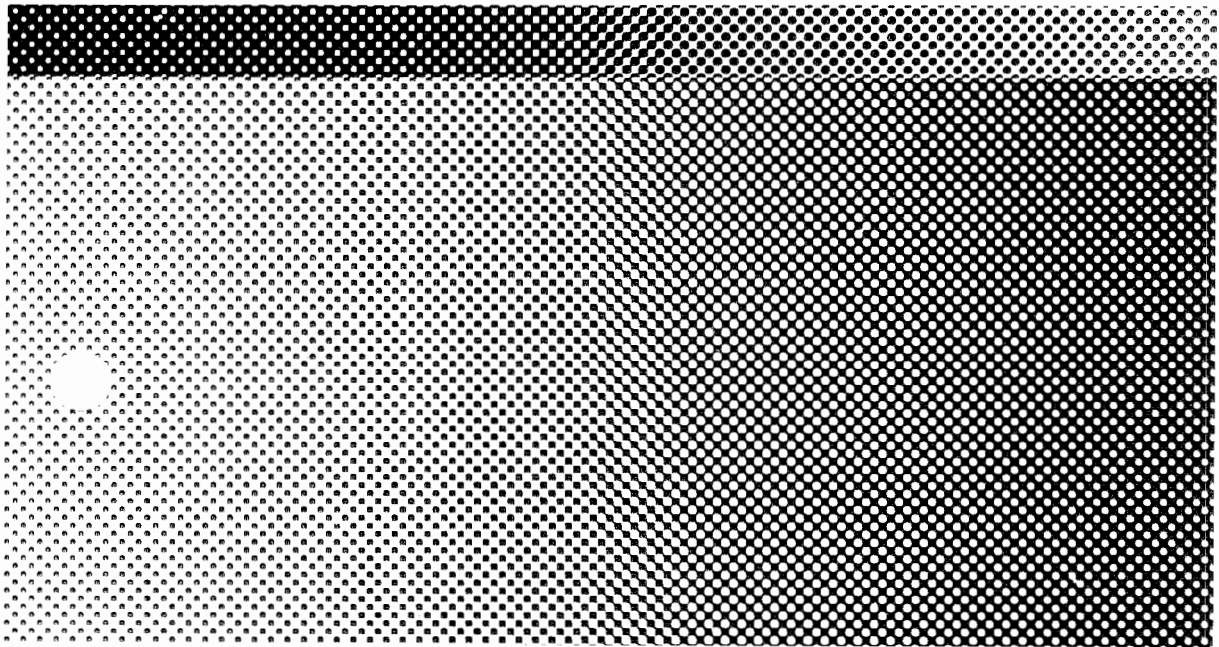


**Replace this
page with the
CARTRIDGE TAPE
tab separator.**



AT&T 3B2 Computer
UNIX™ System V Release 2.0
Cartridge Tape
Utilities Guide



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Chapter 1

INTRODUCTION

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Chapter 1

INTRODUCTION

GENERAL

This guide describes command syntax and use of the Cartridge Tape Utilities available with your AT&T 3B2 Computer.

The commands and procedures described in this guide are for use by sophisticated users who have a cartridge tape drive, and would like to do the following:

- Create a backup cartridge tape.
- Load files from a backup cartridge tape.
- Obtain information about a cartridge tape.
- Format a cartridge tape.
- Use the cartridge tape as an intermediate device to reorganize a file system.

INTRODUCTION

- Copy file archives to the cartridge tape.
- Copy file archives from the cartridge tape.

To use these commands the following utilities must be installed:

- *Cartridge Tape Utilities*
- *System Administration Utilities.*

In addition, if your 3B2 Computer is configured with a AT&T/XM, the following prerequisites must also be met:

1. *3B2/XM Administration Utilities* must be installed on the 3B2 Computer
2. An AT&T/XM containing a cartridge tape drive must be connected to the 3B2 Computer.

Before proceeding with this guide, be sure you have read the *AT&T/XM Manual*.

Some of the commands described in this guide appear to accomplish the same result. They copy data from the disk to the cartridge tape. Each command, however, has advantages and disadvantages. When you become familiar with each command, you will know what command to use for different circumstances.

GUIDE ORGANIZATION

This guide is structured so you can easily find desired information without having to read the entire text. The remainder of this guide is organized as follows:

Chapter 2, "COMMAND DESCRIPTION," describes the command formats (syntax) for each command in the *Cartridge Tape Utilities*. The descriptions include the purpose of the command, a discussion of the command syntax and options, and examples of using each command.

Appendix, "ERROR MESSAGES," contains the **UNIX*** System Error Messages pertaining to the Cartridge Tape Utilities.

