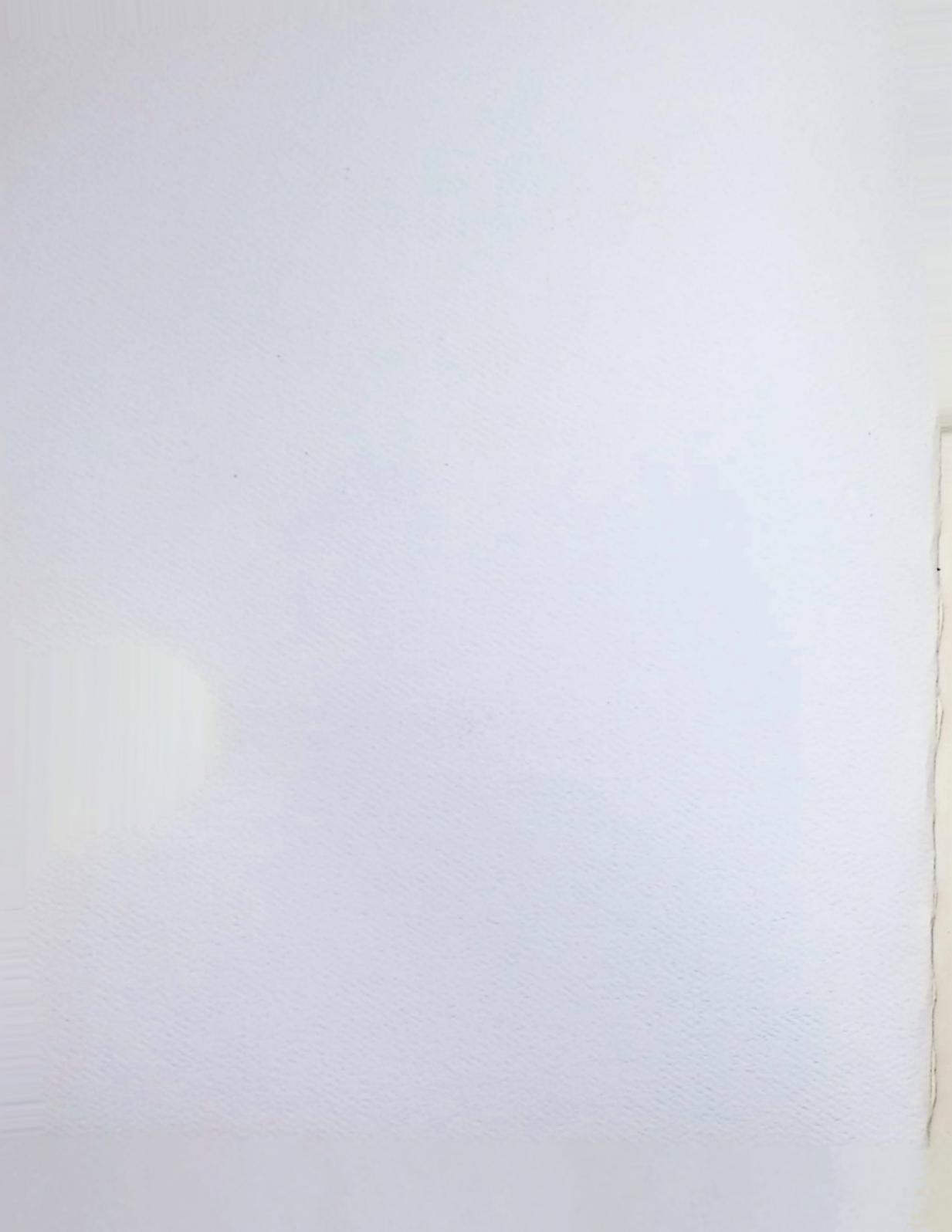


Z-80 Version

Advanced Command Processor

for CP/M®2





Pickles & Trout
ADVANCED
COMMAND
PROCESSOR
for CP/M® 2
USER'S MANUAL

(Z-80 Version)

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General Comments

The P&T ACP is an Advanced Command Processor for the CP/M® 2 operating system. It replaces the standard console command processor (CCP) and provides you with significant new features at the command level of CP/M 2. The P&T ACP is easy to install and use and works with most computers that run CP/M 2.

The P&T ACP retains all of the commands of the CCP but provides several useful extensions for each one. In addition the P&T ACP provides several new commands to perform often needed functions.

This manual assumes that you have some experience with the standard CP/M 2 console command processor (CCP). You should know how to execute a program with the standard CCP and use its built-in functions (DIR, SAVE, TYPE, ERA, REN, USER). If you are not familiar with these operations with the standard CCP, you should consult the Digital Research documentation or any of the several books that have been published on CP/M.

The command structure of P&T ACP makes it much easier to use the user number feature of CP/M 2. For example, the directory display command (DIR) allows you to easily list the directory of any drive and user number without actually logging onto that drive and user number. In addition you may, if you wish, display only files that fall into one of these categories: system files, user (non-system files), read only files, and read/write files.

With certain terminals, P&T ACP allows you to edit any line that appears on the screen and resubmit it as a command line. This is particularly useful for correcting typos and for executing commands repetitively.

The SUBMIT/XSUB function of CP/M 2 has been altered to give you more extensive control over the way in which SUBMIT files are executed. When using XSUB, you must now identify which lines in the SUBMIT file are to be executed as command lines and which are to be used as program input. P&T ACP will not try to execute a program input line as a command nor try to feed a command line into a program as input.

Please register your copy of P&T ACP at once. Registering your copy will insure that you will be kept up-to-date on additions and changes to the system. To register your copy you must fill out and return the registration card you received with the original diskette. If you did not receive the cards, please call Pickles & Trout at once for instructions on how to register your copy.

If You Need Help

This manual has been designed to provide you complete information about the P&T ACP. It should answer most of the questions that arise while using the program. If you should have trouble with the program or if you do not understand how some part of it works, please read the manual first.

page 12
If You Need Help

INTRODUCTION

P&T ACP
User's Manual

If you cannot find the information you need in this manual, you should seek assistance from the dealer from which you purchased the P&T ACP.

If you cannot get the answer to your question from this manual or your dealer, you may contact Pickles & Trout for direct assistance. If you desire assistance from Pickles & Trout it is absolutely necessary that your copy of P&T ACP be registered.

Please have your P&T ACP serial number available when you contact Pickles & Trout regarding your copy of P&T ACP; YOU WILL BE ASKED FOR IT. The serial number appears on the label of the master diskette and is displayed on the console every time P&T ACP is initiated.

Conventions of Notation

For ease of reference, all page numbers in this manual consist of two numbers. The first refers to the section of the manual and the second refers to the page within the section. Figures within this manual are numbered in a similar way. For example, Figure 5.8 refers to the eighth figure in the fifth section of the manual.

All numbers in this manual are decimal (base 10) unless otherwise noted. A hexadecimal number (base 16) is indicated by appending the letter "h" to the number (e.g. 1Ah) or by prefacing it with a dollar sign (e.g. \$1A). A binary number (base 2) is indicated by appending the letter "b" to the number (e.g. 101b). In figures that represent console displays, this convention will not be used if the program that generated the display does not follow it. Every effort has been made to make the figures representing console displays as accurate as possible. The text relating to a figure will specify the base of the numbers displayed if it is not obvious from the context.

In this manual, the term "Kbyte" (or Kb) is taken to refer to 1024 bytes. The term "Mbyte" (or Mb) is used to refer to 1024 Kbytes (ie. 1,048,576 bytes).

When it is necessary to refer to one of the named keys on the keyboard, the name of the key is enclosed in angle brackets. A key of particular importance is carriage return (sometimes called enter or return). In this manual the carriage return key is referred to as <cr>. If you are instructed to press <cr> at some point, it is expected that you will press the key labeled carriage return rather than typing the 4 characters "<", "c", "r", ">".

Control keys and control codes are denoted by the characters "ctl-" followed by a letter and enclosed in angle brackets (e.g. <ctl-A>). In other manuals, control codes are often indicated by a caret or up-arrow immediately preceding the letter (e.g. ^A). This manual will use the term "control key" to refer to the key that is actually typed to generate a control code. For example, to generate a <ctl-A>, you would type the "A" key on the keyboard while holding down the <ctrl> key; the <ctrl> key functions as a special type of shift key.

In describing the operation of a program, a sample dialog between the computer and user may be shown. In these dialogs, characters displayed on the console by the computer are shown in black; characters typed in by the user are shown in green.

When using the P&T ACP or running the utility programs you may be asked a question that requires a yes or no answer. In these cases, the characters "Y" and "y" are accepted as affirmative responses while "N" and "n" are accepted as negative responses. In all cases you must press <cr> after your response. This allows you the chance to change your response by using <back space> and retyping your response.

P&T ACP is not quite ready for use in the form in which it is delivered. Before using it, you must go through a process called installation. During this process, you will be asked a few very simple questions. The answers to these questions are used to construct a working copy of P&T ACP for your system which will give maximum performance.

It is very important that the installation procedure be performed on the system on which P&T ACP is to be used since some information is gathered from the system during installation.

Running INSTALL

You may have received more than one diskette with P&T ACP. In this case one of the diskettes will be labeled as the library diskette. The library is where information about the different types of systems and terminals supported by P&T ACP is kept. If you received only one diskette, the library is on it along with the utility programs.

The first thing you should do is copy all of the COM files from the utility program diskette to one of your working diskettes. If you have received a separate library diskette, it will have no COM files on it so you need not check for any on it. Assuming the utility program diskette is on drive B and you want to transfer the programs to drive A, the command line you would use is shown in Figure 3.1.

A>PIP A:=B:*.COM[V]<cr>

Figure 3.1 PIP Command to Transfer COM Files to Working Diskette

After transferring the utility programs to one of your working diskettes, you should run the P&T ACP INSTALL program. Assuming that you transferred the utility programs to drive A, the command line shown in Figure 3.2 will execute the INSTALL program.

A>INSTALL<cr>

Figure 3.2 Command Line to Execute Install

INSTALL will clear the console display and begin as shown in Figure 3.3. Before responding with the drive on which to find the library diskette, you should mount the library diskette on an available drive. In Figure 3.3 it is assumed that you have mounted the library diskette on drive B.

P&T ACP Installation Program, Version 1.0
Copyright (C) 1983, Pickles & Trout
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Enter drive on which to find library diskette: B<cr>

Figure 3.3 Opening Dialog of INSTALL

After the library diskette is mounted and you tell INSTALL where to find it, INSTALL will clear the console display and begin the dialog shown in Figure 3.4. First you will be presented with a list of terminals and systems that are supported by P&T ACP. If you do not have one of the systems or terminals listed, you should select option 1. This choice will create a copy of P&T ACP which is fully operational except that you will not have on screen editing and command line resubmission.

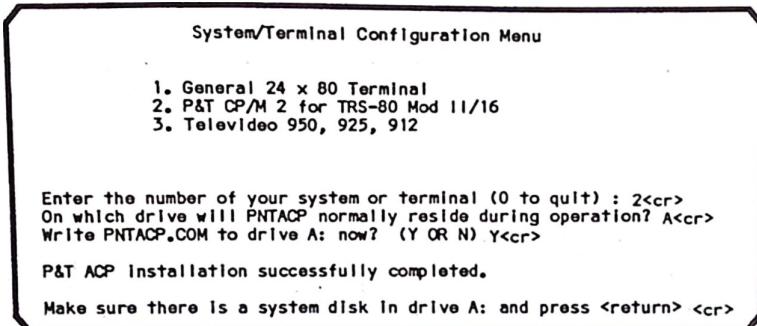


Figure 3.4 INSTALL Terminal Selection Dialog

After you have selected a terminal, INSTALL will ask you on which drive the PNTACP.COM file will normally be stored during system operation. This drive is called the load drive. Since this file is accessed from time-to-time to reload portions of P&T ACP, it is best to select a drive which is usually available.

