) to be updated to reflect the removal of the faulty blocks from "available storage".

b) Update the system Bad Allocation Table (BAT) with the numbers of the detected faulty blocks. If no BAT exists, the table is created by the update operation.

The command string format for a PIP U operation is:

```
>U␣DK␣N↵
```

where N may:

a) be the octal number of one faulty block or a series of numbers identifying a list of non-sequential faulty blocks.

   For example, the command:

   ```
   >U␣DK␣101-105,115↵
   ```

   updates the BAT and SAT to indicate that disk storage blocks 101-105 and 115 are faulty.

b) Indicate a range of numbers which describes a series of continguous blocks which are found to be faulty.

   For example, the command:

   ```
   >U␣DK␣101-105↵
   ```

   updates the BAT and SAT to indicate that disk storage blocks 101 through 105 are faulty.

On completion of each UPDATE operation, PIP outputs the message

```
n BAD BLOCKS IN SYSTEM
```

on the console printer. The letter "n" represents an octal number which indicates the total number of bad blocks on the disk.

CHAPTER 4
MIC PIP OPERATIONS

4.1 GENERAL PIP MIC OPERATIONS

The system manager, when logged in under the Monitor Identification Code (MIC), can perform all of the operations described in Chapter 3. He is required to specify only the UFD or device involved. For example, to transfer a file between UFD's the MIC enters a command similar to the following:

```
>T␣DK␣<JAN>␣DESTFL←DK␣<GEP>␣SOURCE␣(A)↵
```

If a UFD is not specified, PAG (for page mode systems) or BNK (for bank mode systems is used.

Protection codes, file or UFD, do not apply to the MIC.

4.2 SPECIFIC MIC FUNCTIONS

The following paragraphs describe PIP operations which are unique to the MIC or give different results to the MIC user.

4.2.1 N Operation

The MIC user may initialize any user UFD or DECtape directory in the system by specifying the directory's UIC or device/unit mnemonic in the command. For example:

a) `>N␣DK␣<JAN↵`
clears all files from the UFD identified by the UIC "JAN".

b) `>N␣DT1↵`
clears the directory of DECtape unit #1.

WARNING

The command " N DK " issued by the MIC, initializes either the PAG (page mode) or BNK (bank mode) system UFDs. If either of these UFD's is initialized, critical system programs are lost which must be restored for successful operation.

4.2.2 L, List Directory Operation

The only difference between the UIC and MIC "L" operations is that in listing the MFD, the MIC user obtains a complete listing of all UFD's in the system, regardless of their respective protection codes.

For example, the listing obtained by the command:

```
>L␣␣LP←DK    (M)↵
```

a) by a standard user (UIC) -

```
 24-NOV-75
MFD DIRECTORY LISTING
 5766 FREE BLKS
   52 USER FILES
  641 USER BLKS
```

b) by the MIC -

```
 24-NOV-75
MFD DIRECTORY LISTING
 5766 FREE BLKS
   52 USER FILES
  641 USER BLKS
BNK    1000(1)      5   157
PAG    1001(1)      5   160
IOS    1002(1)     30   247
SCR     NON(1)      0     0
WAD    1240(1)      1     4
JAN    1566(1)      1     1
TMP    1573(1)      6    26
GEP     NON(1)      0     0
```

4.2.3 Delete Truncated Files from System

A Delete command with an (X) option switch issued by the MIC will delete <u>all</u> truncated files from all UFD's contained by the operating system. The command required is:

```
>D␣␣DK␣␣(X)↵
```

4.2.4 I, Initialize Operation

The use of this operation clears all of the device bit maps and initializes the MFD. Initialization of the MFD sets it to a default state. The contents of the disk are lost. This command is most useful for

initialization of disk packs. The form of the command is:

```
>I DP1↵
```

CHAPTER 5
PIP ERROR DETECTION PROCEDURES AND MESSAGES

5.1 INTRODUCTION

This Chapter describes the error detection, reporting and corrective procedures employed in PIP operations. Only the error messages and procedures output and followed by the PIP program are described. A complete list of system error messages (IOPS) is given in Appendix D.

PIP error detection and reporting operations are concerned primarily with:

a) the detection of errors in the user command string,
b) the detection of errors during the performance of the user-requested operation.

5.1.1 User Command String Errors

When each input command string is terminated, PIP immediately scans the entered string for such items as:

a) format errors,
b) error in function requested,
c) Conflicts in requested function,
d) completeness of information.

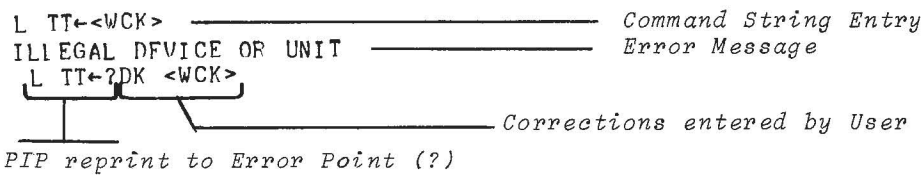
Errors in the command string are normally handled in the following manner:

a) a message identifying the error found is printed on the console teleprinter,
b) the command string entered is retyped by PIP, on a separate line up to the point where the error was detected. PIP outputs a question mark (?) at the point of the error,
c) the user may enter CTRL P or carriage return to abort the operation or may complete the command string from the ? symbol on, entering the needed correct information. Note that it is not necessary to type a space after the ? Example:

```
T DK?FILE SRC←DT1↵
```

The latter should initiate the requested operation if no further error exists.