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Chapter 2

COMMAND DESCRIPTIONS

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Chapter 2

COMMAND DESCRIPTIONS

COMMAND SUMMARY

The *Cartridge Tape Utilities* provide seven UNIX System commands. These commands allow you to do various operations on the cartridge tape drive. A summary of these commands is provided in Figure 2-1.

COMMAND	DESCRIPTION
compress	Improves disk performance by cleaning up fragmentation of a disk file system.
ctccpio	Copies file archives to and from a cartridge tape using streaming mode.
ctcfmt	Formats or reformats a cartridge tape.
ctcinfo	Displays information about a cartridge tape drive or a cartridge tape.
finc	Does an incremental backup on a cartridge tape.
frec	Recovers files from a backup cartridge tape.
tar	Saves and restores files on a cartridge tape.

Figure 2-1. Cartridge Tape Utilities - Command Summary

HOW COMMANDS ARE DESCRIBED

A common format is used to describe each of the commands. The format is as follows:

- **General:** The purpose of the command is defined. Any uncommon or special information about the command is also provided.
- **Command Format:** The basic command format (syntax) is defined and the various arguments and options are discussed.
- **Sample Command Use:** Example command line entries and system responses are provided to show you how to use the command.

In the command format discussions, the following symbology and conventions are used to define the command syntax.

- The basic command is shown in bold type. For example: **command** is in bold type
- Arguments that you must supply to the command are shown in a special type. For example: **command** *argument*
- Command options and arguments that do not have to be supplied are enclosed in brackets ([]). For example: **command** [*optional arguments*]
- The pipe symbol (|) is used to separate arguments when one of several forms of an argument can be used for a given argument field. The pipe symbol can be thought of as an exclusive OR function in this context. For example: **command** [*argument1* | *argument2*]

COMMAND DESCRIPTIONS

In the sample command discussions, the lines that you input are ended with a carriage return. This is shown by using `<CR>` at the end of the lines.

Refer to the *AT&T 3B2 User Reference Manual for UNIX System V* manual pages supporting the commands described in this guide.

Refer to the Appendix for the UNIX System Error Messages that pertain to the *Cartridge Tape Utilities*.

The following conventions are used to show your terminal input and the system output:

This style of type is used to show system generated responses displayed on your screen.

This style of bold type is used to show inputs entered from your keyboard that are displayed on your screen.

These bracket symbols, `< >` identify inputs from the keyboard that are not displayed on your screen, such as: `<CR>` carriage return, `<CTRL d>` control d, `<ESC g>` escape g, passwords, and tabs.

This style of italic type is used for notes that provide you with additional information.

cmpress — Reorganizes a File System to Improve Access Time

General

The **cmpress** command is a shell script that internally reorganizes the free space to improve access time. The **cmpress** command works by first writing the named file system onto a formatted cartridge tape. Then, the original copy of the file system is removed from the hard disk, and the free block list is sorted into sequential order. Finally, the file system is copied from the tape back onto the hard disk in such a way that free space previously scattered throughout the file system are collected together.

Since the file system is destroyed during the compression process, it is recommended that an up-to-date backup of the file system be available before compressing.

All file systems can be compressed except **root** and **/usr** through the **sysadm tapemgmt** commands. Refer to the *AT&T/XM Manual*, under Chapter "Using Your AT&T/XM." The **root** file system cannot be compressed using the **cmpress** command. Compressing the **/usr** file system is more complex because the **sysadm** facilities reside in the **/usr** file system. A scheme for compressing **/usr** is given in the following *Sample Commands*.

The **cmpress** command requires the user to be logged in on the console terminal as **root**. This command should only be executed when adequate time is available, such as during off hours. Execution time depends on the size of the file system being compressed.

Command Format

The **cmpress** command has the following format:

cmpress ctape? (where ? is the ctape drive number)

Sample Commands

The following steps shows the various commands it will take to compress the file system `/usr`, using the **compress** command. At the end of the step procedure is a screen display of the commands as they were entered.

Step 1. See how `/usr` is mounted, by entering the **mount** command. Make note of the `/dev/dsk/c?d?s?` information for `/usr`. This will be used several times in this example. The `?` will vary according to the partitions and mount point.

Step 2. Take the system down to a single user mode by entering the **shutdown** command.

Step 3. Mount the `/usr` file system by using the `/dev/rdisk/c?d?s?` information from the **mount** command in Step 1.

Step 4. Compress the file system by entering the **compress** command and the cartridge tape drive to be used.

Step 5. When compression is complete, unmount `/dev/rdisk/c?d?s?` by entering the **umount** command.

Step 6. Now bring the system back to the multi-user mode by entering the **init 2** command.