Typically you will want to specify drive A but in certain circumstances you may want to use another drive. For example, if your system has a fixed hard disk assigned to drive E and drive A is a floppy diskette, you may want to make E the load drive. This has a side benefit that once P&T ACP is initiated, you will not need a system diskette on drive A unless you attempt to return to the standard CCP. P&T ACP does, however, require that some disk be mounted on drive A since it is checked at every warm boot for a submit file in progress.

After specifying the load drive, INSTALL asks you if you want to write the PNTACP.COM file which it creates to the load drive. Usually you will want to do this since the PNTACP.COM file must be present on the load drive for P&T ACP to work properly. If you want to write the file directly to the load drive, respond affirmatively.

If, for some reason, you wish to create the PNTACP.COM file on another drive, give a negative response to this question. You will then be asked for the drive on which you want to put the file and you can specify any drive you want. If you do not put the PNTACP.COM file on the load drive at this time, it must be copied to the load drive before you can use PNTACP.

Finally, INSTALL will give a message stating that the installation has been successfully completed.

Possible Error Messages

Cannot install on a non-standard CP/M system.

This message indicates that INSTALL has detected a condition in your system that makes it look like a non-standard system. This may be caused by the presence of another program (such as a menu system) in memory when INSTALL is executed.

Cannot install with PNTACP already present.

Use "CCP" command to return to standard CCP before installation.

You must be running with the standard CP/M 2 CCP when you execute INSTALL. This message is given if you try to run INSTALL while the P&T ACP is active. As the message states, you can return to the standard CCP by using the CCP command of P&T ACP. (See page 5.8 for information about the CCP command.)

Invalid library diskette, is d: the correct drive? (Y or N)

"d:" will be replaced with the designation of the drive on which you indicated you would mount the library diskette. INSTALL could not find a valid library on the diskette mounted on the drive you specified. This usually is due to one of three reasons: a) you specified the wrong drive, b) you have the wrong diskette mounted, c) you are not working with the original library diskette. If you have the wrong diskette mounted, respond to this message affirmatively. You will then be prompted to mount the correct diskette. If you have specified the wrong drive, give a negative response. In this case you will be asked to re-specify the drive on which the library diskette is mounted.

Number must be between 0 and XX.

Press any key to continue...

"XX" will be replaced with the highest option number available on the terminal menu. This message indicates that you have entered an invalid selection for the terminal/system type. After you press any key you will be shown the choices again and allowed to re-enter your selection.

d:PNTACP.COM already exists, delete it? (Y or N)

The "d:" will be replaced with the designation of the drive on which you indicated PNTACP.COM should be stored. This message indicates that a file by that name already exists on the drive. If you respond affirmatively, the existing file will be deleted and a new one created. If you respond negatively, you will return to the question for the drive on which PNTACP will normally reside.

Error closing d:PNTACP.COM

The "d:" will be replaced with the designation of the drive on which you indicated PNTACP.COM should be stored. This message occurs if the system reports an error when INSTALL attempts to close the newly created PNTACP.COM file.

Illegal drive designation!

This message results whenever you respond to a query for a drive designation with a character that is not in the range A - P.

After the library diskette is mounted and you tell INSTALL where to find it, INSTALL will clear the console display and begin the dialog shown in Figure 3.4. First you will be presented with a list of terminals and systems that are supported by P&T ACP. If you do not have one of the systems or terminals listed, you should select option 1. This choice will create a copy of P&T ACP which is fully operational except that you will not have on screen editing and command line resubmission.

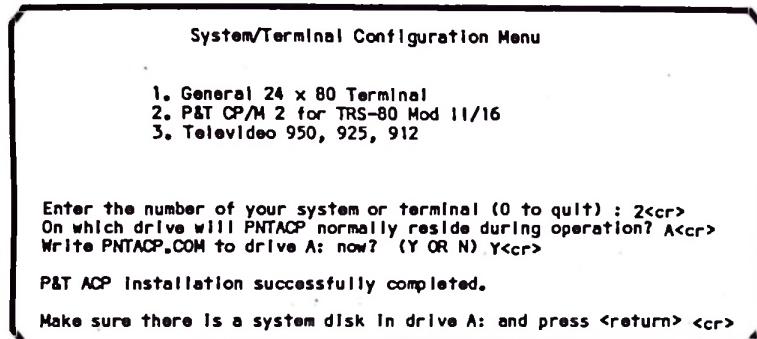


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Typically you will want to specify drive A but in certain circumstances you may want to use another drive. For example, if your system has a fixed hard disk assigned to drive E and drive A is a floppy diskette, you may want to make E the load drive. This has a side benefit that once P&T ACP is initiated, you will not need a system diskette on drive A unless you attempt to return to the standard CCP. P&T ACP does, however, require that some disk be mounted on drive A since it is checked at every warm boot for a submit file in progress.

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If, for some reason, you wish to create the PNTACP.COM file on another drive, give a negative response to this question. You will then be asked for the drive on which you want to put the file and you can specify any drive you want. If you do not put the PNTACP.COM file on the load drive at this time, it must be copied to the load drive before you can use PNTACP.

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Cannot install with PNTACP already present.

Use "CCP" command to return to standard CCP before installation.

You must be running with the standard CP/M 2 CCP when you execute INSTALL. This message is given if you try to run INSTALL while the P&T ACP is active. As the message states, you can return to the standard CCP by using the CCP command of P&T ACP. (See page 5.8 for information about the CCP command.)

Invalid library diskette, is d: the correct drive? (Y or N)

"d:" will be replaced with the designation of the drive on which you indicated you would mount the library diskette. INSTALL could not find a valid library on the diskette mounted on the drive you specified. This usually is due to one of three reasons: a) you specified the wrong drive, b) you have the wrong diskette mounted, c) you are not working with the original library diskette. If you have the wrong diskette mounted, respond to this message affirmatively. You will then be prompted to mount the correct diskette. If you have specified the wrong drive, give a negative response. In this case you will be asked to re-specify the drive on which the library diskette is mounted.

Number must be between 0 and XX.

Press any key to continue...

"XX" will be replaced with the highest option number available on the terminal menu. This message indicates that you have entered an invalid selection for the terminal/system type. After you press any key you will be shown the choices again and allowed to re-enter your selection.

d:PNTACP.COM already exists, delete it? (Y or N)

The "d:" will be replaced with the designation of the drive on which you indicated PNTACP.COM should be stored. This message indicates that a file by that name already exists on the drive. If you respond affirmatively, the existing file will be deleted and a new one created. If you respond negatively, you will return to the question for the drive on which PNTACP will normally reside.

Error closing d:PNTACP.COM

The "d:" will be replaced with the designation of the drive on which you indicated PNTACP.COM should be stored. This message occurs if the system reports an error when INSTALL attempts to close the newly created PNTACP.COM file.

Illegal drive designation!

This message results whenever you respond to a query for a drive designation with a character that is not in the range A - P.

Possible Error Messages

Reading unwritten data, record: nnn

Cannot close current extent, record: nnn

Seeking to unwritten extent, record: nnn

Seek past physical end of disk, record: nnn

Any of these messages indicate that INSTALL is having trouble reading the library files. You may have a system problem, may not be using the original library diskette, or you may have a bad library diskette.

CP/M error, record: nnn

This message indicates that the system returned an illegal error code when INSTALL tried to read the library files. It could indicate a problem with the operating system.

Unrecognizable error code

This message indicates that the system returned an undefined error code when INSTALL tried to read the library files. It could indicate a problem with the operating system.

Running P&T ACP

The P&T ACP does not become a permanent part of your operating system. It must be run each time you power up or reset your system. Once the P&T ACP is running, it will remain in control of the system until you explicitly return to the standard CCP or reset your computer. After one of these actions, P&T ACP must be run again.

To run the P&T ACP, you simply execute the program PNTACP which was created by the INSTALL program. Remember that the PNTACP.COM program file created by the INSTALL program must be stored on user 0 of the load drive (you specified the load drive when you ran the INSTALL program). This file is used to reload portions of P&T ACP after a program is executed that modified the memory occupied by the P&T ACP. If the file cannot be found when it is needed, an error message will be displayed and you will be given a chance to mount the disk containing the file.

Typically a drive that is always present on the system is chosen for the load drive. The most common choice is drive A. Under normal circumstances, the only copy of the PNTACP.COM file on a system would be on the load drive.

When you first start your system, you will be running the standard CP/M 2 console command processor (CCP). Figure 4.1 shows the command you would type to run the P&T ACP and the messages that are given by the P&T ACP as it is initiated. Figure 4.1 assumes that the load drive is drive A.

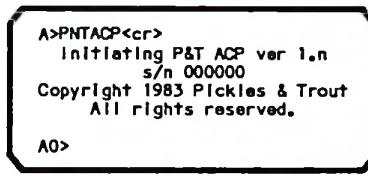


Figure 4.1 Running the P&T ACP

If you specified a drive other than drive A for the load drive, you should execute PNTACP.COM from that drive by specifying it in the command line. (e.g. E:PNTACP).

Note that the first time you use P&T ACP there will be a slight pause as P&T ACP makes some internal modifications to match the system you are currently running. These changes will only be made the first time the program is used or if you change the amount of memory your system uses. While it is making these modifications, the disk drive on which PNTACP.COM is stored must be write enabled. After the changes are made, the disk may be write protected for further use.

After P&T ACP is loaded, it will give you its command level prompt (e.g. "A0>") and it will be ready to use.

Some systems allow you to specify a command line to be executed automatically after a cold boot (reset). If you have this capability, you may want to make use of it to automatically run PNTACP when the system is started up.

Command Level Prompt

One of the most useful features of P&T ACP is that it gives you easy access to the different user numbers of CP/M 2. The current drive and current user number are the drive and user number that are used by default when none are specified. In order to remind you of the current drive and user number they are shown in the system command level prompt. When this prompt is displayed on the system terminal, the P&T ACP is waiting for you to enter a command. Examples of command level prompts are:

- A0> indicates that drive A is the current drive and user 0 is the current user.
B12> indicates that drive B is the current drive and user 12 is the current user.

Numbers

P&T ACP allows you to use either decimal or hexadecimal numbers. By default, all numbers are treated as decimal. If you wish to enter a number in hexadecimal, you should precede it with a dollar sign ("\$"). Some examples of using hexadecimal numbers are:

- A>USER \$E<cr> sets the current user number to 14 (decimal).
A>SAVE \$1A filename<cr> saves 1Ah (26 decimal) pages of the transient program area as a file with the name specified by "filename".

Drive & User Designation

The standard CP/M 2 method of specifying a file name with a drive designation is to separate the drive designation from the file name with a colon ("::"). This is extended in the P&T ACP to allow you to specify both the logical drive and the user number on that drive to access for the operation. This allows you to easily access other user numbers for various operations.

If only a logical drive letter is given, that drive under the current user number is accessed. If only a user number is given, the current drive under that user number is accessed. If both a logical drive letter and a user number are given, the corresponding drive and user number are accessed. When both a logical drive letter and a user number are given, the drive letter should come first. The following examples show the various combinations that may be used:

- A0>DIR D<cr> displays the directory from drive D, user 0. Note that the command level prompt shows that 0 is the current user number.

A0>DIR 8:<cr> displays the directory drive A (the current drive), user 8.

A0>DIR E7:<cr> displays the directory drive E, user 7.

P&T ACP will accept a semicolon (";") in place of the colon in a drive and/or user designation at the command level. Since one of the two (hopefully) is an unshifted character, you may choose the one that is easiest for you to type.

Executing a Program

A program is executed from the P&T ACP in much the same manner as with the standard CCP. The program name with an optional drive/user designation is typed at the command level of the system. If a drive/user designation is given, P&T ACP tries to locate the program file on the specified drive and/or user number. The following examples illustrate how the drive and user number are specified for executing a program:

A0>B:ZOT<cr> executes a program named ZOT from drive B, user 0 (the current user).

