

# ***9100 Series***

## **9100A-016 Hard Disk Backup Utility**

P/N 846295  
October 1988  
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# 9100A-016 Hard Disk Backup Utility

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## INTRODUCTION

The 9100A-016 Backup Utility provides a set of comprehensive hard disk backup and restore features for a user-supplied external 40 megabyte DC2000 SCSI streaming tape drive and tape cartridges or the 9100A disk drive and floppy disks.

The utility provides complete backup of the entire 9100A hard disk, the system libraries (PROGLIB, PARTLIB, PODLIB, HELPLIB), or user-created data (UUTs etc.). In addition, this utility can partially back up or restore elements of the 9100A system software or user-created software. A list of the functions is shown below:

- Backup All
- Restore All
- Partial Backup
- Partial Restore
- Media Info
- Hard Disk Directory
- Format Tape
- Unload Tape

## HARDWARE REQUIREMENTS

To back up or restore using floppy disks requires no additional hardware.

To back up or restore with a streaming tape, the user must supply an external tape drive. An SCSI port on the rear panel of the 9100A provides an interface to the external drive. An SCSI data cable that connects the 9100A to tape drives using a Cinch-type 50-pin female connector is included with the 9100A-016 Backup Utility option. Pin 1 (red edge) is on the upper part (top) of the connector.

Connect the SCSI cable to the SCSI port located on the 9100A mainframe backpanel. Refer to the tape drive instruction manual for information on cable connection to the tape drive.

The following list of drives is recommended for the tape drive:

- Gigamation Data File 40
- ADIC Model 440
- Kornermann Cirrus 40T

### *NOTE*

*The tape drive manufacturer recommends removing the cartridge from the drive when the unit is powered up or down to prevent the possibility of extraneous data being written to the tape.*

*For best performance, place the tape backup unit on a flat surface next to the mainframe. Avoid placing the tape backup unit on top of the monitor or near the video cables. The backup unit may be sensitive to interference given off by the monitor and cables.*

*If the front panel tape drive light flashes after installing a tape, this indicates an internal drive initialization error has occurred.*

## Supported Tape Drives

In all cases only tape drives that use a 3M 40-megabyte DC2000 SCSI cartridge drive are currently supported. The SCSI ID of the drive must be set to address 1 for use with the 9100A. (See “Dip Switch Setup on the Tape Drive” for the proper setting of the addressing switch on the 3M drive.) An external SCSI terminator is also necessary if the drive does not have an internal terminator.

### CAUTION

*Loading on the SCSI bus is increased by a powered-down tape unit and may interfere with the operation of the 9100A. It is best to keep both units powered up while they are cabled together.*

## Dip Switch Setup on the Tape Drive

For proper operation, set the dip switch on the 3M 40 megabyte SCSI drive as follows:



In the case of the DataMation drive with the front panel SCSI ID switch, Switch 1 should remain open. Proper operation of the software with a tape drive assumes that the SCSI ID has been set to 1.

## Apple SCSI Adapter

The 9100A-016 Hard Disk Backup Utility may be used with an Apple®-style tape drive. Before you connect the drive to the 9100A, first configure the dip switch on the SCSI tape controller board to be compatible with the backup software.

### NOTE

*For the 9100A-016 Hard Disk Backup Utility to function properly, you must set the tape drive controller for channel 1 operation only.*

To connect a tape drive designed for use with the Apple 25-pin SCSI connector to the 9100A, you must construct a special adaptor to accept a 50-pin ribbon connector and translate it to a 25-pin D-type male connector. The Apple side of the adapter uses a DB25 male connector, while the 9100 side uses a 50-pin, one-tenth inch double-row ribbon pin connector. Refer to the following table for the connections between the two connectors.

<i>25-PIN APPLE</i>	<i>50-PIN 9100A</i>	<i>SIGNAL</i>
1	48	~REQ
2	42	~MSG
3	50	~I/O
4	40	~RST
5	38	~ACK
6	36	~BSY
7	20	GROUND
8	2	DB0
9	22	GROUND
10	8	DB3
11	12	DB5
12	14	DB6
13	16	DB7
14	24	GROUND
15	46	~C/D
16	28	GROUND
17	32	~ATN
18	30	GROUND
19	44	~SEL
20	18	DBP
21	4	DB1
22	6	DB2
23	10	DB4
24	34	GROUND
25	—	NC

The following pins on the 50-pin cable connector are tied together:

1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 33,  
35, 37, 39, 41, 43, 45, 47, 49, 20, 22, 24, 28, 30, 34

## SOFTWARE INSTALLATION

### NOTE

*The Backup Utility requires the 9100A to have at least 3M bytes of system memory.*

The 9100A-016 Backup Utility software is provided on one 3.5 inch floppy disk. Before the backup utility can be executed for the first time, it is necessary to execute the TL/1 program BINSTALL.