COMPRESSING THE **USR** FILE SYSTEM IS COMPLETE.

```
# mount<CR>
/ on /dev/dsk/c?d?s? read/write on Fri July 19 06:30:22 1985
/ usr on /dev/dsk/c?d?s? read/write on Fri July 19 06:32:22 1985
/ usr2 on /dev/dsk/c?d?s? read/write on Thu July 18 08:47:22 1985
# shutdown -i1<CR>
```

Several messages will appear, ending with:

```
INIT: SINGLE USER MODE
```

```
#mount /dev/rdisk/c?d?s? /usr<CR>
# cmpress ctape1<CR>
```

```
Mounted file systems available for compression:
/usr /usr2
```

```
Enter the file system you want to compress [q]: /usr<CR>
```

```
Insert tape into ctape1 drive, wait for re-tension pass to complete,
and press the <RETURN> key when ready [q]:<CR>
```

```
Copying file system to tape
```

```
Verify pass begins.
```

```
Verify pass complete.
```

```
(number) blocks
```

```
Copy to tape complete.
```

```
Removing file system.
```

```
Consolidating the freelist to reorganize the space
```

```
/dev/dsk/c?d?s?
```

```
File System: usr Volume: 1.1
```

```
** Phase 1 - Check Blocks and Sizes
```

```
** Phase 2 - Check Pathnames
```

```
** Phase 3 - Check Connectivity
```

```
** Phase 4 - Check Reference Counts
```

```
** Phase 5 - Check Free List (Ignored)
```

```
** Phase 6 - Salvage Free List
```

```
2 files 2 blocks 9918 free
```

```
*** FILE SYSTEM WAS MODIFIED ***
```

```
Copying file system back from tape
```

```
(number) blocks
```

```
File system copy from tape completed
```

```
# umount /dev/rdisk/c?d?s?<CR>
```

```
# init 2<CR>
```

Several messages will appear, ending with:

```
Console Login:
```


ctccpio — Copies File Archives to and from Cartridge Tape

General

The **ctccpio** command is used to copy file archives to and from a cartridge tape. The **ctccpio** command uses the streaming feature of the cartridge tape controller. Any cartridge tape that has data placed on it by the command **ctccpio** can not be appended to.

Command Format

The **ctccpio** command has the following format:

```
[file(s)] | ctccpio -o [avVK] -T cartridge_tape_device  
ctccpio -i [dmrtuvVf] -T cartridge_tape_device [pattern]
```

The *file(s)* is the standard input; such as file, files, directories, or path names, that are piped (|) to the **ctccpio** command. The *file(s)* can use commands like **find** or **ls** (see *FIND* (1) and *LS* (1)). If the *file(s)* starts with (/), the directories will be placed under the root directory when extracted from the tape.

The **-o** argument (copy to) reads the standard input, to obtain the path names and status information, then copies this data onto the tape device specified by the argument **-T cartridge_tape_device**. Any data stored on the **cartridge_tape_device** will be overwritten.

The **-i** argument (copy from) extracts the data from the cartridge tape device, created by the **ctccpio -o** command, then copies the data to the current directory.

The *pattern* option is used to select a file or files you want extracted from the tape. The default for *pattern* is * (i.e., select all files).

COMMAND DESCRIPTIONS

The options for **ctccpio -o** are:

- a** Reset access times of input files after they have been copied.
- v** *Verbose* causes a list of file names to be displayed as they are copied out to tape.
- V** Prints a dot (.) for each file copied instead of the file name.
- K** Performs a verify pass on output to tape. It is recommended that the **K** option always be used with the **-o** option.

The options for **ctccpio -i** are:

- d** *Directories* are to be created as needed.
- m** Retains previous file *modification* time.
- r** Interactively *renames* files. The system will ask you to rename the files as they are written to hard disk. If you do not want the file written in, enter a <CR> and the system will skip that file.
- t** Prints a *table of contents* of the input. No files are created.
- u** Copies *unconditionally*.
- v** *Verbose* causes a list of file names to be printed. When used with the **t** option, the table of contents looks like the output of an **ls -l** command.
- V** Prints a dot (.) for each file copied instead of the file name.
- f** Copies all files from the cartridge tape except those in *pattern*.