A0>4:ZOT<cr> executes a program named ZOT from drive A (the current drive), user 4.

A0>C&:ZOT<cr> executes a program named ZOT from drive C, user 6.

If no drive/user designation is given with the program name, P&T ACP searches for the program as follows: If the program exists on the current drive and user number, it is loaded and executed. If the program cannot be found on the current drive and user number P&T ACP searches up to three user numbers on up to three drives in an attempt to find it.

One of the 16 user numbers is designated as the alternate user number. If the program cannot be found on the current drive and user number, P&T ACP looks for the program under the alternate user number on the current drive. If the program still has not been found, P&T ACP looks under user 0 on the current drive. The alternate user number is set to 15 when P&T ACP is first started; you can change it with the SAU command (see section 5).

In a similar manner, an alternate drive is also designated. If the program cannot be found on the current drive, the same sequence of user numbers are searched on the alternate drive. If the program still has not been found, the same sequence of user numbers is searched on drive A. The alternate drive is set to A when P&T ACP is first started; you can change it with the SAD command (see section 5).

Figure 4.2 shows the sequence of drives and user numbers that are searched in an attempt to find the program to execute. If there is some overlap (ie. the current drive and the alternate drive are both set to drive B) in the sequence, the redundant searches will not be made.

- 1 current drive, current user number
- 2 current drive, alternate user number
- 3 current drive, user 0

- 4 alternate drive, current user number
- 5 alternate drive, alternate user number
- 6 alternate drive, user 0

- 7 drive A, current user number
- 8 drive A, alternate user number
- 9 drive A, user 0

Figure 4.2 Search Sequence for Program Execution

Wild Card File Names

P&T ACP recognizes the same wildcard file names as the standard CCP with one addition. The built-in commands of P&T ACP accept ".**" as being equivalent to "*.*". This can make for considerably easier typing.

The ".**" can even be used in the command line options for some programs. If it works as a command line option depends on whether the program looks at the command line passed to it by the P&T ACP or not. For example, STAT does not look at the command line hence ".**" will work with it. PIP does look at the command line and ".**" will not work with it. In all cases, of course, "*.*" will work.

The following examples show various uses of wild card file names:

- | | |
|----------------|--|
| A>DIR Q**<cr> | displays all files on drive A, user 0 (the current drive and user) whose primary name begins with "Q". |
| A>DIR B4**<cr> | displays all files on drive B, user 4. |
| A>STAT C**<cr> | gives a STAT listing of all files on drive C, user 0 (the current user number). |

Echoing Output to Printer

Typing <ctl-P> while at the command level of P&T ACP will cause all further output to the console to be sent to the system printer also. This action does not terminate with a warm boot as with the standard CCP. All console output will be sent to the system printer until <ctl-P> is used again to stop it. This feature is helpful for such things as printing a log of the execution of a SUBMIT file for later examination.

Submit Files

The P&T ACP allows you to batch command lines together for execution. A disk file (called a SUB file) containing the command lines to be executed is created with a text

editor or other means. To begin the execution of the batch of command lines, the SUB file is processed by the PNTSUB utility program to create a special file named " \$\$\$.SUB".

While a SUB file is being executed, the command lines to be executed come from this special file. With the standard CCP, this file must be on drive A under the current user number. This makes it impossible for a SUB file to move from one user to another since as soon as the user number is changed access to the " \$\$\$.SUB" file is eliminated.

P&T ACP always looks for the " \$\$\$.SUB" file on drive A, user 0. This allows you to move between user numbers within a SUB file with complete freedom. Although you can use the standard CP/M 2 SUBMIT to process the SUB file, the PNTSUB program is considerably easier to use since it always puts the " \$\$\$.SUB" file on drive A, user 0.

PNTSUB accepts a drive and user designation for the SUB file to be processed so that you can run a SUB file from another drive and user number without changing the current drive and user. In addition, PNTSUB allows you to nest SUB files to any depth as long as the total number of lines yet to be executed does not exceed 128. See Section 6 for further information on PNTSUB.

While a SUB file is in progress the command level prompt of P&T ACP is changed. On any command line that comes from the SUB file, the ">" character in the command prompt is changed to "\$". This makes it easy to distinguish command lines that come from a SUB file from those typed at the console.

Since P&T ACP always looks for the " \$\$\$.SUB" file on drive A, user 0, any program that attempts to create this file must put it there. However, most application software will put the " \$\$\$.SUB" file on the current user number rather than user 0. Unless you can modify such a program, you must run it on user 0 if you want it to run properly. Typically only a few features of any program will be affected by this limitation. If you do not use these features, you may run the program on any user number.

Disk System Reset

With the standard CCP, every time a program terminates or you press <ctl-C>, a disk system reset occurs. This causes all drives to be reset (set to an inactive state) whether they need it or not. A hard disk drive which is never (or rarely) changed usually does not need to be reset.

If a drive is reset the system will take a little time to activate the drive the next time it is accessed. If the drive did not need to be reset in the first place, the time to reactivate it is wasted.

P&T ACP resets only those drives that need it when a program terminates or you press <ctl-C>. The drives that are reset are those that the system checks for changed disks (ie. they have a directory check vector). Any drives that have been set to "read-only" status are also reset regardless of whether they have a check vector or not. Typically floppy diskette drives are checked for changed disks while hard disk drives with fixed media are not. Hard disk drives with removable media might be either way.

You can use the STAT program to find out if a particular drive on your system is checked for changed disks. Type in the command

STAT d:DSK:

where "d" is replaced by the letter of the drive you are interested in. Look at the line giving the number of "Checked Directory Entries" on the report from STAT. If the number is 0, the drive is not checked for changed disks. If the number is not 0, the drive is checked and will be reset by P&T ACP.

There are some cases when you may want to do a full and complete disk system reset (reset all drives). Examples are: When you change the media on a hard disk drive with removable media that is not checked for changed disks. When more than one computer is connected to a hard disk drive it may be necessary to do a full disk system reset in order to account for changes made by one of the other computers.

P&T ACP provides a special command (`<esc><ctl-C>`) that causes a complete disk system reset to be performed. This command is discussed in more detail in Section 5.

Programs That Won't Work

P&T ACP will work with nearly all programs that are designed to work with standard CP/M 2. There are a few programs that will not work in conjunction with P&T ACP. These programs usually expect to make use of parts of the standard CCP or "know" that the CCP occupies 2 Kbytes of space.

For example, since the normal CCP is not in memory while the P&T ACP is active, programs expecting to make use of it will not execute properly. Few programs fit into this category.

Some programs want to install themselves just under the CCP in memory and "know" that the CCP is only 2 Kbytes long. Since the P&T ACP has so many expanded functions, it uses more than 2 Kbytes of memory. These programs will end up installing themselves right in the middle of P&T ACP. Unfortunately it is impossible to predict what results will occur from trying to use one of these programs.

Two examples of programs in this category are XSUB and DESPOOL. P&T ACP has XSUB built-in so you will not use (or need) the XSUB program. In fact, you cannot execute the XSUB program since you cannot execute a program with the same name as a built-in command.

How it Works

This section gives some of the details of how the P&T ACP is loaded and executed. It is not necessary to read this section in order to make use of the P&T ACP.

The P&T ACP is stored in a relocatable form in the program file PNTACP.COM. When this program is executed, it determines the size of the system on which it is running and from that figures out where in memory to put the P&T ACP. If the P&T ACP is already configured for that address, it is merely transferred into place and executed.

If the P&T ACP is not configured for the proper address, it is reconfigures itself accordingly. The program file PNTACP.COM is then updated with the reconfigured version so that it will be available for reloading. The reconfigured version is then moved into place and executed. If the reconfiguration is performed, the drive on which PNTACP.COM is stored must be write enabled so that the reconfigured copy of the program can be written back to the file.

The P&T ACP is divided into two parts, a resident part and a non-resident part. The resident part is 1/2 Kbyte long and remains in memory at all times when the P&T ACP is active. It is responsible for reloading the P&T ACP when necessary. The non-resident part contains the bulk of the P&T ACP.

The P&T ACP resides at the top of the transient program area (just like the standard CCP). When a transient program is executed it might not use all of the transient program area. If it uses the memory occupied by the non-resident portion of the P&T ACP, that portion of P&T ACP will be reloaded from the PNTACP.COM file after the program terminates. If the memory occupied by the non-resident portion of P&T ACP is not used, no reloading is done after the program terminates.

Since the non-resident portion of the P&T ACP may need to be reloaded after a program terminates, the file PNTACP.COM must be available at that time. It is typically easiest to put PNTACP.COM on a drive which will not be changed (like a fixed hard disk). If the PNTACP.COM file cannot be found when it is needed, an error message is issued and you are allowed to mount another disk and try again or return to the standard CCP.

Speed Considerations

The only real speed consideration in using P&T ACP is the amount of time it takes to perform a warm boot after program termination. In most circumstances, P&T ACP will perform at least as well as the system does when running the standard CCP. When running programs that do not use the high part of the transient program area, P&T ACP warm boots very quickly since nothing is reloaded from disk.

If you want to insure that you get maximum performance from P&T ACP, you should take the following steps:

1. Put the PNTACP.COM file on the fastest disk drive you have on your system. If you have a choice between a hard disk and a floppy disk, use the hard disk.
2. If possible, put the PNTACP.COM file on the disk before any other files. This will insure that it appears at the beginning of the disk directory and that the file is stored near the directory. This can considerably lessen the time to find and access the file.
3. If possible, make drive A a fast disk. Drive A is checked at every warm boot for a submit file in progress. If it is a fast disk, the check will go rapidly and command lines will be fetched from the file more rapidly too.

4. If you write your own programs, try to organize them so that they leave the top 5 Kbytes or so of the transient program area untouched. If they do not use the memory used by the P&T ACP it will not be reloaded when the program terminates, thus saving time.

Error Messages

Any of the error messages that can be given by the P&T ACP are specific to various commands. Such messages are explained in section 5 with the description of the command. The following error messages are of a more general nature:

?

The question mark indicates that P&T ACP could not understand part of a command line or that the program requested by the command line could not be found. In the first case, the portion of the command line that caused the problem will be repeated followed by a question mark. In the second case, the name of the program that could not be found will be repeated followed by a question mark.

enter "Y" or "N", please

This message indicates that you gave an improper response to a yes/no question. The valid responses to these types of questions are "Y", "y", "N", and "n".

Program too large for TPA

This message indicates that you have tried to execute a program that will not fit in the available transient program area. Special care was taken in the design of P&T ACP to allow you to execute the largest possible programs. P&T ACP will, in fact, execute larger programs than can be executed with the standard CCP.

PNTACP not found error, CR to retry, ^C to quit

This message is displayed if the PNTACP.COM file cannot be found when it is need to reload parts of P&T ACP. You have two options after receiving this message. If you have removed the disk containing P&T ACP, you may remount it and press <cr> to continue. If you press <ctl-C> you will be returned to the normal CCP.

PNTACP load error, CR to retry, ^C to quit

This message is displayed if a disk error occurs while reloading parts of P&T ACP from the PNTACP.COM file. You have two options after receiving this message. You may press <cr> to try again or press <ctl-C> to return to the normal CCP. If you have another disk with the PNTACP.COM file on it, you may mount it before pressing <cr> if you wish.

PNTACP location error, CR to retry, ^C to quit

This message indicates that the contents of the PNTACP.COM file are not configured for the proper location in memory. This happens when you change disks on the load drive and the PNTACP.COM file on the currently mounted disk was not configured for the same location. You have two options after receiving this message. You may remount the original disk (or one containing a copy of PNTACP.COM configured for the same memory location) and press <cr> to continue or you may press <ctl-C> to return to the normal CCP.

System Requirements

P&T ACP works with most computers running the CP/M 2 operating system. There are, however, some conditions that must be met.