To run BINSTALL, perform the following steps:

1. Place the 9100A-016 Backup Utility floppy disk into the 9100A floppy drive.
2. Change the default USERDISK to DR1 using the SETUP menu.
3. Press the EXEC key.
4. Press the CONT key to enter a space (blank entry) into the UUT field and use the right arrow key to move to the PROGRAM field. If the UUT field is already blank, use the right arrow key to advance the cursor to the PROGRAM field. Enter BINSTALL for the program field.
5. Press the ENTER/YES key.

### NOTE

*When the backup utility is copied to the internal hard disk, the 9100A-016 Utility disk is locked to the 9100A it was copied to, which prevents the disk from being copied to other 9100A mainframes.*

*PROGLIB programs BINSTALL and BACKUP are overwritten during this process. Ensure that programs with these names are renamed to prevent their loss.*

To copy the backup utility from the 9100A-016 Backup Utility disk to the internal hard drive, perform the following steps:

1. Use the MAIN MENU to select the COPY from DR1 to HDR function.
2. Insert the 9100A-016 Backup Utility floppy disk into the drive.
3. Press ENTER/YES to copy the utility to the hard drive.

### **START THE BACKUP UTILITY**

To begin using the backup utility, perform the following steps:

1. Set the USERDISK to HDR using the SETUP menu.
2. Press the EXEC key, and enter a space (press the CONT key) for the UUT field. Scroll to the PROGRAM field using the right arrow key and enter the program name BACKUP.
3. Press ENTER/YES to start the 9100A-016 Backup Utility.

The Backup Utility uses either system memory (RAM) or the hard disk for temporary storage during operation. System memory is first accessed and if an E-disk has been loaded, the following message appears:

```
Warning: 512K size file E-DISK exists.  
All E-DISK files will be destroyed.  
OK to erase files? <YES/NO>
```

The file size changes depending on the actual E-disk loaded.

Answering no follows with a message about using the hard disk for temporary storage. Answering yes removes the current E-disk and sets up the system memory for temporary storage. The execution speed of the utility is faster using system memory but the E-disk must be reloaded so that system memory can be used.

The message “Fluke 9100A Backup Utility,” and the version number appear on the display along with a number of double-width softkey options on the bottom line of the application display. Press either of the softkeys under each entry on the application display to select that entry. When you press either the MORE softkey or the SOFT KEYS key the monitor screen displays a new set of softkey options. Continually pressing and releasing one of the two keys eventually returns to the original set of options. Press the RESET key to exit the backup utility and return the 9100A to standard operation.

Refer to the syntax diagram (Figure 1) for an illustration of the backup utility process.