EXAMPLE: the following is an example of the detection, reporting and correction of a command string error:



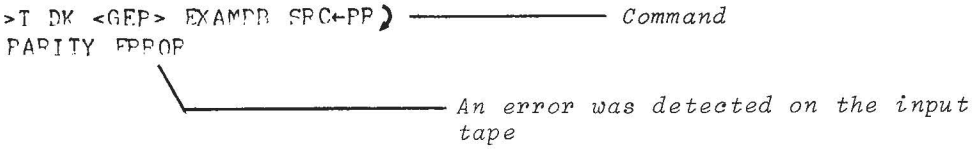
In the above example, the user forgot to enter a source device mnemonic (i.e., DK). PIP detected the error, output an error message and that part of the command line up to the error (i.e., >L␣TT←?); the user chose to complete the operation and entered the needed data (i.e., DK<WCK>) to complete the string and initiate the desired operation.

NOTE

In correcting errors involving a source filename, it is necessary to respecify the file data mode.

5.1.2 Operational Errors

PIP also detects and reports errors found during the performance of the requested function. Parity errors, checksum errors, the inability of PIP to find a referenced filename, and protection code violations fall into this category. These errors are reported by PIP by messages output on the console teleprinter. The following is an example of an operational error:



PIP restarts itself after outputting the error message.

5.2 PIP ERROR MESSAGES

The messages output by PIP on the detection of command string or operational errors are listed and described in Table 5-1.

Table 5-1
PIP Error Messages

	Printed Message	Interpretation
1)	CHKSUM ERR	An error has occurred in the transfer of data; retry transfer.
2)	COMMAND STRING TOO LONG	The command string entered exceeds 72 characters.
3)	DATA MODE MISMATCH	The data mode derived from the command string does not match the mode specified in bits 14-17 of the first header word. The transfer is aborted.
4)	DEV ILL FOR OPTION FUNCTION	Change function or device. Retype from error.
5)	DEVICE NOT IN +.DAT	Return to the monitor and use the A (Assign) command to assign the device involved to any positive .DAT slot.
6)	DISK FULL	Device has no further storage available.
7)	FILE ALREADY PRESENT	There is already a file present under the new file name and extension supplied in a 'R' function. The operation is aborted.
8)	FILE NAME TOO LONG	Filenames are restricted to a maximum of 6 characters plus a 3-character extension: the user has exceeded this limit. Retype from error.
9)	FILE NOT ON INPUT DEVICE	There is no file under the specified name on the directoried input device. Retype from error.
10)	FILE STRUCTURE CONTAMINATED	The file structure on the device (i.e., disk) is faulty; this error indicates that the system bit map(s) is (are) incorrect.
11)	ILL BLK #	Improper block number (i.e., too large, or negative) specified in command. Retype command.
12)	ILL CMD STRUCTURE	The command string entered was not properly ordered or structured. Retype the correct command.

Table 5-1 (Cont)
PIP Error Messages

Printed Message	Interpretation
13) ILL CNT	This error message is printed only in DECtape Directory listings. When output, it will appear immediately after the directory line "SYSTEM BLKS" (for example: Ø SYSTEM BLKS ILL CNT). This message indicates that an illegal number of system blocks have been detected. The user, on detection of this error message, should immediately attempt to transfer any files contained by the DECtape involved onto another DECtape. The files should be transferred one at a time. The faulty DECtape should be initialized to clear the error condition.
14) ILL DEV/UNIT	Illegal device mnemonic specified in command string. Retype from error.
15) ILL FUNCTION	The function specified in the command string entered (i.e., first character) is not a legal PIP function. Retype from error.
16) ILL FUNCTION FOR UIC	The operation specified is not permitted at the level of the current user. For example, a standard user (UIC) cannot employ the (H) switch in a copy to system device operation. The requested operation is not performed.
17) ILL P CODE	Specified directory code is illegal (i.e., something other than Ø or 1) or the directory just read has an illegal protection code. Retype from error.
18) ILL SWITCH	An optional switch entered in the command is not permitted in the primary operation being performed. Retype from error.
19) ILL TERMINATOR	Command improperly terminated: only RETURN or ALT MODE is legal. Retype from error.
20) ILL UFD ENTRY SIZE OR ILL MFD ENTRY SIZE	The size of an entry (i.e., filename or UFD) in the directory involved is illegal. This error indicates that the system is faulty.

Table 5-1 (Cont)
PIP Error Messages

Printed Message	Interpretation
21) ILL UIC	User has given an improper code; the UIC must be a 3-character code within angle brackets (i.e., <XXX>). Retype from error.
22) INPUT LINE TOO LONG	Input commands are limited to one physical line of 72 characters; the user has attempted to exceed this limitation.
23) NEED BLK #	No block number was given in an UPDATE command; enter required octal number.
24) NEED DATA MODE	User must enter the proper data mode switch. Retype from error.
25) NULL FILE NAME ILL	A filename must be specified; a nullname is not acceptable. Retype from error.
26) P VIOLATION	Current user has attempted an operation which violates the established protection code of a UFD or a file. The operation is aborted.
27) PARITY ERR	File being processed contains a parity error. During T, transfer operation, this message may be accompanied by a printout of the line which contains the error. The user must correct the indicated line (Use (G) switch in a Transfer, T, operation or the Editor).
28) READ-COMP ERROR ON BLK: XXXXX	During H mode or Block (B) copy operations, PIP compares the newly written data blocks against the original blocks and outputs this message if they are different. The operation goes to completion.
29) S FUNCTION NOT DONE	A segmentation operation requires the entry of an S command followed by a T command. This message indicates the S command was not entered before the T command with the Y switch.