1. The system must have a Z-80 processor.
2. The system BIOS jump table must not be in ROM.
3. The BIOS warm boot function should not contain any code that must be executed on each warm boot.

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System Requirements

USING P&T ACP

P&T ACP
User's Manual

The P&T ACP command structure is very similiar to the standard CP/M 2 command processor (CCP). All of the commands of the CCP are available in the P&T ACP but most have had extensions made to them. The extensions have been made so that the forms of the commands used with the CCP will still work with the P&T ACP. If you have been using the standard CCP for any length of time, you should feel right at home with the P&T ACP.

This section describes the following built-in functions of the P&T ACP:

<u>page</u>	<u>name</u>	<u>function</u>
5.3	d:	"d" would be replaced by a logical drive letter. Make the specified logical drive the current drive. The current user number remains unchanged.
5.4	dn:	"d" would be replaced by a logical drive letter and "n" would be replaced by a user number. Make the specified logical drive the current drive and the specified user number the current user number.
5.5	n:	"n" would be replaced by a user number. Make the specified user number the current user number. The current drive remains unchanged. This command has the same effect as the USER command.
5.6	,	Enter the screen editing mode for editing a line on the console display and resubmitting it as a command line. This function is available only with certain terminals.
5.8	CCP	Return to the standard CP/M 2 console command processor.
5.9	DIR	Display the names of files stored on a specific drive and user number.
5.12	ERA	Delete files stored on a specific drive and user number.
5.14	LIST	List a file on the system printer with optional pagination.
5.16	REN	Rename a disk file.
5.18	SAD	Set the alternate drive or display the alternate drive letter.
5.19	SAU	Set the alternate user number or display the alternate user number.
5.20	SAVE	Save a portion of the transient program area (TPA) as a disk file.

5.22	TYPE	Display a file on the console with an optional pause each time the display fills up.
5.24	USER	Set the current user number.
5.25	WAIT	Halt execution of a SUBMIT file until <cr> is pressed on the console keyboard. <ctl-C> can be pressed to abort the SUBMIT file.
5.27	XSUB	Enable a submit file to feed console input into programs that use the system buffered console input function (BDOS function 10).
5.29	<esc><ctl-C>	Force a complete disk system reset.

Name: d:
Function: Set the current disk drive.

General description

The "d" in the command is replaced by the logical drive letter of the drive which is to be made the current drive. The current drive is the drive that will be searched first to find a program when a drive is not explicitly specified in the command line. It is also the drive that will be used by default in a disk related operation when a drive is not explicitly specified.

Using d:

The form of the command line to use this function is shown in Figure 5.1.

d:<cr>
where "d" is replaced by a drive letter (A-P)

Figure 5.1 Form of the d: Command

Possible Error Messages

None.

Name: dn:
Function: Set the current drive and user number.

General description

The "d" in this command is replaced by the logical drive letter of the drive which is to be made the current drive and the "n" is replaced by the user number that is to be made the current user number. The current drive and user number are searched first to find a program when a drive and/or user number is not explicitly specified in the command line. They are also the drive and user number that will be used by default in a disk related operation when a drive and/or user number is not explicitly specified.

Using dn:

The form of the command line to use this function is shown in Figure 5.2.

dn:<cr>
where "d" is replaced by a drive letter (A-P)
"n" is replaced by a user number (0-15)

Figure 5.2 Form of the dn: Command

Possible Error Messages

None.

Name: n:
Function: Set the current user number.

General description

The "n" in this command is replaced by the user number that is to be made the current user number. The current user number is the user number that is searched first to find a program when a user number is not explicitly specified in the command line. It is also the user number that will be used by default in a disk related operation when a user number is not explicitly specified.

Using n:

The form of the command line to use this function is shown in Figure 5.3.

n:<cr>
where "n" is replaced by a user number (0-15)

Figure 5.3 Form of the n: Command

Possible Error Messages

None.

Name: ,
Function: Enter the screen editing mode for command line editing and resubmission.

General description

If you use one of the terminals supported by the P&T ACP, you may edit any line that appears on the terminal display and then submit it for execution as if you had typed it from the keyboard. This feature is particularly useful for correcting typographical errors and repeatedly executing the same command line.

Several useful editing functions are available to you once you enter the editing mode. Any printing character can be inserted on a line being edited and all control characters that are not used for editing functions are ignored. The edited line cannot be longer than 80 characters. Adding characters to a line that is 80 characters long will cause characters to be lost from the right end of the line.

Using ,

Due to the internal organization of P&T ACP, a special command must be used to enter the screen editing mode. This means that you cannot enter the screen editing mode while you are typing in a command line. The command to enter the screen editing mode is shown in Figure 5.4.



Figure 5.4 Command to Enter Screen Editing Mode

The comma was chosen as the command to enter the screen editing mode because it is not valid in a file name and it is easy to type. As soon as you press <cr> at the end of the command line, the cursor will return to the left end of the command line and stay there. You are now in the screen editing mode.

Figure 5.5 shows the various editing functions available to you. Each of these functions is invoked by a control key on the terminal keyboard. For some terminals, other special keys on the keyboard may be used for some of these functions. Appendix A2 gives a listing of the specific control keys used with the various terminals supported by P&T ACP.

<ctrl-S>	move cursor left
<ctrl-D>	move cursor right
<ctrl-W>	move cursor up
<ctrl-X>	move cursor down
<ctrl-Q>	move cursor home
<ctrl-A>	move cursor to beginning of line
<ctrl-F>	move cursor to end of line
<ctrl-T>	delete character
<ctrl-Y>	delete right to next space
<ctrl-U>	delete to end of line
<ctrl-C>	abort screen editing mode
<cr>	execute line

Figure 5.5 Screen Editing Functions

The cursor movement keys allow you to move the cursor around the screen. Other control keys allow you to delete characters, words, and the rest of the line to the right of the cursor. Any normal characters you type will be inserted at the cursor position and any characters to the right will be moved over to make room. In order to replace characters, you must delete the old characters and then insert the new ones.

No edited line may be longer than 80 characters. If a line grows to 80 characters, inserting additional characters will push characters from the right end of the line off the edge of the screen and they will be lost.

When the line has been edited to your satisfaction, just press <cr> to execute the line. You may press <cr> while the cursor is at any point on the line to execute the entire line.

Since you will most likely be editing lines that were previously entered as command lines, they will probably have a P&T ACP command level prompt (e.g. "A0") at the beginning of the line. When the edited line is submitted for re-execution, these prompt characters are automatically removed. You do not have to bother deleting them unless you need the extra space for a long command line. Any spaces that precede the first character following the prompt on the edited line will also be removed before the command is executed.

Possible Error Messages

None.

Name: CCP
Function: Return to the standard CP/M 2 console command processor.

General description

When the P&T ACP is initiated, it takes control of the system in such a manner that you will not return to the standard CP/M 2 console command processor. In a few cases, though, it may be necessary to return to the standard CCP. As an example, you might want to use a SUBMIT file that works with the standard XSUB utility (the P&T ACP replacement for XSUB is slightly different) and you do not wish to edit it for use with P&T ACP.

The CCP command allows you to return to the standard CCP without performing a cold boot. It does this by executing the code that your system normally uses for a warm boot. If your system requires that a system disk be mounted to do a warm boot with the standard CCP, you must have it mounted when you use the CCP command.

Using CCP

The form of the command line to invoke the CCP function is shown in Figure 5.6.

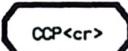


Figure 5.6 Command Line to Return to Standard CCP

Possible Error Messages

None.

Name: DIR
Function: Display the names of files stored on a specific drive and user number.

General description

CP/M 2 allows you to designate files as being either "system" or "user" (sometimes called "dir") files. The main distinction between the two types of files is that a system file will not be listed on a normal directory display while a user file will be listed. Files are usually created as user files and may be changed into system files by using the STAT utility program.

In addition to designating files as system or user, you may set a file to "read/write" or "read only" status. Both read and write operations are allowed on a file which is set to read/write status. Only read operations are permitted on a file set to read only status.

The DIR command allows you to display the names of files stored under any user number on any drive. You may display the names of all files or select a subset of the files by using a wild card file name. In addition you can elect to have only the names of certain kinds of files (user, system, read/write, or read only) displayed.

Using DIR

The general form of the DIR command is shown in Figure 5.7.

```
DIR [file name] [options]<cr>
[file name] is optional and may be either a specific file name
or a wild card file name. It may include a drive
and/or user number designation.

[options] may be any combination of the following letters:
  S - display system files only
  A - display all files (system and user)
  R - display read only files only
  W - display read/write files only
  N - do not pause during directory display
```

Figure 5.7 Form of the DIR Command

There must be at least one space between the DIR command and the file name, if one appears on the command line. If one or more options are specified, they must be separated from the previous characters on the command line by at least one space. Option letters need not be separated from one another but may be separated by one or more spaces if you wish. As many options as you wish may be selected but if conflicting options are specified (for example A and S) only the last one on the line will have effect.

If no file name and no options are specified with the DIR command, all user files from the current drive and user number will be listed.

You may select a subset of file names to be listed by including a specific file name or a wild card file name with the DIR command. Only file names matching the name used with the DIR command will be listed. If the name used with DIR was a specific file name, only that one file can be listed. This is a method of determining if a specific file exists on the disk. If a wild card file name was used with the DIR command more than one file name will be listed if more than one matches it.

The file name can include a drive and/or user number designation. If they are present, the file names from the directory of the specified drive and user number are displayed. If they are not present, the current drive and user number are used. If a drive and/or user number designation are present but no file name is given, all user file names from the specified drive and user are listed.

A typical directory display is shown in Figure 5.8. The file names are displayed five across in order to fit more file names on the console display at one time. The drive and user number from which the file names were listed are shown at the left end of each line of the display. The names of system files are shown in parentheses to differentiate them from user files.

If there are more file names than can be shown at one time on the console display, the P&T ACP will pause after the display fills. Press the <cr> key to display more files. By using the N option with the DIR command you can instruct P&T ACP not to pause at all during the display of a directory. This can be useful while listing the directory on the system printer.

```
A0>DIR 4: A<cr>
A4:(ARRAY .LIB): ASM     .SUB : (BLKMOV .LIB): DIRSAMPL.ASM : DIRSAMPL.BAK
A4: DIRSAMPL.COM : DIRSAMPL.HEX : (EQUATE .LIB):(MAKEFCB .LIB):(MATH .LIB)
A4:(SCRN .LIB): SEQ     .ASM : SEQ     .COM : SEQ     .NUM :(STRCONVT.LIB)
A4:(STRMANIP.LIB):(STRUCT .LIB): VEDIT   .COM :(Z80S   .LIB)
A0>
```

Figure 5.8 Example of Using DIR

The various option characters available for the DIR command are:

- A A directory display normally includes only user files from the specified drive and user number. This option causes all files (both system and user) to be listed.
- S This option causes only system files to be listed.
- R This option causes only "read only" files to be listed.
- W This option causes only "read/write" files to be listed.
- N This option eliminates paging of the directory display which is useful when listing the directory on the system printer. To list the directory on the printer, press <ctl-P> to cause everything displayed on the console to be echoed to the printer, type the DIR command to display the desired files, and press <ctl-P> again after the listing is finished to stop echoing to the printer.