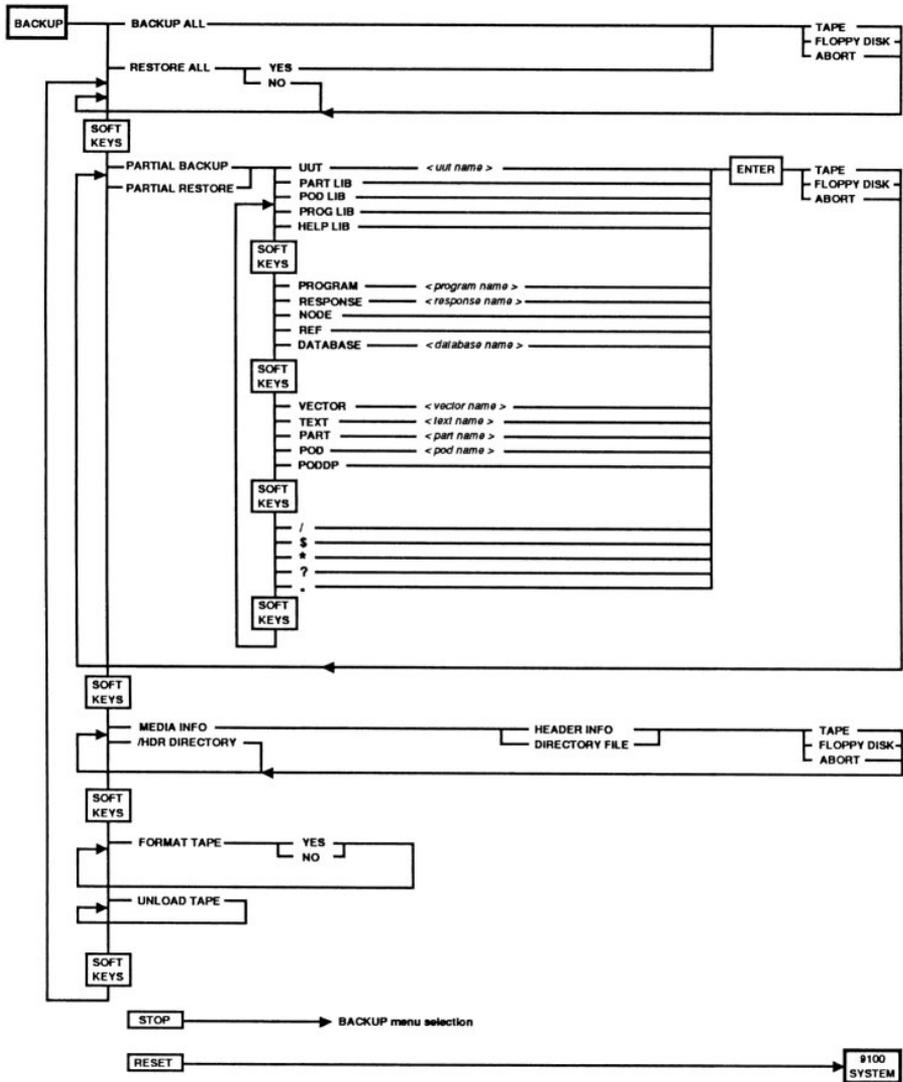


Figure 1. Key Syntax Diagram

## BACKUP STORAGE LOCATION

Each backup operation requires a single tape or microfloppy diskettes (1 or more). The backup operation only stores the specified files on the media and any previous files are written over (destroyed).

## BACKUP ALL

### *NOTE*

*Before you begin backup, create a Hard Disk (/HDR) directory so you have a listing of the backup files. For more information see "Hard Disk Directory".*

Press the BACKUP ALL softkey to back up the entire hard disk to an SCSI tape drive or floppy disks using a file-by-file copy. During the backup operation, the top line of the three-line display shows the current media operation, and the bottom line shows the raw directory/file name being backed up. When the program has finished, the soft menu reappears and any errors that occurred during the process are shown on the center line of the display.

### *NOTE*

*If you press any key during backup, the operation stops and sets the tape or disk in an incomplete state that is unusable by the restore program.*

Before backup begins, a prompt asks you to select either a tape or floppy backup.

## Backup To Tape

To select tape backup, press the TAPE softkey. The backup utility directs you to insert a (formatted) tape into the drive and press any key to begin the backup process. The tape rewinds and then copies the entire 9100A Hard Disk data on a file-by-file basis. The time required to back up the disk depends on the amount of data on the disk as well as the number of files.

## Backup To Floppy Disk

If you choose to back up to a floppy disk (by pressing the FLOPPY DISK softkey), the menu program first estimates how many disks are necessary for a complete backup.

If enough formatted floppies are available, press the ENTER/YES key to begin the backup. If there are too few formatted disks available, press the CLEAR/NO key; then press the RESET key to exit the backup utility. Use the 9100A MAIN MENU format function to format the required additional floppies.

Each floppy disk must be numbered after it is written. The restore program uses the last disk to read the index and requires that the other disks be inserted in their original order during the restore process.

### NOTE

*Data written to the backup floppies is not in a standard file format and cannot be read from the standard 9100A operating software.*

## RESTORE ALL

Press the RESTORE ALL softkey to restore the entire hard disk from either the tape drive or a set of floppies. Restore is a file-type restore that overwrites any file on the hard disk with the same directory/name as on the tape or floppy, returning the file system to the state just prior to the BACKUP ALL operation. The 9100A displays a message reminding you of this fact and gives you an opportunity to abort the restore process by pressing any key other than the ENTER/YES key. To begin the restore process, press the ENTER/YES key. The 9100A asks you if the backup is from tape or floppy disks.