Table 5-1 (Cont)
PIP Error Messages

Printed Message	Interpretation
30) STRINGS 1-16 ACCEPTED	If a Segment (S) operation divides a file into more than 16 segments, PIP will load segments 1-15 to their respective destination files. All remaining segments are put into the 16th file and this message is printed.
31) SWITCH CONFLICT	Two or more switches entered in the command cannot be used together. Retype from error.
32) SYSBLK NOT ON DEV	Device specified is not the system device. The List operation is aborted.
33) TOO FEW FILES 34) TOO MANY FILES	These error messages indicate that the number of files on the destination side of the command does not match the number given on the source side. All matching files have been transferred; transfer the rest via a new command.
35) TOO MANY FILES OR BLOCKS	The limit of 28_{10} in either case was exceeded. Retype the command, giving 28 or fewer block numbers of file names.
36) UIC NOT IN MFD	Indicates that a File Directory (UFD) has not been established for the current user. The user should employ the PIP N command to set up a UFD under his identification code (i.e., UIC).
37) WARNING - FILE HAS ILL P CODE	This message indicates that the file last read has an illegal protection code. The requested operation will be carried out; however, an error message of this type indicates that the system is faulty, or that an illegal default protection code was specified at SGEN time.

5.3 CORRECTION AND RECOVERY COMMANDS

If a user detects an error in the command string before it is terminated, he may

a) delete the incorrect character,

b) negate the line entered (prior to terminator) and restart on a new line.

If an error is detected in the user's command string by PIP, he may

a) respond to the PIP error report and command string printout by correctly completing the command;

b) abort the task by entering a CTRL P or RETURN.

The commands which permit the above procedures are listed and described in Table 5-2.

Table 5-2

User Correction and Recovery Commands

To:	Type:	Which is Echoed on the Teleprinter as:
1) Delete a character from the command string	RUBOUT	/
NOTE Characters are deleted one per entry starting from the last entered character and proceeding to the left.		
2) Negate (delete) line entered	CTRL U	@
NOTE The CTRL U entry must be made before the line is terminated.		
3) Abort the current task and/or return control to PIP	CTRL P or RETURN	↑P Nonprinting
NOTE CTRL P entries are also requested by PIP during paper tape input and file segmentation operations to continue operations after a tape or file segment has been transferred.		
4) Abort the current task and/or return control to the monitor	CTRL C	↑C

Table 5-2 (Cont)
User Correction and Recovery Commands

	To:	Type	Which is Echoed on the Teleprinter as:
5)	Continue the requested operation after a "DEVICE NOT READY" condition has been corrected for a PDP-15 or XVM device (not needed for a UC15 device).	CTRL R	↑R

CHAPTER 6
QUICK REFERENCE TABLES

6.1 INTRODUCTION

This Chapter contains tabularized data intended as an aid to recall for users who are familiar with the contents of Chapters 2 and 3. Tables are supplied which describe the Primary PIP Operations, PIP Optional operations, optional functions permitted within each primary operation, and the PIP command structure, plus a series of tables describing specific operations which may be carried out using PIP facilities. In some cases, the tables presented in this section are duplicates of those contained in earlier sections of the manual; this redundancy is necessary to make this section a complete single source of information.

6.2 OPTIONS VERSUS PRIMARY OPERATIONS

The matrix Table 6-1 illustrates the optional PIP function switches permitted in each of the PIP primary operations.

6.3 PIP COMMAND STRING FORMAT CHARTS

Figure 6-1 illustrates the general format of the Destination/Source command strings; Figure 6-2 illustrates the general format of the Single-Device Command Strings.

6.4 PIP USER OPERATION TABLES

Tables 6-2, 6-3, 6-4, 6-5, and 6-6 describe the operations which may be performed by the standard user (UIC); they contain:

a) a description of the operation,
b) the optional switches which may be used,
c) an example of a command string for each operation described.

Quick Reference Tables

No attempt is made to describe all possible operation/switch combinations or applications. However, the user is provided with sufficient commands to meet his own requirements if he has familiarized himself with Chapters 2 and 3 of this manual.

The User Operation Tables are organized according to the following functional areas:

Table	Function Described
6-2	Directory Operations, how to set up, list, modify, and operate with disk (UFD) and DECtape directories.
6-3	List Operations, how to obtain printouts of directory and file information.
6-4	File Modification Operations, how to modify and manipulate files and file contents.
6-5	File Transfer Operations, how to transfer files between system storage devices.
6-6	Copy Operations, how to copy device contents, large groups of files or data blocks from system mass storage devices.

Table 6-1
Available Options Versus Primary Operations

PRIMARY OPERATIONS												
	TRANSFER	VERIFY	SEGMENT	LIST	NEW DIRECTORY	DELETE FILE	RENAME FILE	COPY	BLOCK COPY	INITIALIZE	UPDATE	
SWITCHES	T	V	S	L	N	D	R	C	B	I[2]	U	DESCRIPTIONS
(A)	X	X										IOPS ASCII Data Mode
(B)	X	X										IOPS Binary Data Mode
(C)	X											Space to Tab Conversion
(D)	X											Dump Mode
(E)	X											Tab to Space Conversion
(F)	X											Insert Form Feed
(G)	X											Correct Bad Parity
(H)[1]	X							X				Image Binary Mode
(I)	X											Image Alphanumeric Mode
(N)	X							X	X			New Directory
(Snn)	X				X			X	X			New Directory with CTRL Q area
(T)	X											Delete Trailing Spaces
(Q)	X											Delete Sequence Numbers (cards)
(W)	X											Combine Files
(Y)[3]	X											Segment Files
(V)	X											Vertical Forms Control
(K)					X							Delete Current UFD
(M)				X								List Unprotected UFDs
(X)						X						Delete Truncated Files
(P)				X								List Current UFD & RIB data
(L)				X								List SYSBLK

[1] Legal only with DECtape, Disk Pack or Disk cartridge copy operations.

[2] Legal only when the current password is the MIC.

[3] Transfer, T, commands which include a Y option switch must be immediately preceded by an S, segment command string.