The following examples illustrate the use of the DIR command:

- A0>DIR<cr> displays all user file names from drive A, user 0 (the current drive and user number).
- A0>DIR Q*.PAS<cr> displays all user file names whose primary name begins with Q and have the extension "PAS" from drive A, user 0 (the current drive and user number).
- A0>DIR 4<cr> displays all user file names from drive A (the current drive), user 4.
- A0>DIR X??DATA.PAY<cr> displays all user file names from drive A, user 0 (the current drive and user number) which match the one given. Any characters will match the positions at which the question marks appear.
- A0>DIR *.COM S<cr> displays all system file names with the extension "COM" from drive A, user 0 (the current drive and user number).
- A0>DIR ** AR<cr> displays the names of all "read only" files (user and system) from drive A, user 0 (the current drive and user number). Note that the "*" is required in this case because if it were not there, the DIR function would treat the "AR" as the file name to search for. (See the next example for a case where the "*" is not needed.)
- A0>DIR 15: A<cr> displays all file names (user and system) from drive A (the current drive), user 15.
- A0>DIR B: AN<cr> displays all file names (user and system) from drive B, user 0 (the current user number) and does not pause during the display.
- A0>DIR C5:*.COM WS<cr> displays the names of all system files having the extension "COM" which are stored under user 5 on drive C and are set to read/write status.
- A0>DIR H3:PAY.* R<cr> displays the names of all user files having the primary name "PAY" which are stored on drive H, user 3 and are set to read only status.

Possible Error Messages

No File

This message indicates that no files were found which matched the specified file name. If no name was specified, there were no files stored on the specified drive and user number.

Name: ERA
Function: Delete (erase) files from a disk.

General description

The erase function allows you to delete files from any user number on any logical drive. Multiple files can be erased with a single command by using a wild card file name. The names of all files which will be deleted by an erase operation are displayed on the console and the user is requested to verify that it is OK to proceed with the deletion.

Using ERA

The general form of the command line for the ERA function is shown in Figure 5.9.

```
ERA [file name] [N]<cr>
[file name] must appear and may be either a specific file name
or a wild card file name. It may include a drive
and/or user number designation.

[N] Is optional and if present stops ERA from displaying
the names of the files to be deleted and asking for
verification before deleting them.
```

Figure 5.9 Form of the ERA Command

If a specific file name was specified in the command line, only that file will be erased (if it exists). If a wild card file name is specified, all files that match it will be deleted. A drive and/or user number designation may be given with the file name. If the designation is present, the erase operation will take place on the specified drive and/or user number.

Before any files are erased, P&T ACP displays their names on the console and asks "OK to ERASE listed files?" At this point you may abort the deletion by entering a negative response or allow it to continue by entering a positive response. This is your last chance to turn back! If you do not wish to be bothered by the display of the file names or by being asked if it is OK to erase them, you may specify the "N" option on the ERA command line. If the "N" option is present, the display and question will be bypassed.

The following examples illustrate the use of the ERA function:

ADERA SAMPLE.1<cr> deletes the file SAMPLE.1 from drive A, user 0 (the current drive and user number).

ADERA B*.COM<cr> deletes all files with a "COM" extension on drive B, user 0 (the current user).

ADERA C4**<cr> deletes all files on drive C, user 4. In this case P&T ACP

will ask an additional question, "ERASE All?", before proceeding. This is done to remind you that you have asked for all files to be deleted and give you a chance to change your mind. If you respond affirmatively, indicating that you do want to erase all files, P&T ACP will then display all of the files that will be erased and then ask you if it is OK to erase the files.

A0>ERA C4*.COM N<cr> deletes all files with a "COM" extension from drive C, user 4. Since the "N" option is present, the names of the files to be deleted will not be displayed nor will you be asked whether it is OK to erase the files. The "N" option is useful when using the ERA command within a SUBMIT file.

Figure 5.10 shows the actual console dialog that takes place when the ERA command is used.

```
A0>ERA T**<cr>
A0: TEMP   . : TEMP    .SUB :(TRACE   .UTL): TAPEGRAC.1 : TAPEGRAC.2
A0: TEST   .1 : TEMP    .BAK : TIME    .COM : TRS2CPM .COM
Ok to ERASE listed files? Y<cr>
A0>
```

Figure 5.10 Example of Using ERA

Possible Error Messages

No File

This message indicates that no files were found which matched the specified file name, hence no files were deleted.

Name: LIST
Function: List the contents of a disk file on the system printer (LST:) with optional pagination.

General description

The LIST function provides an easy means of printing the contents of a file on the system printer (the LST: logical device). You may have the file paginated as it is printed and you can also specify that the listing be preceded by a form feed.

Using LIST

The general form of the LIST command is shown in Figure 5.11.

```
LIST [file name] [F] [Pnn] [C]<cr>  
[file name] must appear and must be a specific file name. It  
may include a drive and/or user number designation.  
[F] Is optional and, if present, causes a form feed to be  
sent to the printer before the file is listed.  
[Pnn] Is optional and, if present, causes the file to be  
paginated as it is printed. If "nn" is not present,  
a form feed is sent to the printer after every 64th  
line. If "nn" is present, a form feed is sent to the  
printer after every "nn"th line.  
[C] Is optional and, if present causes all control  
characters in the file to be sent to the printer.  
All options must be separated from each other by at least  
one space.
```

Figure 5.11 Form of the LIST Command

The file name specified with the LIST command must be a specific file name; wild card file names are not permitted. A drive and/or user number designation may be given with the file name. If such a designation is given, the file listed is from the drive and/or user number specified. If no designation is given, the file listed is from the current drive and user number.

If the "F" option character is present, a form feed character will be sent to the LST: device before the file is printed. This is useful when listing several files in succession to insure that each one starts at the top of a new page.

If the "P" option is present, the contents of the file are paginated as they are printed. If no number follows the "P" a form feed character is sent to the printer after every 64 lines have been printed. You may specify how many lines are to be printed on a page by

following the "P" with a number. If the number is present, a form feed will be sent to the printer after that number of lines have been printed.

LIST normally filters out (does not send to the printer) all control characters except carriage return, line feed, and form feed. In some cases it is desirable to have all control characters sent to the printer (for example when listing a file which includes printer commands). If the "C" option is present on the LIST command line, all control characters in the file will be sent to the printer except TAB.

LIST expands the TAB character with spaces, assuming that a tab stop exists at every 8th column across the page. If you do not want TABs expanded while the file is printed, you must use PIP to print the file.

Examples of using the LIST command are:

A0>LIST DOC1<cr> prints the file DOC1 from drive A, user 0 (the current drive and user) with no leading form feed and no pagination.

A0>LIST C3:LT.TOM P62<cr> prints the file LT.TOM from drive C, user 3 and sends a form feed to the printer after every 62 lines have been printed.

A0>LIST B:LDR.PAS FP<cr> prints the file LDR.PAS from drive B, user 0 (the current user) with a leading form feed and a form feed after every 64 lines.

LIST keeps track of its location on the page by counting the line feed characters that are sent to the printer. If the file you are using contains line feed characters that do not advance the paper by one line, LIST will lose track of its position on the page and the pagination will not work properly. This situation can occur when printer commands are present in the file being printed. For example many printers recognize the two character sequence <esc> <line feed> as a command to back up one line. LIST will expect that the line feed advanced the paper one line and will lose track of the paper position.

LIST expects that the printer (or operating system) understands that a form feed character means to advance the paper to the next page. It sends form feed characters whenever it wants to move to a new page. If your printer does not understand a form feed character, strange results will occur if you use the "P" option.

Possible Error Messages

No File

This message indicates that the specified file could not be found.

Name: REN
Function: Rename a disk file.

General description

The REN command allows you to change the name of files on a disk. You may rename files on any drive and user number regardless of the current drive and user number. You cannot change the drive or user number of a file using the REN function. To move a file from one drive and/or user number to another, you must copy it to the destination and then erase (if you wish) the original file.

If all you want to do is move a file from one user number to another on the same drive, you can use the ALIAS program. See Section 6 for information on using ALIAS.

Using REN

The general form of the REN command is shown in Figure 5.12.

```
REN [new file name]=[old file name]<cr>
[new file name] is the name which the file is to have after the
rename operation.
[old file name] is the name of the file before the rename operation.
```

Figure 5.12 Form of the REN Command

Drive and/or user designations may be used to specify the drive and/or user number on which the operation is to take place according to the following rules: If designations are present on both file names, they must match. If no designations are present the REN operation is performed current drive and user number. Only a designation on the new name is required to specify a different drive and user number. A designation on the old name must not be present if one is not present on the new file name.

The following examples show several usages of the REN function:

A>REN FILE.NEW=FILE.OLD<cr> renames the file FILE.OLD to FILE.NEW on drive A, user 0 (the current drive and user number).

A>REN B>SAVEIT=TAX82<cr> renames the file TAX82 to SAVEIT on drive B, user 0 (the current user number).

A>REN C>BAKUP.1=ZOT.PAS<cr> renames the file ZOT.PAS to BAKUP.1 on drive C, user 8.

Possible Error Messages

No File

This message indicates that a file with the old name (the second name on the command line) could not be found. No action is taken.

Destination file exists, delete it?

This message indicates that a file already exists on the specified drive with the new file name (the first name on the command line). P&T ACP warns you of the situation with this message and asks permission to delete the existing file. An affirmative answer will cause the existing file to be deleted and the rename operation to continue. A negative response (or <ctrl-C>) will terminate the rename operation with no action being taken.

Name: SAD
Function: Set or display the alternate disk drive letter.

General description

P&T ACP allows you to designate an alternate drive to be searched for a program to be executed (the current drive and drive A are always searched, if necessary). When P&T ACP is first initiated, the alternate drive is set to drive A. The SAD command allows you to display the alternate drive assignment and to change it.

Using SAD

The general form of the SAD command is shown in Figure 5.13.

SAD [d]<cr>
[d] Is optional. If present, it specifies the drive to be designated as the alternate drive. If not present, the alternate drive letter is displayed.

Figure 5.13 Form of the SAD Command

If a valid drive letter is given with the SAD command, the alternate drive is set to it. No check is made to determine if the specified drive is in fact on the system. If you specify a drive that is not on the system, errors will occur the next time you try to execute a program that the P&T ACP must search for.

If no drive letter is specified on the command line, the SAD command will display the drive letter which is currently designated as the alternate drive. Figure 5.14 shows an example of using the SAD command.

AO>SAD<cr>
A:
AO>SAD E<cr>
AO>SAD<cr>
E:
AO>

Figure 5.14 Using the SAD Command

Possible Error Messages

None.

Name: SAU
Function: Set or display the alternate user number.

General description

P&T ACP allows you to designate an alternate user number to be searched for a program to be executed (the current user number and user 0 are always searched, if necessary). When P&T ACP is first initiated, the alternate user number is set to 15. The SAU command allows you to display the alternate user number and to change it.

Using SAU

The general form of the SAU command is shown in Figure 5.15.

```
SAU [n]<cr>
[n]      Is optional. If present, it specifies the user number
        to be designated as the alternate user. If not present,
        the alternate user number is displayed.
```

Figure 5.15 Form of the SAU Command

If a valid user number is given with the SAU command, the alternate user number is set to it. If no user number is specified on the command line, the SAU command will display the user number which is currently designated as the alternate user number. Figure 5.16 shows an example of using the SAU command.

```
AO>SAU<cr>
15
AO>SAU 9<cr>
AO>SAU<cr>
9
AO>
```

Figure 5.16 Using the SAU Command

Possible Error Messages

None.

Name: **SAVE**
Function: Save a portion of the transient program area (TPA) as a disk file.

General description

The SAVE function allows you to save an integral number of pages (a page is 256 bytes of memory) from the transient program area (beginning at 100h) in a disk file. As with all numbers in the P&T ACP, the number of pages to be saved may be specified in either decimal or hexadecimal. The file created by SAVE can be directed to any user number and disk drive regardless of the current drive and user number.

Using SAVE

The general form of the SAVE command is shown in Figure 5.17.

```
SAVE [np] [file name]<cr>
[np] must appear. It is a number specifying the number
      of pages of the transient program area (TPA) to
      be saved. A page is 256 (100h) bytes.
[file name] must appear and must be a specific file name. It is
      the name to be given to the file created to hold the
      portion of the TPA that is saved. It may include a
      drive and/or user number designation.
```

Figure 5.17 Form of the SAVE Command

The file name specified in the SAVE command must be a specific file name and may include a user number and/or drive designation. If such a designation is included, the file is created on the specified drive and user. If it is not included, the current drive and user number are used.