Sample Commands

The following example shows how to archive all files and subdirectories, of the directory *usr/old*, out to the tape device */dev/rSA/ctape1* with the file names displayed and verified:

```
# cd /<CR>
# find usr/old -print | ctccpio -ovKT /dev/rSA/ctape1<CR>
usr/old/junk/chapter1
usr/old/junk/chapter2
usr/old/junk/chapter3
usr/old/junk/chapter4
usr/old/bin/vikeys
usr/old/sample

Verify pass begins.
Verify pass completed.

12 blocks
#
```

COMMAND DESCRIPTIONS

The next example shows how to retrieve the data stored on the tape from the previous example, place it in another directory, rename the files, then see what was copied to the new directory with the **ls** command.

```
# mkdir lastexp<CR>
# cd lastexp<CR>
# ctccpio -irT /dev/rSA/ctape1<CR>
Rename <chapter2>
newchapter1<CR>
Rename <chapter4>
newchapter2<CR>
Rename <chapter6>
newchapter3<CR>
Rename <chapter8>
newchapter4<CR>

10 blocks
#ls<CR>
newchapter1
newchapter2
newchapter3
newchapter4
#
```

ctcfmt — Format Cartridge Tape

General

The **ctcfmt** command is used to format or reformat a cartridge tape. Formatting typically takes about ten minutes to complete. The cartridge tape can be formatted by using the device specified by the *rawdevice* parameter. Formatting a tape can be verified to make sure it is formatted properly.

Note: Once formatting has started, it can not be stopped.

Command Format

The **ctcfmt** command has the following format:

```
ctcfmt [-v] [-p passct] -t rawdevice
```

The *-v* option specifies that you want to verify the format. Verifying a tape takes an additional ten minutes, but it could save you time and loss of data if a problem were to occur. The decision of whether to use this option should be based on the importance of the data to be placed on the tape and whether you have had recent problems with cartridge tape defects. It is recommended that verification be made to make sure the tape is formatted properly and all blocks are readable.

The *-p passct* option specifies the maximum amount of tape passes allowed for the tape. This number is used to warn the user that the tape is nearing the end of its expected life and should be replaced to avoid the loss of data. If this option is not specified, a default value of 4000 is used. If the cartridge tape is going to be used for a file system, the pass count should be lowered to 3000.

The *-t rawdevice* argument specifies what device you are using to format a cartridge tape: **/dev/rSA/ctape1** for the first cartridge tape drive or **/dev/rSA/ctape2** for a second cartridge tape drive that may be added.

Sample Commands

The following example shows how to format a cartridge tape, with verification, and set the pass count to default (4000):

```
# ctcfmt -v -t /dev/rSA/ctape1<CR>
Insert tape, wait for re-tension pass to complete,
and press the <RETURN> key when ready [q]:<CR>
Format completed successfully.
#
```

The following example shows how to format a cartridge tape and set the pass count to 3500:

```
# ctcfmt -v -p 3500 -t /dev/rSA/ctape1<CR>
Insert tape, wait for re-tension pass to complete,
and press the <RETURN> key when ready [q]:<CR>
Format completed successfully.
#
```

ctcinfo — Display Information About a Cartridge Tape or Tape Drive

General

The **ctcinfo** command is used to display information about a cartridge tape drive and any cartridge tape that is inserted in the drive. The drive you want information about must be specified in the command line.

Command Format

The **ctcinfo** command has the following format:

```
ctcinfo [options] rawdevice
```

The *options* for **ctcinfo** are:

The *-v* option prints the volume table of contents for the tape in the specified tape drive.

The *-d* option prints the device type.

The *-t* option prints the current tape pass count.

The *-m* option prints the maximum tape count.

The *-u* option prints the current tape drive usage count.

The *-c* option prints the number of cylinders.

The *-x* option prints the number of tracks per cylinder.

The *-s* option prints the number of sectors per track.

The *-b* option prints the number of bytes per sector.

The *-a* option prints the total bytes on the device.

COMMAND DESCRIPTIONS

The `-B` option prints the total blocks on the device.

The `-r` option resets the tape drive usage count back to 0 and will stop issuing warning messages about using a dirty tape drive.

***Warning:* The `-r` option should only be used to inform the system that the tape drive has just been cleaned, when in fact it has been cleaned.**

Using the `-r` option when the tape drive has not been cleaned creates the possibility of losing data from any tapes that are run through the tape drive when it needs cleaning. If data is lost, it cannot be recovered unless you have retained another copy of it.

The *rawdevice* argument is the name of the tape drive you want information about. For example: `/dev/rSA/ctape1` identifies cartridge tape drive 1.