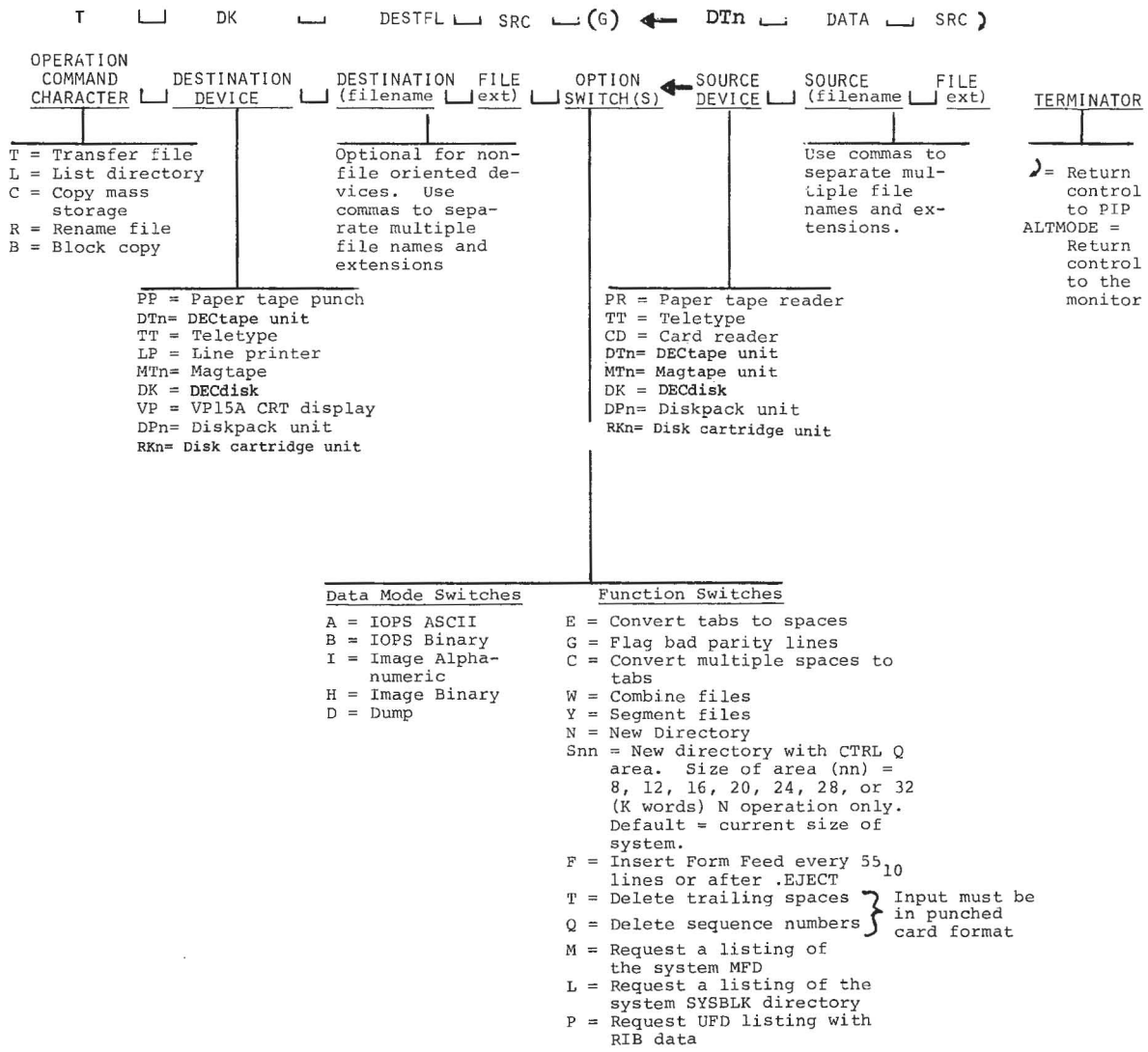


Figure 6-1 Destination/Source Command String Format

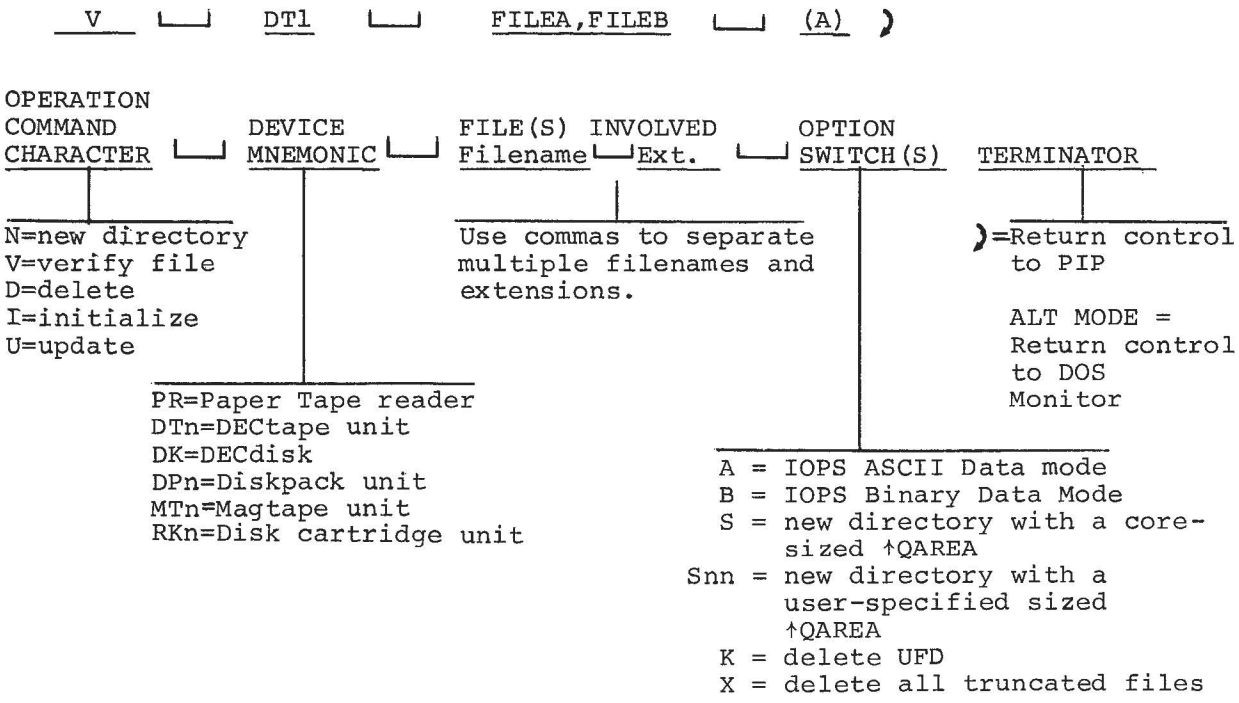


Figure 6-2
PIP Single Device Commands, General Format

Table 6-2
Directory Operations

	IN ORDER TO:	USE OPERATIONS:	AND OPTIONS:	IN THIS MANNER:
1)	Initialize the existing UFD or create a new UFD for the current UIC	N, New directory	None	>N␣DK)
2)	Initialize the existing UFD or create a new UFD for the current UIC during a T transfer	T, Transfer	(N),(NA),(NB)	>T␣DK␣DESTFL←DT1␣SOURCE␣(NA))
3)	Initialize or create a UFD for the current UIC with a specified UFD protection code	N with code specified	(None)	>N␣DK␣(Ø))
4)	Delete a file from the current UFD	D, Delete	None	>D␣DK␣DESTFL␣BIN) Note: Filename extension is required.
5)	Rename a file in the current UFD	R, Rename	None	>R␣DK␣NEWNAM␣BIN←DK␣OLDNAM␣BIN) Note: Filename extension is required.
6)	Rename a file in the current UFD and set its protection code	R, Rename	None	>R␣DK␣NEWNAM␣BIN←DK␣OLDNAM␣BIN␣(3)) Note: Protection code is specified within parentheses.
7)	Change protection code of the current UFD	R, Rename	None	>R␣DK␣<JOE:Ø>)

Table 6-2 (Cont)
Directory Operations

IN ORDER TO:	USE OPERATIONS:	AND OPTIONS:	IN THIS MANNER:
8) Initialize the directory of a directoried device	N, New directory	None	>N␣DT1) Note: illegal to magtape
9) Initialize DEC-tape directory and set up a ↑QAREA of:	N, New directory		
a) System core size		(S)	>N␣DT1␣(S))
b) Specified size		(Snn)	>N␣DT1␣(S32))
10) List contents of directories:			
a) MFD	L, List	(M)	>L␣TT←DK␣(M))
b) UFD	L, List	None	>L␣TT←DK) Note: illegal from magtape
c) DECtape	L, List	None	>L␣TT␣DT1)
11) List contents of unprotected, non-current UFD	L, List	None	>L␣TT←DK␣< JOE>)

Table 6-3
List Operations

	IN ORDER TO:	USE OPERATIONS:	AND OPTIONS:	IN THIS MANNER:
1)	List the system MFD	L, List	(M)	>L␣LP←DK␣(M))
2)	List the UFD of the current UIC	L, List	None	>L␣TT←DK)