Examples of using the SAVE command are:

A0>SAVE 39.TEST.1<cr> saves the first 39 pages of the TPA (100h to 27FFh) in a disk file named TEST.1 on drive A, user 0 (the current drive and user number).

A0>SAVE \$20 B4>TEST.2<cr> saves the first 20h (32 decimal) pages of the TPA (100h to 20FFh) in a disk file named TEST.2 on drive B, user 4.

A0>SAVE 0 5>NULL.COM<cr> saves 0 pages from the TPA in a disk file named NULL.COM on drive A (the current drive), user 5. In this case, a file is created but nothing is stored in it. This is commonly called a zero length file.

Possible Error Messages

Destination file exists, delete it?

This message indicates that a file with the name specified in the **SAVE** command line already exists on the specified drive. P&T ACP warns you of the situation with this message and asks permission to delete the existing file. An affirmative answer will cause the existing file to be deleted and the **SAVE** operation to continue. A negative response (or a <ctrl-C>) will terminate the **SAVE** operation with no action being taken.

Name: TYPE

Function: Display the contents of a disk file on the system console.

General description

The TYPE function allows you to list the contents of a disk file on the system console. The display is halted when the screen fills up so you can look it over before continuing (this is called paged mode). The next "screen full" of information is displayed when you press <cr>. You can also display the file in a continuous mode which does not halt as the screen fills. You may switch back and forth between paged and continuous mode as often as you wish while the file is being displayed.

Using TYPE

The general form of the TYPE command is shown in Figure 5.18.

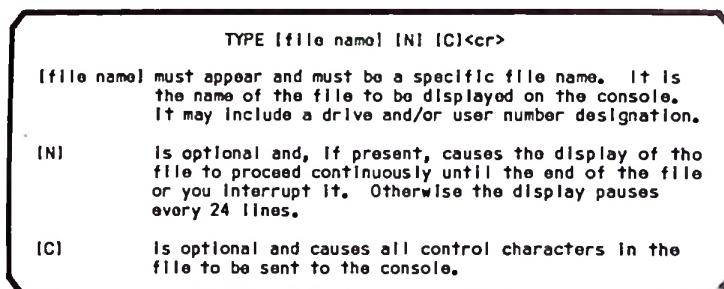


Figure 5.18 Form of the TYPE Command

The file name specified in the TYPE command line must be a specific file name and may include a drive and/or user number designation. If no drive or user number is specified, the file displayed is from the current drive and user. If a designation is included with the file name, the file is typed from the specified drive and/or user number.

TYPE normally filters out (does not send to the console) all control characters except carriage return, line feed, and form feed. If the "C" option is present on the command line, all control characters (except TAB) are sent to the console. TYPE expands the TAB character with spaces assuming that a tab stop exists at every 8th column across the display.

If the "N" option is included on the command line, the TYPE function will start in the continuous mode. You can switch to the paged mode at any time by pressing "P" on the console keyboard. The display will stop within one line after you press "P" and the TYPE function will be switched to the paged mode. While in the paged mode the display will stop after the screen fills up and wait for you to press <cr> to continue.

While in the paged mode you may enter the continuous mode at any time by pressing "N". Pressing <ctl-C> will terminate the TYPE operation and will return you to the command level of the system. You can stop the display immediately by pressing the <ctl-S> key. When the display is stopped with the <ctl-S> key, pressing any key on the keyboard will cause the display to resume.

Figure 5.19 gives a summary of the keys that are recognized during a TYPE operation. All other keys are ignored during a TYPE.

<u>key</u>	<u>function</u>
P	Enter the paged mode of display.
N	Enter the continuous mode of display.
<ctl-S>	Immediately halt the display and wait for any other key to be pressed before continuing.
<ctl-C>	Abort the TYPE operation and return to the command level.

Figure 5.19 Command Keys Recognized While TYPEing a File

The following examples illustrate the use of the TYPE command:

A0> TYPE LETTERSAM<cr> displays the file LETTERSAM from drive A, user 0 (the current drive and user) and starts in the paged mode.

A0> TYPE B6:TAX.TBL<cr> displays the file TAX.TBL from drive B, user 6 and starts in the paged mode.

A0> TYPE C:GOTIT.PRN N<cr> displays the file GOTIT.PRN from drive C, user 0 (the current user number) and starts in the continuous mode.

The TYPE function determines when the console screen is full by counting the number of lines that are sent to the console. It assumes that each line from the file will take one line on the console. A problem may arise for lines from the file that have more characters than there are character positions on a line of the console.

Many terminals have a line wrap mode that causes long a line to be displayed on more than one console line. In this case, the display screen will be filled up before the TYPE function pauses. If you have this problem, you may be able to set your terminal so that it does not wrap on long lines. In this case the long lines will appear to be truncated at the width of the terminal.

Possible Error Messages

No File

This message indicates that the file specified in the TYPE command could not be found on the specified drive and user number.

Name: USER
Function: Set the current user number.

General description

The USER function allows you to set the current user number. The current user number is the one that is searched first to find a program when a user number is not explicitly specified in the command line. It is also the user number that will be used by default in a disk related operation when a user number is not explicitly specified.

Using USER

The general form of the USER command is shown in Figure 5.20.

USER [n]<cr>
[n] must appear and will make the current user number.

Figure 5.20 Form of the USER Command

Some examples of using the USER command are:

ADUSER 5<cr> sets the current user number to 5.

ADUSER \$E<cr> sets the current user number to E (hexadecimal), 14 (decimal).

Possible Error Messages

None.

Name: WAIT
Function: Provide a pause and a chance to abort during the execution of a SUB file.

General description

It is often useful to provide a pause to inspect the console display during the processing of a SUBMIT file. It is also useful to have a means whereby you can abort the SUBMIT file processing if you wish.

The WAIT command prints a message on the console display and waits for your input. If a SUBMIT file is in progress, you can either allow it to continue or you can abort it and return immediately to the command level of the system.

Using WAIT

The WAIT command is shown in Figure 5.21.



Figure 5.21 The WAIT Command

When the WAIT command is executed, it displays the following message on the console:

press <return> to continue, <ctl-C> to quit

The system will then wait for input from the console. If you press <cr> any SUBMIT file in progress will continue. If you press <ctl-C> any SUBMIT file in progress will be aborted.

The WAIT command can be given directly from the console keyboard but it is of limited usefulness in this case.

A feature of the SUBMIT processor in P&T ACP is that any line in a SUBMIT file that begins with a colon (":") is treated as a comment. It is displayed on the console but is otherwise ignored. Such comment lines can be combined with the WAIT function to give you control over the action of a SUBMIT file. Figure 5.22 shows a sample SUBMIT file that uses the WAIT function. This particular file is used to compile and link a Pascal program.

```
: Submit file to compile the Pascal program SLOAD.PAS
: on drive B, user 3
B3:
MTPLUS SLOAD
:
: Press <cr> If it is OK to LINK the program, <ctrl-C> If not.
WAIT
LINKMT SLOAD=/D:8000,SLOAD,A:PASLIB/S
:
: Operation Complete
```

Figure 5.22 Example of a SUB FILE Using WAIT

Possible Error Messages

None.

Name: XSUB
Function: Allow a SUB file to supply console input to a program.

General description

The XSUB function allows a SUB file to supply console input to programs that use the CP/M buffered console input function (BDOS function 10). Normally the lines in a SUBMIT file are treated as command lines to be executed at the system command level as if they were typed at the console keyboard.

When the XSUB function is in effect, a SUBMIT file may also supply lines of input into programs. Each line which is to be used as program input is flagged so that it will not be used as a command line.

Even with XSUB, a SUBMIT file cannot feed input into a program if that program does not use BDOS function 10 to get console input. The standard CP/M 2 utility programs all use this function. Other programs may not. There is no easy way to determine if a program uses BDOS function 10 or not. If you are trying to feed input into a program from a SUBMIT file and it is not accepted, chances are that the program does not use BDOS function 10.

Using XSUB

The general form of the XSUB command is shown in Figure 5.23.



Figure 5.23 The XSUB Command

Once the XSUB command has been used in a SUBMIT file, the XSUB function remains in effect until the SUBMIT file is finished.

When the XSUB function is in effect, lines in the SUBMIT file that begin with a less than sign "<" are considered to be program input lines. All other lines are considered to be command lines. Any time a program input line is received from the SUBMIT file when the system is at the command level, the line is skipped. A dollar sign is displayed on the console for each line from the SUBMIT file that is skipped. If a program requests an input line using BDOS function 10 and the next line in the SUBMIT file is not a program input line, P&T ACP will accept keyboard input instead.

Figure 5.24 shows an example of a SUBMIT file that uses XSUB to feed input into a program.

```
: Submit file to transfer several files from drive A, user 4
: to drive B, user 9
XSUB
B9:
PIP
<B:=A:MAC.COM(VG4)
<B:=A:Z80S.LIB(VG4)
<B:=A:MATH.LIB(VG4)
<B:=A:DOIT.ASM(VG4)
<
```

Figure 5.24 Example of a SUB File Using XSUB

Possible Error Messages

None.

Name: <esc><ctl-C>
Function: Perform a full disk system reset.

General description

Upon a warm boot, P&T ACP normally resets only those logical drives on the system that need it. After a drive is reset, it must be reactivated the next time it is accessed. Since logical drives on a hard disk will not be reset, they will not need to be reactivated and time is saved.

A warm boot can be forced from the console keyboard by typing <ctl-C>. As just explained, this will not necessarily reset all logical drives on the system. The <esc><ctl-C> command provides a way to force a complete disk system reset from the console keyboard.

Using <esc><ctl-C>

The general form of the <esc><ctl-C> command is shown in Figure 5.25.

<esc><ctl-C><cr>

Figure 5.25 The <esc><ctl-C> Command

Note that this is a command just like any other command of the P&T ACP. It must be the only thing on the command line and you must press <cr> to actually execute it. After performing the full disk system reset, P&T ACP returns to the system command level.

Possible Error Messages

None.

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<esc><ctl-C>

BUILT-IN FUNCTIONS

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The P&T ACP comes with several utility programs to perform functions that help you to get the most from P&T ACP. The following utility programs are described in this section:

<u>page</u>	<u>program</u>	<u>function</u>
62	ALIAS	Allow you to create alternate directory entries that point to an existing file. This is useful for creating multiple names for the same program and for allowing access to files from several user numbers.
67	PNTSUB	Replace the standard SUBMIT program and is specifically designed to be used with P&T ACP.
612	USRMAP	Display the number of files and directory entries under each user number on a drive. Also shows the number of free directory entries for the drive.

Program: ALIAS

Function: Create additional directory entries that point to an existing file.

General description

Although the P&T ACP allows you complete flexibility in executing a program from any drive and user number, once the program is running it will have access only to files stored under the current user number. In many cases this does not cause trouble because it only needs access to files on the current user number.

As an example, when editing a text file with an editor, you might have the editor stored on drive A, user 0 while the file to be edited might be on drive C, user 5. If the editor consists of a single program file and does not do overlays you would merely make C5: the current drive and user and execute the editor as if it were on C5:. P&T ACP will search for the editor, find it on A0: and execute it.

A problem occurs when the program being executed requires access to other disk files. This can happen for a variety of reasons: A program may need to load overlays during its execution. It may need to access library files. It might make use of a file containing messages of some sort.

The traditional method of coping with this problem is to make copies of the needed files under each user number from which the program will be executed. While this solves the problem, it can become very wasteful of disk space because you end up with multiple copies of the files on the disk. For example consider the case of having a separate copy of a 160 Kbyte dictionary file on 4 different user numbers!

The ALIAS program provides a different approach to the problem. It allows you to create additional entries in the disk directory for an existing file. The additional entries may be on other user numbers or on the same user number (if a different name is used). This can be useful if you wish to call a program by two different names (for example you might want to be able to execute PIP with either "PIP" or "COPY").