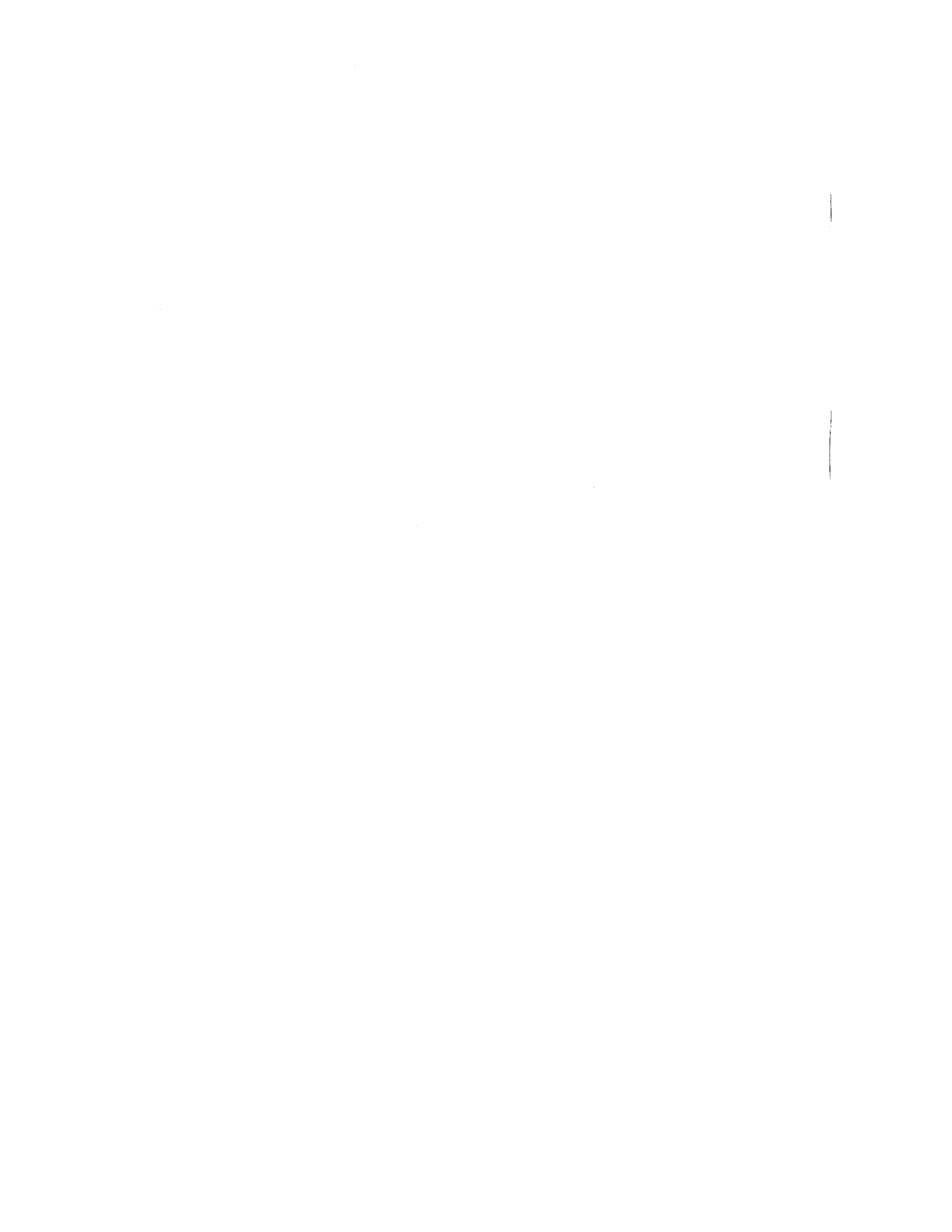
Sample Commands

The following examples show how to print all the information about tape drive 1.

```
# ctcinfo -vdtmucxsbaB /dev/rSA/ctape1<CR>
Tape Drive Usage:
    1 hours 4 minutes since last cleaning
    18 hours 55 minutes until next cleaning

For device named /dev/rSA/ctape1:
VOLUME TABLE OF CONTENTS
VOLUME NAME: ctctape VERSION: 1 POSSIBLE NUMBER OF PARTITIONS: 16

PARTITION TAG FLAG SECTOR START SIZE IN SECTORS
    0      2   0      5272          8928
    1      3   1       126          5146
    2      4   0     14200         31341
    3      0   1         2         45539
    6      5   1         0         45541
    7      1   1         0          126
Device type is 6 Stream Floppy Tape
Tape Pass Count: 148
Maximum Allowed Tape Pass Count: 4000
Cylinders: 6
Tracks per cylinder: 245
Sectors per track: 31
Bytes per sector: 512
Total available bytes: 23315968
Total available blocks: 45539
#
```



finc — Incremental Backup

General

The **finc** command selectively copies the input file system to the output tape. This is a slow process. The tape must already be formatted by the command *ctcfmt* or the Simple Administration command *format*. Also, the tape must be labeled by the *labelit* command. The selection is controlled by the *selection-criteria* described below. Only one option should be used at a time.

Before executing **finc**, you should execute the **ff** command and save the output in a file as an index of the tape contents. Files on the tape can be recovered with the **frecc** command.

Note: You should mount the input file-system as read-only to insure an accurate backup, although acceptable results can be obtained in the read-write mode. The **finc** command copies the file system one block at a time.