3)	List the contents of an unprotected non-current UFD	L, List	None	>L␣TT←DK␣<JPE>)
4)	List the system SYSBLK	L, List	(L)	>L␣TT←DK␣(L))
5)	List current UFD with File Protection Codes and RIB information	L, List	(P)	>L␣TT←DK␣(P))
6)	List directories of DECtapes	L, List	None	>L␣TT←DT1)
7)	List a selected file entry from the current UFD or device directory	L, List	None	>L␣TT␣FILNAM␣BIN←DK)
8)	List a selected file entry from an unprotected non-current UFD	L, List	None	>L␣TT␣FILNAM␣SRC←DK␣<JOE>)

Table 6-3 (Cont)
List Operations

IN ORDER TO:	USE OPERATIONS:	AND OPTIONS:	IN THIS MANNER:
9] List all file entries having the same extension from			
a] the current UFD or device directory, or	L, List	None	>L␣TT␣#SRC←DK)
b] an unprotected non-current UFD	L, List	None	>L␣TT␣#BIN←DK␣<JOE>)

Table 6-4
File Modification Operations

IN ORDER TO:	USE OPERATION:	AND OPTIONS:	IN THIS MANNER:
1) Rename a file	R, Rename	None	>R␣DK␣NEWNAM␣BIN←DK␣OLDNAM␣BIN) Note: Filename extension is required.
2) Rename and set the protection code for a file	R, Rename	None	>R␣DK␣NEWNAM␣BIN←DK␣OLDNAM␣BIN␣(3)) Note: Filename extension is required.
3) Delete a file:			
a) from current UFD	D, Delete	None	>D␣DK␣FILEA␣BIN)
b) from unprotected UFD	D, Delete	None	>D␣DK␣<JOE>␣FILEA␣BIN) Note: Filename extension is required.
c) from mass storage device directory	D, Delete	None	>D␣DT1␣FILEA␣BIN)
4) Delete all truncated files from a UFD which is:			
a) current	D, Delete	(X)	>D␣DK␣(X))
b) specified	D, Delete	(X)	>D␣DK␣<ABC>␣(X))
5) Convert multiple spaces to tabs	T, Transfer	(C), (CA)	>T␣LP␣DESTFL←DT1␣SOURCE␣(CA))
6) Convert tabs to spaces	T, Transfer	(E), (EA)	>T␣LP␣DESTFL←DT1␣SOURCE␣(EA))
7) Detect and Correct File Parity and Checksum errors	T, Transfer	(G), (GA)	>T␣DK␣DESTFL←DT1␣SOURCE␣(GA))
8) Delete Trailing Spaces from file contents	T, Transfer	(T), (TA)	>T␣DK␣DESTFL←DT1␣SOURCE␣(TA))