There are some cautions you must be aware of when using ALIAS. It should only be used with files that are read from but not written to. If aliases exist for a file, and a program modifies the file, only the alias on the current user number will be changed. This will result in differences between the various aliases which is not desirable. The only case in which it is safe to write to a file that has an alias is when the file has been pre-allocated so that writing to it will not make any changes to entries in the directory.

Because of the danger of writing to a disk file which has aliases, ALIAS will set both the original file and any alias it creates to "read only". If you want to write to a file that has an alias, you must explicitly set the file to "read/write" before doing so.

A second caution regards the deletion of an alias. An alias may be deleted with the ERA command just like any other file name. However, you might not erase all of the aliases for a particular file at once. Since the CP/M 2 system knows nothing about aliases, it assumes that the disk space occupied by a file becomes available as soon as you erase any alias of it. Since the system now (incorrectly) assumes that the space is available, it might make use of it the next time a file is created or expanded. If you have not erased all aliases to a file and the system reuses the space assigned to that file, it will destroy the contents of the file.

This problem can be avoided by resetting the disk system immediately after erasing an alias. If the alias was on a drive that has directory checking (typically drives that have removable media), pressing <ctrl-C> at the command level prompt will be sufficient. If the drive does not have directory checking (typically drives with fixed media), you must perform a complete disk system reset by using the <esc><ctrl-C> command.

Be careful when deleting aliases to a file; it is your responsibility to insure that the disk is properly reset before any writing is done to it. If all files having aliases are set to "read only" you will not be allowed to erase them until you return them to "read/write" status. This gives you a little bit of protection since you cannot accidentally erase one of the aliases.

Since ALIAS creates multiple directory entries pointing to a single file, the alias and the file must be on the same drive. You cannot have an alias on one drive to a file on another drive. The USRMAP program may be used before ALIAS to check that there are some directory entries available for creating aliases.

Using ALIAS

The general form of the command line to execute ALIAS is shown in Figure 6.1.

```
ALIAS [original name] [alias name]<cr>
[original name] must be a specific file name which specifies the
existing file for which an alias is to be created.
It may include a drive and/or user designation.

[alias name] the name which is to be created as an alias for
existing file name. Wild card characters may be used
to indicate characters copied from original name.
```

Figure 6.1 Form of ALIAS Command Line

A drive and/or user designation may appear on either the original file name or the alias file name subject to these restrictions: If a drive designation appears on the alias file name, it must agree with the drive designation given on the original file name or must be the current drive if no designation is given with the original file name. A user number may be designated with either name and they need not be in agreement.

If you do not specify the original file name and alias on the command line of ALIAS, you will be prompted for them as shown in Figure 6.2.

```
A0>ALIAS<cr>
File to alias: B2:EJECT.COM<cr>
Alias: B0:##<cr>
Alias created.
```

Figure 6.2 Using the Prompted Mode of ALIAS

The original file name must be a specific file name of a file that already exists on the specified drive and user. If no drive and/or user number is specified with the original file name, the file must exist on the current drive and user. The alias specified on the command line may be a specific file name or may contain wild card characters. If the alias is a specific file name, that is the name given to the alias. If a "?" wild card character is present, it means to copy the character at that position from the original file name. If a "*" wild card character is present, it means to copy all characters from the original file name from the current position to the end of the primary name or extent. The following examples illustrate the use of ALIAS:

- | | |
|--------------------------------|---|
| A0>ALIAS PIP.COM COPY.COM<cr> | creates an alias named COPY.COM on drive A, user 0 to PIP.COM on drive A, user 0. |
| A0>ALIAS Z80.LIB 4**<cr> | creates an alias on drive A, user 4 to Z80.LIB on drive A, user 0 using the same file name. |
| A0>ALIAS B3:PASLIB 7:??X.*<cr> | creates an alias named PASX.LIB on drive B, user 7 to PASLIB on drive B, user 3. |
| A0>ALIAS C:UTIL.COM 5:**<cr> | creates an alias on drive C, user 5 to UTIL.COM on drive C, user 0 using the same name. |

ALIAS can also be used to move a file from one user number to another without actually copying it. The general scheme is to create an alias on the destination user number and then delete the file on the source user number. Although it takes several commands to perform the move, they can all be combined into a single SUB file. The SUB file shown in Figure 6.3 will perform such a move operation and is included on the P&T ACP utility program disk as the file MOVEIT.SUB.

```
: This SUB file will move an existing disk file from one user number to
: another on the same drive. It takes 4 parameters as follows:
:   1 => drive on which to make the move, you entered $1
:   2 => source user number,           you entered $2
:   3 => complete name of file to move,   you entered $3
:   4 => destination user number,      you entered $4
: Press <cr> if you specified the correct parameters, <ctrl-C> if not.
WAIT
$1$2:
ALIAS $1$2:$3 $1$4:$3
: Press <cr> if ALIAS was successful, <ctrl-C> if not.
WAIT
STAT $3 $$R/W
ERA $3 N
$4:
STAT $3 $$R/W
^I^C
:
: $3 has been moved from user $2 to user $4 on drive $1
: and has been set to read/write.
```

Figure 6.3 SUB File to Use ALIAS to Move a File to Another User

Possible Error Messages

You cannot alias from one drive to another.

This message is given if the drive designations on the original file name and the alias do not agree. The alias and the original file must be on the same drive.

Alias must be different than the original file name.

You cannot specify an alias which is the same as the original file name unless it is on another user number.

No wildcards allowed in original file name.

You may not use a wild card in the original file name in an attempt to alias several files at once. You can, of course, create a submit file to execute ALIAS several times.

dnamealready exists.

The "dn" will be replaced by the drive and user number on which the alias was to be made. "alname" will be replaced with the alias name that was to be created. This message indicates that a file with the alias name already exists on the drive and user number where you have attempted to create an alias. No action is taken. You must erase or rename the existing file before creating an alias with that name.

Can't find dnamefile.

The "dn" will be replaced by the drive and user number on which the original file was sought. "orfile" will be replaced by the name specified for the original file. This message is displayed if the original file cannot be located on the specified drive and user number.

Not enough room in directory! No alias created.

There is not enough room in the drive directory to create the alias directory entries. You must either delete some existing files from that drive (from any user number) or reconfigure your system for more directory entries.

Error reading directory! Sector SS, Track TT

This message is displayed if a disk error is reported while ALIAS is reading the disk directory in preparation for creating the alias. "SS" will be replaced by the sector number at which the error occurred and "TT" will be replaced by the track number at which the error occurred. It indicates some sort of hardware error.

Error writing directory! Sector SS, Track TT

This message is displayed if a disk error is reported while ALIAS is creating the alias directory entry. This is a very serious error because ALIAS may have been in the middle of creating the alias when it occurred. If this error occurs there is a substantial chance that some damage was done to the disk directory. "SS" will be replaced by the sector number at which the error occurred and "TT" will be replaced by the track number at which the error occurred. This message typically indicates some sort of hardware problem.

Program: PNTSUB

Function: Process SUB files for batch execution of commands.

General description

The P&T ACP allows you to batch command lines together for execution. A disk file (called a SUB file) containing the command lines to be executed is created with a text editor or other means. To begin the execution of the batch of command lines, the SUB file is processed by PNTSUB.

PNTSUB accepts up to 9 command line parameters to be substituted into designated locations in the SUB file. After the parameters are substituted, PNTSUB creates a special file named " \$\$\$.SUB" on drive A, user 0. The P&T ACP takes command lines, one at a time, from this special file and executes them. It can also feed them to a program as console input (when the XSUB function is active).

PNTSUB does not change the case of the command lines in the SUB file so it is possible to feed lower case input into programs if you wish. Control characters can be included in the command lines in the SUB file, if desired.

No line in the SUB file can contain more than 126 characters nor may it expand to more than 126 characters after parameter substitution is performed. A SUB file can contain no more than 128 lines.

PNTSUB allows you to nest SUB files as long as the total number of lines remaining to be used never exceeds 128. For example, if a SUB file contains 75 lines and on the 25th line it invoked another SUB file, the second sub file could contain no more than 78 lines. The 50 remaining lines from the first SUB file and the 78 makes 128 lines waiting to be used.

Using PNTSUB

The general form of the command line to execute PNTSUB is shown in Figure 6.4.

```
PNTSUB [subfile] {parm1} {parm2} ... {parm3}<cr>
[subfile]  Is the name of the SUB file to be processed for batch
           execution. The file name may include a user and/or
           drive designation.

{parm n}  optional parameters to be substituted into the SUB file.
           They consist of strings of characters which may be
           enclosed in quotation marks.
```

Figure 6.4 Command Line to Execute PNTSUB

PNTSUB assumes an extension "SUB" on the submit file name. If you specify a different extension, it will be changed to "SUB" before looking for the submit file. If the command

line that executes PNTSUB does not include the name of a SUB file, PNTSUB will prompt you for the name of a file. In response to this prompt, you should enter the name of the SUB file you want executed followed by any parameters it may require. Figure 6.5 gives an example of this case.

```
A0>PNTSUB<cr>
File: lsubfile1 {parm1} {parm2} ... {parm9}<cr>
```

Figure 6.5 Executing PNTSUB Without Naming a SUB File

The SUB file contains the command lines to be executed. They will be executed in the order in which they appear in the file. A marker consisting of a dollar sign followed by a single numeric digit (e.g. \$0, \$1, ..., \$9) is placed in the command lines wherever a parameter from the command line of PNTSUB is to be inserted. Since a dollar sign denotes a marker, two dollar signs in succession are converted into a single dollar sign in the processed file.

Up to 9 parameters may appear on the command line. Each parameter consists of a group of characters surrounded by spaces or a string of characters enclosed in quotation marks (""). A parameter enclosed in quotation marks may include embedded spaces. When PNTSUB processes the SUB file, it associates each parameter appearing on its command line with one of the markers in the SUB file. The first command line parameter is associated with \$1, the second with \$2, etc. The \$0 marker is associated with the name of the SUB file being processed. As the SUB file is processed, the markers are replaced by their respective parameters.

If the number of parameters is not the same as the number of markers, a potential error condition occurs. PNTSUB will warn you of the discrepancy and give you the option of continuing the submission process or aborting and returning to the command level of the system.

If one of these situations occurs and you elect to continue, the parameter substitution will occur as follows: If there are fewer parameters than markers, those markers which have no parameter will be removed and not replaced by anything. If there are more parameters than there are markers, the extra parameters will be ignored.

Control characters may be placed within command lines by preceding a normal printing character with a caret (^). The character following the caret will be converted into a control character. The correspondence between the printing characters and the control characters is given in Figure 6.1. The only exception is that two carets in succession are converted into a single caret.

control char	use one of these preceded by caret	control char	use one of these preceded by caret
NUL	space, @	DLE <ctl-P>	P, p
SOH <ctl-A>	A, a	DC1 <ctl-Q>	Q, q
STX <ctl-B>	B, b	DC2 <ctl-R>	R, r
ETX <ctl-C>	C, c	DC3 <ctl-S>	S, s
EOT <ctl-D>	D, d	DC4 <ctl-T>	T, t
ENQ <ctl-E>	E, e	NAK <ctl-U>	U, u
ACK <ctl-F>	F, f	SYN <ctl-V>	V, v
BEL <ctl-G>	G, g	ETB <ctl-W>	W, w
BS <ctl-H>	H, h	CAN <ctl-X>	X, x
HT <ctl-I>	I, i	EM <ctl-Y>	Y, y
LF <ctl-J>	J, j	SUB <ctl-Z>	Z, z
VT <ctl-K>	K, k	ESC	; ,
FF <ctl-L>	L, l	FS	<, back slash
CR <ctl-M>	M, m	GS	=, !
SO <ctl-N>	N, n	RS	>
SI <ctl-O>	O, o	US	?