The *labelit* command requires that you specify the desired cartridge tape drive in the raw mode and use the *-n* option to skip label checking.

Command Format

The **finc** command has the following format:

```
finc [selection-criteria] file-system raw-tape
```

COMMAND DESCRIPTIONS

The *selection-criteria* for **find** are:

The *-a n* option specifies to only copy the file, if the file has been accessed in *n* days.

The *-m n* option specifies to only copy the file, if the file has been modified in *n* days.

The *-c n* option specifies to only copy the file, if the i-node has been changed in *n* days.

The *-n file* option specifies to copy any file that has been modified more recently than the argument file.

The *file-system* argument specifies what file system you want to backup.

The *raw-tape* argument specifies where you want the *file-system* copied.

Note: The *n* argument for options *a*, *m*, and *c* must be a whole decimal number, where *+n* means more than *n*, *-n* means less than *n*, and *n* means exactly *n*. A day is defined as a 24-hour period.

Sample Commands

To copy a file system to the output tape, the first command would be to enter **mount** to see what is available. Next run the **ff** command to list the i-nodes and directories of the special file you want copied. Then you can run the **finc** command.

The following examples show how to copy to a tape all files for file system **/mnt** that were modified in the last 48 hours. The **/mnt** file system is actually a file system on the integral floppy diskette that has been mounted as **/mnt**.

```
# mount<CR>
/ on /dev/dsk/c1d0s0 read/write on Fri July 19 07:43:55 1985
/usr on /dev/dsk/c1d0s2 read/write on Fri July 19 07:45:51 1985
/usr4 on /dev/dsk/c1d1s2 read/write on Fri July 19 08:36:35 1985
/mnt on /dev/SA/diskette1 read/write on Fri July 19 08:45:56 1985
# ff -m -1 /dev/SA/diskette1<CR>
ff: /dev/SA/diskette1: ff: 5 files selected
.                2
./awa            3
./awa/junk1     4
./awa/junk2     5
.awa/bin        9
# labelit /dev/rmt/ctape1 tape14 tape14 -n<CR>
Skipping label check!
NEW fsname =tape14, NEW volname =tape14 - - DEL if wrong!!
# finc -m -1 /dev/rSA/diskette1 /dev/rmt/ctape1<CR>
finc: /dev/rSA/diskette1->/dev/rmt/ctape1: 5 files (7 blocks) selected
finc: /dev/rSA/diskette1->/dev/rmt/ctape1: datacopy done

#
```


frec — Recover Files from a Backup Tape

General

The **frec** command recovers files from the specified backup tape. The tape must have been written by **finc**. To recover a file, you need to give the *i*-numbers for that file. The output for each recovery request will be written into the file specified by *name*.

Command Format

The **frec** command has the following format:

```
frec [-p path] [-f reqfile] raw-tape i-number:name...
```

The *-p* option allows you to specify a default prefixing *path* different from your current working directory (*./*). This path will be prefixed to any *names* that are incomplete. For example: any *names* that do not begin with */* or *./*.

The *-f* option specifies a file that contains recovery requests. The format is:

```
i-number:newname
```

The file can only contain one request per line.

The *raw-tape* argument identifies the tape you want to recover data from.

The *i-number:name...* argument identifies the file you want to recover and where you want the file saved.

Sample Commands

The following example shows how to recover a file named *chap1* and place it in the current working directory. *Chap1* has an i-number of **9** and is located on a tape labeled *csave*.

```
# frec /dev/rSA/ctape1 9:chap1<CR>  
frec: /dev/rSA/ctape1: Finc of csave (reel 1/1) made on Fri July 19 09:08:55 1985  
#
```

The following example shows how to recover files *setup* and *Rlist.ctc* that have i-numbers of **7** and **6**, respectively. The files are recovered from a tape that was labeled *tape14* and placed in the *usr3* directory instead of the current working directory.

```
# frec -p /usr3 /dev/rSA/ctape1 7:setup 6:Rlist.ctc<CR>  
frec: /dev/rSA/ctape1: Finc of tape14 (reel 1/1) made on Fri July 19 14:33:00 1985
```

tar — Tape File Archiver

General

The **tar** command saves and restores individual files on a cartridge tape. Its actions are controlled by the *key* arguments.

Command Format

The **tar** command has the following format:

```
tar [key] [device] [files]
```

The *key* argument tells what actions you want the **tar** command to take. The *key* argument must have one, but no more than one, function letter. It must have at least one function modifier, but may have several, if desired. The **f** modifier must be used to specify the cartridge tape drive (**/dev/rSA/ctape1**).