Table 6-4 (Cont)
File Modification Operations

IN ORDER TO:	USE OPERATION:	AND OPTIONS:	IN THIS MANNER:
9) Delete sequence numbers from file (card input or card format data files only)	T, Transfer	(Q), (QA)	>T␣DT1␣DESTFL␣ØØ1␣(Q)←CD)
10) Combine separate files into one file	T, Transfer	(W),(B),(A)	>T␣DT1␣LIBR␣(WB)←DT2␣FILA␣BIN,FILB␣BIN)
11) Segment a file into 2 to 16 separate:			
a) files	S, Segment +	None	>S␣TAG,TAGB,TAGC)
	T, Transfer	(Y), (YA)	>T␣DT1␣FILA,FILB,FILC,FILD␣(YA)←DT2␣SOURCE)
b) papertapes	S, Segment +	None	>S␣TAGA,TAGB,TAGC)
	T, Transfer	(Y), (YA)	>T␣PP␣,,,␣(YA)←DT1␣SOURCE)
12) Verify a file for parity and/or checksum errors	V, Verify	(A), (B)	>V␣DK␣FILEA␣(A))

Table 6-5
File Transfer Operations

IN ORDER TO:	USE OPERATION:	AND OPTIONS:	IN THIS MANNER:
1) Transfer a file to the current UFD	T, Transfer	(A) or (B)	>T␣DK␣DESTFL←DT1␣SOURCE␣(A)❯
2) Transfer a file to a selected non-current UFD when protection code permits	T, Transfer	(A) or (B)	>T␣DK␣< JOE>DESTFL←DT1␣SOURCE␣(A)❯
3) Transfer a file from a current UFD to a specified, non-current unprotected UFD	T, Transfer	(A) or (B)	>T␣DK␣< JOE>DESTFL←DK␣SOURCE␣(A)❯
4) Transfer console keyboard entries, line-by-line, to a system output device	T, Transfer	(A) only	>T␣LP␣(A)←TT❯ Note: cnd input with a ↑D
5) Transfer file and:			
a) Convert spaces to tabs	T, Transfer	(C) or (CA) only	>T␣TT←DT1␣SOURCE␣(CA)❯
b) Convert tabs to spaces	T, Transfer	(E) or (EA) only	>T␣TT←DT1␣SOURCE␣(EA)❯
c) Enable parity or checksum error to be detected	T, Transfer	(G) or (GA) only	>T␣DT1␣←DT2␣SOURCE␣(GA)❯

Table 6-5 (Cont)
File Transfer Operations

IN ORDER TO:	USE OPERATION:	AND OPTIONS:	IN THIS MANNER:
d) Initialize the directory of a directoried device	T, Transfer	(N) or (NA) or (NB) Note: illegal to magtape	>T␣DT1␣DESTFL←DT2␣SOURCE␣(NA)
e) initialize or create a UFD for the current UIC	T, Transfer	(N) or (NA) or (NB) Note: illegal to magtape	>T␣DK␣DESTFL←DT1␣SOURCE␣(NA)
f) Combine two or more files into one file	T, Transfer	(W) or (WA) or (WB)	>T␣DK␣DESTFL←DT2␣A,B,C␣(WA)
g) Delete sequence numbers from card reader inputs	T, Transfer	(Q) or (QA) (QAC) (QAT)	>T␣DT1␣DESTFL␣(QA)←CD

Table 6-6
COPY Operations

IN ORDER TO:	USE OPERATION:	AND OPTIONS:	IN THIS MANNER:
1) Copy the contents of a specific device storage block	B, Block copy	None	>B␣DT1␣5Ø,51←DT2␣1Ø1,1Ø2)
2) Copy the contents of a specific series (i.e., range) of device storage blocks	B, Block copy	None	>B␣DT1␣5Ø-55←DT2␣1ØØ-1Ø5)
3) Copy the contents of one or more blocks and:			
a) initialize the directory of the destination device	B, Block copy	(N)	>B␣DT1␣5Ø-55(N)←␣DT2␣1ØØ-1Ø5)
b) initialize the DECtape directory and reserve a ↑QSAVE area equal to core size	B, Block copy	(S)	>B␣DT1␣5,6,7␣(S)←DT2␣5Ø,51,52)
c) initialize DECtape directory and specify size of ↑QSAVE area to be reserved	B, Block copy	(Snn)	>B␣DT1␣5,6,7␣(S32)←DT2␣5Ø,51,52)
4) Add (copy) the files on one device to those of a second device	C, Copy	None	>C␣DK←DT1)
5) Copy and add files from one device to another device and:			

APPENDIX A
USE OF VT15 GRAPHICS DISPLAY SYSTEM

PIP users may employ the VT15 display unit as either a listing or a general purpose display device.

PROCEDURE

a) Before PIP is loaded, the command:

    $VT␣ON↵

    must be issued to the monitor to set up the display system for use.

b) Once PIP is loaded, the user need only type CTRL X to activate the display function. For all practical purposes, the CTRL X (↑X) command causes the VT Display to take the place of the console printer unit. Command characters entered at the console keyboard are echoed both by the console printer and on the VT Display screen; all other information normally output to the printer (i.e., error messages, listings, etc.) is displayed on the VT display screen only.

c) To discontinue the VT Display function, the user must issue a second CTRL X command. This action returns the display/print function to the console printer. The display unit, however, remains on and continues to display the information contained before the second CTRL X command was issued.

d) To clear the VT15 Display screen, the user must actuate the rightmost display control pushbutton (see CONTROLS) and enter a RETURN at the keyboard.

e) To turn the VT15 Display off (i.e., deactivate the CTRL X feature) the user must return control to the monitor (CTRL C) and enter the command:

    $VT␣OFF↵

VT15 CONTROLS AND DISPLAY MODES

CONTROLS

The VT15 Display console contains a horizontal strip of six square push-to-light pushbuttons which are used in display operations. These pushbuttons are unmarked since their function is determined by software and may vary according to the particular program (system or user) which is in control of the system.