Figure 6.6 Table of Characters for Specifying Control Characters

Figure 6.7 shows an example of a SUB file named COMPILESUB prior to processing. The SUB file expects three command line parameters.

```
EDIT $1.PAS
MTPLUS $1 $$ $2
LINKMT $1=$3,$1,A:PASLIB/S
: Now executing $1
$1
```

Figure 6.7 Sample SUB File

A command line that might given to execute this SUB file is shown in Figure 6.8.

```
A0>PNTSUB COMPILE C:TESTPROG "Z TB PB" /D:8000<cr>
```

Figure 6.8 Command Line to Submit Sample SUB File

The resulting command lines that would be executed are shown in Figure 6.9.

```
EDIT C:TESTPROG.PAS
MTPLUS C:TESTPROG $ Z TB PB
LINKMT C:TESTPROG=/D:8000,C:TESTPROG,A:PASLIB/S
: Now executing C:TESTPROG
C:TESTPROG
```

Figure 6.9 Command Lines from Sample SUB File after Processing

Possible Error Messages

Too many parameters for PNTSUB.

PNTSUB can handle only 9 parameters on the command line. This message is given to indicate that too many parameters were found. Remember that if you want to specify a parameter that includes spaces, it must be enclosed in quotation marks.

No input file found.

This message is given if the SUB file you specified cannot be found. Check to be sure you typed the name correctly and that the file exists.

Out of memory at line xxx, submit file too large.

During processing of the SUB file, PNTSUB used up all available memory. This message can only occur if the transient program area of your system is less than 32 Kbytes.

Submit file too large, limit is 128 lines.

SUB files are limited to 128 lines. Split longer files into two or more files and chain from one to another by using PNTSUB on the last line of one SUB file to submit the next.

Error closing \$\$\$SUB.

A system error occurred when PNTSUB tried to close the temporary command file after writing it out.

SUBFILE expects N parameter(s), M provided.

Last XX is/are unused. Continue? (Y or N)

This message is given if more parameters are supplied on the command line than there are markers in the SUB file. "SUBFILE" will be replaced with the name of the file you are trying to submit. "N" will be replaced by the number of different markers that were found in the SUB file. "M" will be replaced by the number of parameters that were found on the PNTSUB command line.

In this case, the extra parameters will be ignored. On the second line of the message the "XX" will be replaced with the number of parameters that were ignored. You are then given the option of continuing. If you give an affirmative response, the SUB file will be executed. If you give a negative response, processing of the SUB file will be aborted and you will be returned to the command level of the system.

SUBFILE expects N parameters(s), M provided.

Last XX is/are empty. Continue? (Y or N)

This message is given if fewer parameters are supplied on the command line than there are markers in the SUB file. "SUBFILE" will be replaced with the name of the file you are trying to submit. "N" will be replaced by the number of different markers that were found in the SUB file. "M" will be replaced by the number of parameters that were found on the PNTSUB command line.

In this case, each marker which has no parameter associated with it will be removed from the SUB file and not replaced by anything. On the second line of the message the "XX" will be replaced with the number of markers that were so treated. You are then given the option of continuing. If you give an affirmative response, the SUB file will be executed. If you give a negative response, processing of the SUB file will be aborted and you will be returned to the command level of the system.

Illegal parameter substitution in line NNN.
(echo line here)

 ^ (pointer to error)

This message is given if a dollar sign is found in the SUB file which is not immediately followed by one of the digits 0 - 9 or another dollar sign. The "NNN" is replaced with the line number in the SUB file at which the error was detected. The line containing the error is then displayed followed by a line with a caret pointing to the location at which the error was detected.

Program: USRMAP

Function: Display the number of files and directory entries stored under each user number of a drive and report the number of free directory entries on that drive.

General description

USRMAP allows you to quickly determine how many files are stored under each user number on a drive and how many directory entries are still available on that drive. This allows you to check how many user numbers are actually in use and allows you to evaluate the available directory space. You may want to check the number of available directory entries on the disk before using ALIAS to create additional names for existing files.

Using USRMAP

You may specify the drive for which you want the map when you execute USRMAP. If you do not specify a drive, the current drive is used. A drive is specified by giving its logical drive letter on the command line used to execute USRMAP. You may type anything on the command line you wish but only the first character will be used by USRMAP. Figure 6.10 shows USRMAP used with and without a drive specification.

```
A0>USRMAP B<cr>
      Directory usage on drive B:
      User   User Files   User Entries
      0        2           2
      1       84           84
      2       16           20
      3       10           10
      4       20           20
Total      132          136
120 free directory entries
A0>
```

Figure 6.10 Example of Using USRMAP

Possible Error Messages

Illegal drive designation.
Enter drive letter:

This message indicates that the drive specification you gave when executing USRMAP is not valid (A - P). You are then given a chance to enter a valid character. If you just press <cr>, the current drive will be used. If you press <ctrl-C> you will be returned to the system command level.

?: See wild card file name.

??: See wild card file name.

<cr>: The "carriage return" key on the console keyboard. This key is sometimes labeled "enter" or "return".

\$\$SUB: The temporary file which is created to hold the command lines from a SUB file while it is being executed. The command lines are drawn from this file as they are needed. With P&T ACP, this file must always reside on drive A, user 0.

active drive: A drive which has been accessed since it was last reset. When a drive is first accessed after being reset, the system goes through a process called activating the drive during which it collects information about the files stored on the drive. This information is used to insure that any additional data stored on the drive will not affect previously stored data.

affirmative response: When asked a yes/no question, an affirmative response is one of the letters "Y" or "y". A <cr> must follow the response.

alternate drive: The second drive searched for the program file when neither a drive nor a user number is specified on the command line.

alternate user number: The second user number searched on a drive for a program file when neither a drive nor a user number is specified on the command line.

BDOS: The basic disk operating system of CP/M 2. The BDOS is responsible for regulating various activities of the system such as disk file reading and writing.

CCP: The standard console command processor of CP/M 2.

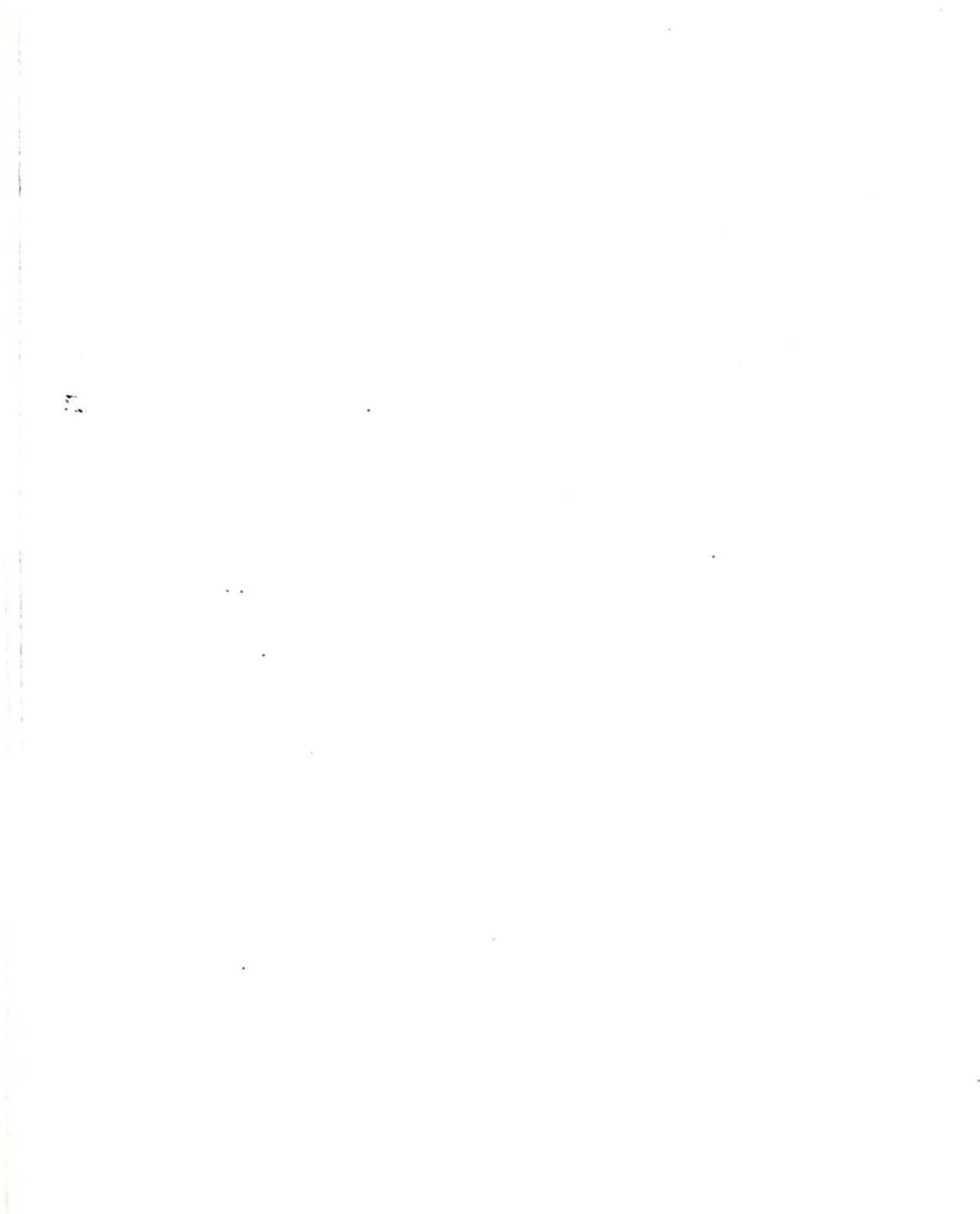
command level: When the P&T ACP is waiting for instructions the system is said to be at the command level. The command level is denoted by a prompt on the console of the current drive letter followed by the current user number followed by a greater than sign (e.g. "B>").

command line: A line of text typed at the command level (or drawn from a SUB file) to instruct the P&T ACP to perform some operation.

current drive: The drive that is used for disk operations if no other drive is specified in a command. It is also the first drive searched for the program file when neither a drive nor a user number is specified on the command line.

current user number: The user number that is used for disk operations if no other user number is specified in a command. It is also the first user number searched on a drive for the program file when neither a drive nor a user number is specified on the command line.

directory: A catalog of all files stored on a disk. The directory contains information



TERMINAL EDITING CHARACTERS

With certain terminals, the command level of P&T ACP allows you to edit any line on the screen and resubmit it as a command line (see page 5.6 for a full description of this feature). This appendix lists the the various control keys used with each terminal in the editing mode. In addition to the standard set of control keys, some of the terminals also accept special keys on the keyboard for for some editing functions. The following figures list both the standard control keys and the special keys (if any) that are accepted for each editing function.

<ctrl-S>	or <left arrow>	move cursor left
<ctrl-D>	or <right arrow>	move cursor right
<ctrl-W>	or <up arrow>	move cursor up
<ctrl-X>	or <down arrow>	move cursor down
<ctrl-Q>		move cursor home
<ctrl-A>		move cursor to beginning of line
<ctrl-F>		move cursor to end of line
<ctrl-T>		delete character
<ctrl-Y>		delete right to next space
<ctrl-U>		delete to end of line
<ctrl-C>	or <break>	abort screen editing mode
<enter>		execute line

Screen Editing Control Characters for P&T CP/M 2 (TRS-80 Mod 11/16)

<ctrl-S>	or <left arrow>	move cursor left
<ctrl-D>	or <right arrow>	move cursor right
<ctrl-W>	or <up arrow>	move cursor up
<ctrl-X>	or <down arrow>	move cursor down
<ctrl-Q>	or <home>	move cursor home
<ctrl-A>		move cursor to beginning of line
<ctrl-F>		move cursor to end of line
<ctrl-T>	or 	delete character
<ctrl-Y>		delete right to next space
<ctrl-U>		delete to end of line
<ctrl-C>		abort screen editing mode
<return>		execute line

Screen Editing Control Characters for Televideo 950, 925, 912

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