The top line of the three-line display shows the media operation status, and the bottom line shows the raw path name of the files being restored. When the program has finished, the soft menu reappears, and any errors that occurred during the process are displayed on the center line in reverse image.

### NOTE

*Trying to restore an entire hard disk to a unit other than the one originally backed up results in the error message "full restore to same machine only," after which the process aborts and returns to the main menu.*

## Restore from Tape

Press the TAPE softkey to restore from a tape. The 9100A directs you to load the tape and press any key when the tape has stopped moving. If the tape does not contain a backup of the entire disk, the 9100A displays an error message and the process is aborted.

## Restore from Floppy Disk

To restore from floppy disk, select the FLOPPY DISK softkey. The 9100A prompts you to place the last disk of the set into the floppy drive and press any key. The backup utility checks the header information to ensure the floppy set was a complete hard disk backup before proceeding. If the floppy set was not a complete hard disk backup, the monitor displays an error message and the process is aborted. If the floppy set is valid, the restore process then starts.

## PARTIAL BACKUP AND RESTORE

Press the PARTIAL BACKUP softkey to back up a UUT, PARTLIB, PROGLIB, PODLIB, POD, or HELPLIB and their subdirectories and files (shown in Figure 2 as shaded boxes). Press the PARTIAL RESTORE softkey to restore a UUT, PARTLIB, PROGLIB, PODLIB, POD, HELPLIB, or any file within these directories. Press the STOP key at any time to return to the top level backup menu.

To properly restore individual files within a UUT or system library, you must be familiar with the structure of the 9100A Userdisk as well as the internal file system structure. Figure 2 shows the general structure of the Userdisk. To view the internal structure of the 9100A system files before backup, see “Hard Disk Directory” later in this section. To view the contents of the storage media (tape or floppy disks) before restoring, see “Media Info” later in this section.

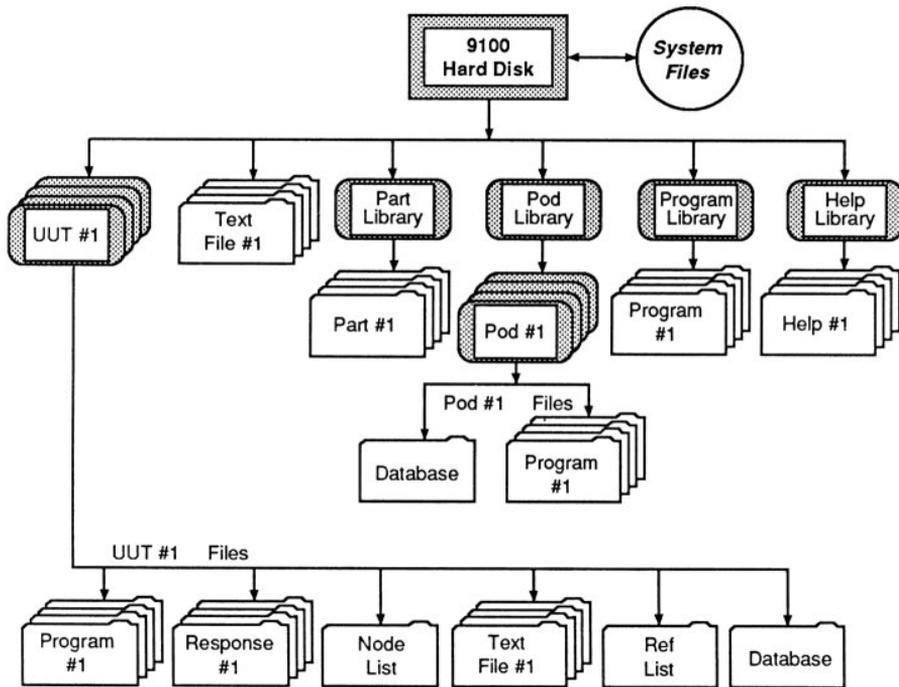


Figure 2. Structure of the Userdisk

After you have entered the partial backup or restore function, the 9100A displays /HDR and the first level softkey menu. Use the softkey selections and the alpha keys to select the path of the directory or files you want to back up or restore. The pathname for both the save and restore function is:

```
/HDR/type$name of file
```

The shaded boxes in Figure 2 represent what directory or files are affected during the save function. For example, if you want to save the subdirectory and/or files of the UUT named ABC in the UUT directory, the pathname is:

```
/HDR/UUT$ABC
```

The pathname /HDR/UUT\$ABC can be also used with the restore function.