APPENDIX B
USE OF VP15A DISPLAY DEVICE

In XVM/DOS systems which have a VP15A Storage Tube Display, the PIP user may use the display device as a listing device. He may list system and device directories and files in the following manner:

a) Listing Directories - System and device directories may be displayed on the VP15A by specifying the display's device mnemonic (VP) as the destination device in an L, List, command. For example, to cause the current UFD to be displayed in its most complete version, the user would issue the command:

```
>L␣VP←DK␣(P)↵
```

b) Listing Files - The contents of files may be displayed on the VP by specifying it as the destination device in a T, Transfer, command. For example, to display the file TEST1 ØØ1 on the VP, the user would issue the command:

```
>T␣VP←DK␣TEST1 ØØ1↵
```

DISPLAY CONTROLS

The VP15A display unit is provided with two pushbutton controls, ERASE and VIEW which are located on the right front panel of the CRT enclosure. These controls are used in the following manner:

a) ERASE — When operated, it causes the current display to be erased from the display.

b) VIEW — The normal brightness of displayed data fades after 90 seconds unless renewed; this control enables the user to renew (brighten) the display when desired.

WARNING

The same display should not be maintained on the CRT for a period exceeding 15 minutes; if this occurs, the phosphor of the display CRT may be damaged.

DISPLAY MODES

The VP15A CRT is capable of displaying fifty-six 72-character lines. If the data file to be displayed exceeds the 56-line display capacity, the display will operate in either a SCAN or PAGE mode depending on the type of handler installed in the system (VPA or VPA.S) for the VP15A[1].

SCAN Mode

When the VPA device handler is installed in the operating system, the VP15A display operates in a SCAN mode. In this mode, each time the display screen is filled it is erased, automatically, after the 56th list is written and is refilled from the display file. This fill-erase-rewrite cycle is continued until the screen is completely or partially filled and no more data is in the file to be displayed. The last display is not erased but remains and may be renewed (brightened) manually by the viewer when necessary.

PAGE Mode

When the VPA.S version of the handler is installed in the operating system, the VP15A Display operates in a PAGE mode. In this mode the erase-rewrite operations of the display are controlled by the manual operation of the Accumulator zero switch (ACSØ). Each time the display is filled, the full screen (i.e., page) is not erased and rewritten with the next set of available display file data if the ACSØ switch is actuated. This feature permits the user to manually advance through a file page-by-page.

---

[1] The type of VP15A handler available in the operating system will be that selected by the System Manager during the configuration of the system.

APPENDIX C
XVM/DOS TERMS AND ACRONYMS

Terms unique to the XVM/DOS Software System which are used in the PIP manual are listed and described in the following table. The acronyms for each term are also given. Detailed descriptions of the items identified by the following terms are given in the XVM/DOS Users Manual.

TERM	ACRONYM	DEFINITION
Bad Allocation Table	BAT	A device (disk) table which indicates, in storage blocks, any faulty disk areas in which data cannot be stored.
Master File Director	MFD	A master device (disk) file directory which contains pointers to all user directories (UFD's) within a disk device.
Monitor Identification Code	MIC	The master system password which permits full access to all files within the system. This code identifies the system manager and should be used only by him.
Storage Allocation Table	SAT	The device (disk) table which stores busy, not-busy indicators for the disk storage area.
System Block	SYSBLK	The system table which contains the names, locations, and loading and starting parameters for all system programs within the operating system.
User File Directory	UFD	File directories for each user who establishes disk file storage areas within the system.
User File Directory Table	UFDT	The system directory table which maintains the relationship between the system's .DAT slots and each unique user identification code (UIC).

TERM	ACRONYM	DEFINITION
User Identification Code	UIC	A password entered by a user to uniquely define himself and any files which he may enter. If necessary, a user may enter more than one UIC to establish several unique sets of files. Since only one user may employ the system at any one time, the current UIC is the last logged-in UIC.

INDEX

Abort operation, 1-2
Acronyms, C-1
Adding files, 3-40
ALT mode, 1-3
At symbol (@) usage, 1-3

Back arrow (←) delimiter, 2-2
Backslash (\ ) usage, 1-3
Bad Allocation Table (BAT)
    update, 3-43
Bank mode, 4-1
Block copy operation, 3-37

Card input, 3-25
Change filename, 3-34
Character deletion, 1-3
Characters, keyboard command,
    1-3
Checksum errors, 3-20, 3-27, 5-2
Combining files during transfers,
    3-23
Commands, destination/source,
    2-2
Command string
  description, 2-1
  elements, 2-6
  errors, 5-1
  format, 2-4
Command types
  destination/source, 2-2
  single-device, 2-3
Continuation lines, 2-1
Control characters, 1-3
Copy mass storage, 3-39
Create current UFD, 3-1
CRT display, B-1
CTRL C (↑C), 1-2
CTRL keys, 1-3
CTRL P (↑P), 1-2
CTRL Q area (↑QAREA), 3-5
CTRL X, A-1

Data modes, 2-1, 2-11, 2-12,
    2-13
Data mode specifications, 3-14
Data transfer, 2-2
    see also File transfers
DECtape directories,
  initialization of, 3-4
  listing of, 3-10
Delete operation, 3-31
Deletion of
  characters, 1-3
  DECtape files, 3-34
  files from UFDs, 3-32
  lines, 1-3
  trailing spaces, 3-26
  truncated files, 3-34, 4-2
  UFDs, 3-3
Delimiters, 2-6
Destination/source commands, 2-2
Devices, 2-1, 2-7
Device to device file transfers,
    3-17
Directoried devices, file trans-
    fers between, 3-13
Directory initialization, 3-41
Directory initialization during
    transfer, 3-22
Directory list operation, 3-5
Directory protection codes, 3-36
Directory setup, 3-1
Display device, VP15A, B-1
Display system, VT15 graphics, A-1
Dump mode, 2-12, 3-41