The function letters are listed below:

- r** The named *files* are written at the end of the data stored on the tape. Data is not overwritten using the **r** function letter.
- x** The named *files* are extracted from the tape. If a directory name is given instead of a file name, the entire directory will be extracted. If no *files* argument is given, the entire contents of the tape is extracted. If several files with the same name are on the tape, the last one overwrites all earlier ones.
- t** The names of the specified files are listed each time they occur on the tape. If no *files* are specified, all the names on the tape are listed.
- u** The named *files* are added to the tape if they are not already there or if they have been modified since last written on the tape.

COMMAND DESCRIPTIONS

- c** Creates a new tape. Writing begins at the beginning of the tape instead of after the last file. The **c** function letter overwrites all data stored on the tape.

The function modifiers are listed below:

- 0,,7** This modifier selects the drive on which the tape is mounted. The default is 1.
- v** Causes **tar** to type the name of each file it treats, preceded by the function letter. When used with the **t** function, **v** will give more information about the tape entries than just the name.
- w** Causes **tar** to print the action to be taken, followed by the name of the file, and then waits for the users confirmation. If a word beginning with "y" is given, the action is performed. Any other input means "no."
- f** Causes **tar** to use the next argument as the name of the device to use instead of **/dev/mt?**. If the name of the file is -, **tar** writes to the standard output, or reads from standard input, whichever is appropriate. Thus, **tar** can be used as the head or tail of a pipeline. The **tar** command can also be used to move hierarchies with the command:


```
# cd fromdir; tar cf - . | (cd todir; tar xf -)<CR>
```
- b** Causes **tar** to use the next argument as the blocking factor for tape records. The default is 1, the maximum is 20. The block size is determined automatically when reading tapes (function letters **x** and **t**).
- l** Tells **tar** to complain if it cannot resolve all the links to the files being dumped. If **l** is not specified, no error messages are printed.
- m** Tells **tar** not to restore the modification times. The modification time of the file will be the time of extraction.

The *files* argument specifies what files are to be dumped or restored. If a directory name is used instead of file names, all the files and subdirectories under that directory are specified.

Sample Commands

The following example will write out all the files and any subdirectories in directory **/mnt** that end with **.c**, then list each file as it is transferred, and start saving the files at the start of the tape:

```
# cd /mnt<CR>
# tar cvf /dev/rSA/ctape1 *.c<CR>
a chapter.c 8 blocks
a moreinfo.c 7 blocks
#
```

The next example shows how to write the file **addinfo.h** at the end of the data stored on the tape:

```
# tar rvf /dev/rSA/ctape1 addinfo.h<CR>
a addinfo.h 2 blocks
#
```

COMMAND DESCRIPTIONS

To see what has been stored on the tape, enter:

```
# tar tvf /dev/rSA/ctape1<CR>
Tar: blocksize = 20
rw----- 0/1  3590 July 19 11:18 1985 chapter.c
rw----- 0/1  3328 July 19 11:16 1985 moreinfo.c
rw----- 0/1   955 July 19 12:15 1985 addinfo.h

Note: The file addinfo.h was stored at the end
of the data on the tape.
#
```

The next example shows how to retrieve the files from the previous **tar** command and place them in another directory:

```
# cd /usr2/awa<CR>
# tar xvf /dev/rSA/ctape1<CR>
Tar: blocksize = 20
x chapter.c 8 blocks
x moreinfo.c 7 blocks
x addinfo.h 2 blocks
# ls -l<CR>
rw-----      0/1          955   July 19 12:15 1985 addinfo.h
rw-rw----      0/1         1093   July 19 10:14 1985 chapter1
rw-rw----      0/1         1006   July 19 01:28 1985 chapter2
rw-rw----      0/1         5554   July 19 03:06 1985 chapter3
rw-----      0/1         3590   July 19 11:18 1985 chapter.c
rw-----      0/1         3328   July 19 11:16 1985 moreinfo.c

Note: The three chapters (1, 2, and 3) already existed
in the directory awa.
```

Appendix

ERROR MESSAGES

This appendix contains the error codes that are created and displayed by the Cartridge Tape Utilities. The error codes are stored in the file `/usr/include/sys/ct.h`. They are in addition to those found in `/usr/include/sys/errno.h`. Information on the `errno.h` error codes can be found in the **intro(2)** manual page of the *AT&T 3B2 Computer Programmer Reference Manual*.

The following is an example of an error messages that will appear on the console terminal.

```
NOTICE: CTC Access Error: Consult the Error Message Section of the
3B2 Computer Cartridge Tape Utilities Guide (error num=215)
```

The following tables show the error **CODE** number and **NAME**, a **DESCRIPTION** of the error, and what **ACTION** must be taken to correct the error. The **ACTION** statement " See CTC RECOVERY PROCEDURE" is at the end of the tables.