The following pathname example restores the program TEST1 subdirectory of the UUT named ABC:

```
/HDR/UUT$ABC/PROGRAM$TEST1
```

If you make a mistake entering the directory or file name, press CLEAR on the keypad to erase any error. Press SOFT KEYS on the 9100A keypad to show more directory name selections. A complete list of the available softkey selections is shown in the following table. You can use the softkeys or the individual alpha keys to center the file specification. After you enter the file specification, press ENTER/YES. You are then asked to select either tape or floppy disks. Select the appropriate backup media, and press ENTER/YES.

<i>Menu</i>	<i>Softkey Entry</i>	<i>Displayed Information</i>
Menu I	UUT	/UUT\$
	PARTLIB	/PARTLIB\$PARTLIB
	PODLIB	/PODLIB\$PODLIB
	PROGLIB	/PROGLIB\$PROGLIB
	HELPLIB	/HELPLIB\$HELPLIB
Menu II	PROGRAM	/PROGRAM\$
	RESPONSE	/RESPONSE\$
	NODE	/NODE\$NODELIST
	REF	/REF\$REFLIST
	DATABASE	/DATABASE\$
Menu III	VECTOR	/VECTOR\$
	TEXT	/TEXT\$
	PART	/PART\$
	POD	/POD\$
	PODDB	/PODDB\$POD_FILE
Menu IV	/	/
	\$	\$
	*	* (wild card)
	?	? (single character wild card)
	.	.

If the 9100A cannot find the directory path or filename you have selected, the process is aborted, and an error message is shown on the second line of the 9100A display.

The wild card character (\*) matches any following characters. For example, the specification:

```
/HDR/UUT$ABC/PROGRAM$TEST*
```

matches the programs TEST1, TEST2, TESTABLE, etc.

The single wild card character (?) matches a single character in the specification. For example, the file specification:

```
/HDR/UUT$ABC/PROGRAM$TEST?
```

matches the programs TEST1 and TEST2, but not TEST-ABLE.

The following example illustrates the procedure for backing up (or restoring) all the files in the UUT ABC:

1. Start the Backup Utility.
2. Select the PARTIAL BACKUP (or RESTORE) softkey option.
3. Select the UUT softkey option. The prompt line now reads:

```
/HDR/UUT$
```

4. Type ABC with the alpha keys. The prompt line now reads:

```
/HDR/UUT$ABC
```

5. Press ENTER/YES.
6. Select the TAPE or FLOPPY DISK softkey to begin the backup (or restore) of the entire UUT named ABC.

The next example shows how to restore an individual pod (for this example, an 80286 pod) within the pod library (PODLIB).

1. Start the Backup Utility.
2. Select the PARTIAL RESTORE softkey.

3. Select the PODLIB softkey. The prompt line now reads:

```
/HDR/PODLIB$PODLIB
```

4. Press SOFTKEYS twice to scroll the softkey menu to the third level selections. Press the POD softkey. The prompt line now reads:

```
/HDR/PODLIB$PODLIB/POD$
```

5. Enter 80286 from the 9100A keypad. The prompt line now reads:

```
/HDR/PODLIB$PODLIB/POD$80286
```

6. Press ENTER/YES.
7. Select the TAPE or FLOPPY DISK softkey to begin restoring the 80286 pod information.

The following example demonstrates how to restore the complete program library (PROGLIB):

1. Start the Backup Utility.
2. Select the PARTIAL RESTORE softkey option.
3. Select the PROGLIB softkey option. The prompt line now reads:

```
/HDR/PROGLIB$PROGLIB
```

4. Press ENTER/YES.
5. Select the TAPE or FLOPPY DISK softkey to restore the entire program library.

The next example shows how to restore the program A\_TABLE within the program library (PROGLIB):

1. Start the Backup Utility.
2. Select the PARTIAL RESTORE softkey option.
3. Select the PROGLIB softkey option. The prompt line now reads:

```
/HDR/PROGLIB$PROGLIB
```

4. Select the PROGRAM softkey. The prompt line now reads:

```
/HDR/PROGLIB$PROGLIB/PROGRAM$
```

5. Use the alpha keys of the keypad to enter the program name A\_TABLE. The prompt line now reads:

```
/HDR/PROGLIB$PROGLIB/PROGRAM$A_TABLE
```

6. Press ENTER/YES.
7. Select the TAPE or FLOPPY DISK softkey to begin restoring the program A\_TABLE.

After you have backed up information on tape or floppy disk, you may want to restore only part of the information. To do this, enter the storage media directory path using the 9100A softkeys and alpha keys. (To view the contents of the storage media before restoring, see “Media Info”.) The Backup Utility restores only the information from the selected directory and its subdirectories and files. If you are restoring from floppy disk, the display indicates the number of the floppy to be inserted in the 9100A to properly begin the restore operation.