ERASE pushbutton, B-1
Error corrections, 5-7
Error detection, 5-1
Error messages,
  PIP, 5-3
  system, D-1

Filename, 2-1, 2-3
  extensions, 2-13
File protection codes, 2-13, 2-14,
    3-14, 3-36
Files, deletion of, 3-34
File transfer commands, 3-12
File transfers,
  card input, 3-25
  device to device, 3-17
  to disk, 3-15
  keyboard input to output device,
    3-18
  paper tape input, 3-25
  source file to multiple paper
    tapes, 3-31
  UFD to UFD, 3-16
Functions, optional, 2-9
Function switches, 3-20

Horizontal tab codes, 3-21

Image alphanumeric data mode, 2-12
Image binary data mode, 2-12
Initialization of
  current UFD, 3-1
  DECtape directories, 3-4
  MFD, 4-2
  new directory, 3-1
Input/output devices, 2-7
Input, termination of, 1-3
IOPS ASCII data mode, 2-11
IOPS binary data mode, 2-11

Keyboard command characters, 1-3

Line deletion, 1-3
List DECtape directories, 3-10
List directory operation, 4-2
List (L) operation, 3-5
List MFD, 3-7
List monitor SYSBLK, 3-8
List selected file, 3-10
List UFD, 3-6
List UFD with file protection codes, 3-9

Master File Directory (MFD) listing, 3-7
Mnemonics, 2-7
Monitor Identification Code (MIC), 4-1

New directory (N) operation, 3-1

Operation, abort, 1-2
Operational errors, 5-2
Optional functions, 2-1, 2-9
Options, 6-3
Option switches, 2-3
Output to paper tape, 3-31

Page mode, 4-1
  VP15A, B-2
  VT15, A-2
Paper tape input, 3-25
Parity/checksum error correction, 3-20
Parity errors, 3-27, 5-2
Primary operations, 2-7
  summary of, 2-8
Protection codes, 2-1, 2-14, 3-2, 3-36
  violations of, 5-2
Pushbuttons,
  VP15A, B-1
  VT15, A-2

Q-dump operations, 3-5

Renaming files, 3-35
Restart PIP, 1-3
RETURN, 1-3

SCAN mode, VP15A, B-2
SCROLL mode, VT15, A-2
Segmentation point, 3-28
Segment file operation, 3-28
Selected file, listing of, 3-10
Single-device commands, 2-3
Single file transfers, 3-13
Source file to multiple paper tapes segmentation operations, 3-31
Space, delete trailing, 3-26
Space delimiters, 3-21
Space-to-tab conversion, 3-21
Startup procedures, 1-2
Storage Allocation Table (SAT) update, 3-42
Storage device, 2-7
Switch combinations, 3-14, 3-20
Switches, data
  (A), 2-11
  (B), 2-11
  (D), 2-12
  (H), 2-12
  (I), 2-12
Switches, function
  (C), 3-21, 3-22, 3-25, 3-26
  (E), 3-21
  (G), 3-20
  (K), 3-4
  (L), 3-6, 3-8, 3-10
  (M), 3-6, 3-7, 3-10
  (N), 3-22, 3-41
  (P), 3-6, 3-9, 3-10, 3-12
  (Q), 3-25

Switches, function
(S), 3-5, 3-41
(T), 3-25
(V), 3-25
(W), 3-23, 3-25
Symbols in text, 1-3
SYSBLK listing, 3-8
System error messages, D-1
System file protection code, 3-14

Tab delimiters, 3-21
Tables, 6-1
Tab-to-space conversion, 3-21
Terminate input, 1-3
Terms, XVM/DOS, C-1
Trailing spaces, deletion of, 3-26
Transfer files
see File transfers
Truncated files, 3-35, 3-40

UFD to UFD file transfers, 3-16
UIC block copy, 3-38
Updating tables, 3-42
User File Directory (UFD), 2-11, 2-13
deletion, 3-3
file deletion, 3-32
initialization, 4-1
listing, 3-6, 3-9
protection code, 3-2

Verify operation, 3-27
Vertical forms control, 3-26
VIEW pushbutton, B-1
VP15A display device, B-1
VT15 graphics display system, A-1

Writing conventions, 1-2

XVM/DOS terms, C-1

PIP XVM
Utility Manual
DEC-XV-UPPUA-A-D

Please cut along this line.

READER'S COMMENTS

NOTE: This form is for document comments only. Problems with software should be reported on a Software Problem Report (SPR) form.

Did you find errors in this manual? If so, specify by page.

Did you find this manual understandable, usable, and well-organized? Please make suggestions for improvement.

Is there sufficient documentation on associated system programs required for use of the software described in this manual? If not, what material is missing and where should it be placed?

Please indicate the type of user/reader that you most nearly represent.

- ☐ Assembly language programmer
- ☐ Higher-level language programmer
- ☐ Occasional programmer (experienced)
- ☐ User with little programming experience
- ☐ Student programmer
- ☐ Non-programmer interested in computer concepts and capabilities

Name _____ Date _____

Organization _____

Street _____

City _____ State _____ Zip Code or Country _____

If you require a written reply, please check here. ☐

---------- Fold Here ----------

---------- Do Not Tear - Fold Here and Staple ----------

FIRST CLASS
PERMIT NO. 33
MAYNARD, MASS.

BUSINESS REPLY MAIL
NO POSTAGE STAMP NECESSARY IF MAILED IN THE UNITED STATES

Postage will be paid by:

digital

Software Communications
P. O. Box F
Maynard, Massachusetts 01754

digital

digital equipment corporation

PRINTED IN U.S.A.