CODE	NAME	DESCRIPTION — ACTION
200	EUSRSPL	Access to device is blocked because a special control function (ioctl - open) has exclusive access. This condition will occur if the tape unit is being used to do a backup/restore or format operation. — Wait for either of these operations to complete, then retry.
201	ENOSGEN	This condition occurs when the CTC board fails to complete its initialization and is left in an insane state. — See CTC RECOVERY PROCEDURE.
202	EBRDDWN	This condition occurs when it is detected that the CTC board is not operating properly and is then marked unavailable. — See CTC RECOVERY PROCEDURE.
203	ENOCNF	This condition occurs when an attempt is made to do an operation on the CTC sub-device (such as, cartridge tape drive or floppy disk drive) that is not connected to the CTC board. — Check hardware configuration for proper sub-devices.
204	EFWCBAD	This condition shows that a software routine failed to execute properly. — See CTC RECOVERY PROCEDURE.

CODE	NAME	DESCRIPTION — ACTION
205	ENOTOPN	This condition shows that read/write access from the CTC board to the sub-device is blocked. This condition will not occur under normal operating conditions. — See CTC RECOVERY PROCEDURE.
206	EROPART	Cartridge tape in sub-device is write protected or mounted read-only. — Remove write protection from media or mount in read/write mode.
207	EPRTOVR	This condition occurs when attempts are made to write to a cartridge tape that has run out of available space. — Retry on cartridge tape with adequate space. (See <i>ctcinfo</i> .)
208	EBDVTOC	<p>The volume table of contents (vtoc) on the cartridge tape is not detected as sane. This may be a result of the cartridge tape needing to be re-tensioned. — Remove tape from drive and reinsert tape into drive and wait for re-tensioning pass to complete. Retry operation. If failure condition reoccurs, reformat cartridge tape.</p> <p><i>Warning: Reformatting tape will destroy data stored on the cartridge tape.</i></p>

CODE	NAME	DESCRIPTION — ACTION
209	EBDPSEC	<p>The physical descriptor sector on the cartridge tape is not detected as sane. This may be a result of the cartridge tape needing to be re-tensioned. — Remove tape from drive, reinsert tape into drive, and wait for re-tensioning pass to complete. Retry operation. If failure condition reoccurs, reformat cartridge tape.</p> <p><i>Warning: Reformatting tape will destroy data stored on the cartridge tape.</i></p>
210	ENSLOPN	<p>This condition occurs when a software routine fails to function properly. This condition will not occur under normal operating conditions. — See CTC RECOVERY PROCEDURE.</p>
211	ENTSUSR	<p>This condition occurs when an attempt is made to access the CTC board while a cartridge tape is being formatted. — Wait for format operation to complete then retry.</p>
212	ETIMOUT	<p>This condition occurs when the CTC board failed to complete a task in the time allotted. — See CTC RECOVERY PROCEDURE.</p>
213	EHDWERR	<p>This condition shows a CTC board hardware failure. — See CTC RECOVERY PROCEDURE.</p>

CODE	NAME	DESCRIPTION — ACTION
214	ENOTRDY	The device was not ready for access. — Try again.
215	ERWERR	Attempt to read or write to cartridge tape has failed. — Try again. If repeated failures occur, re-tension cartridge tape by removing and reinserting cartridge tape into the tape drive. If condition persists, it may be because of a bad cartridge tape.
216	EWRTprt	This condition occurs when an attempt is made to write to a write protected cartridge tape. — Remove write protection from cartridge tape.
217	EBDJSIZ	This condition occurs when a stream request exceeds the 15.5 Kilobyte limit. This condition will not occur under normal conditions. — See CTC RECOVERY PROCEDURE.
218	EBDOFLG	This condition occurs when the software detects a bad open flag and can not determine the read/write direction. This condition will not occur under normal conditions. — See CTC RECOVERY PROCEDURE.
219	ENOMED	This condition occurs when an attempt is made to do an operation on media that is not present in the sub-device. — Put cartridge tape in tape drive.

CTC RECOVERY PROCEDURE

In the normal course of using the Cartridge Tape Utilities you may encounter problems interfacing with the CTC or its sub-devices. These problems may be characterized by various error messages or simple no response at all. What follows is a general recovery procedure that may clear the source of your problem. This procedure requires the user to be logged in as **root** on the console terminal.

Repump the CTC firmware using the following command:

```
# /etc/pump /dev/rSA/ctape? /lib/pump/ctc<CR>
#
Note: The (?) is the number of the CTC (such as,
ctape1 for the first CTC).
```

The system should respond with the root prompt. Check to see if error condition still exists. If the error condition continues to exist, remove and reinstall the Cartridge Tape Utilities software. If the error condition still exists, it may require the attention of your AT&T Service Representative or authorized dealer.