## MEDIA INFO

The MEDIA INFO softkey allows you to view important information about the backup stored on a tape or floppy disk. The three-line display shows the source, date, and size of the data stored on tape. For a floppy disk, only the source and the date are displayed. In addition, the directory, subdirectory, and filename information is stored in a text file on the 9100A for viewing (using EDIT) with the programmers workstation.

The displayed directory is an abbreviated directory of the last specified directory backup stored on the media. All backups start at some directory and store that directory and every subdirectory and files under it to the media. In the case of a BACKUP ALL operation, the original directory is the /HDR directory.

### Header

To view the source and date of creation for the backup, first press the MEDIA INFO softkey, then the HEADER INFO softkey. The program asks you to select a tape or floppy disk. If you select tape, the program asks you to insert the tape in the tape unit, wait for the tape to stop moving, then press any key. The three-line display then shows the media information. If you select floppy disk, the program asks you to insert the last disk of the backup into the floppy drive and then press any key. The monitor then displays the media information.

### Directory

To create a text file that contains a list of the directories, subdirectories, and files of the backup media, first press the MEDIA INFO softkey. Select the DIRECTORY FILE softkey. The program asks you to select a tape or floppy disk. If you select tape, you are asked to insert the tape in the tape reader, wait for the tape to stop moving, then press any key. The 9100A displays the source and date of the data, then the 9100A creates a text file called MEDIA.DIR, and the directories, subdirectories, and data files on the media are stored in the file.

The indentation level of each entry reflects how deep it is in the hierarchical file system. Two spaces represent one level. If you select floppy disk, the program asks you to insert the last disk of the backup into the floppy drive; then press any key. The source and date are shown on the 9100A display; then the 9100A creates a text file called MEDIA.DIR and the directories, subdirectories, and data files on the media stored in the file.

The following is a sample listing of the MEDIA.DIR text file:

*NOTE*

*The following sample listing is not the entire directory.*

```

/HDR/USERDISK/
/HDR/USERDISK/UUT/
/HDR/USERDISK/TEXT/
/HDR/USERDISK/PARTLIB/
/HDR/USERDISK/PARTLIB/PARTLIB/
/HDR/USERDISK/PARTLIB/PARTLIB/PART/
/HDR/USERDISK/PROGLIB/
/HDR/USERDISK/PROGLIB/PROGLIB/
/HDR/USERDISK/PROGLIB/PROGLIB/PROGRAM/
/HDR/USERDISK/PODLIB/
/HDR/USERDISK/PODLIB/PODLIB/
/HDR/USERDISK/PODLIB/PODLIB/POD/
/HDR/USERDISK/HELPLIB/
/HDR/USERDISK/HELPLIB/HELPLIB/
/HDR/USERDISK/HELPLIB/HELPLIB/TEXT/

/HDR/SYSDISK/
/HDR/SYSDISK/HELP/
    DEBUG                HELPLIB                NODE
    PART                 PARTLIB                POD
    PODLIB               PROGLIB                PROGRAM
    REF                  RESPONSE               TEXT
    USERDISK            UUT                    VTERM
    VECTOR

```

/HDR/SYSDISK/PROFILES/

DEBUG	HELPLIB	NODE
PART	PARTLIB	POD
PODLIB	PROGLIB	PROGRAM
REF	TEXT	UUT
VTERM	RESPONSE	USERDISK
VECTOR		
PI_START		

/HDR/TMP/

ndisks                      MEVALID

/HDR/PARTLIB\$PARTLIB/

PART\$2016	PART\$2674	PART\$2675
PART\$2681	PART\$27128	PART\$27256
PART\$4000	PART\$4164	PART\$7400
PART\$7401	PART\$7402	PART\$7403
PART\$7404	PART\$7405	PART\$7406
PART\$7407	PART\$7408	PART\$7409
PART\$7410	PART\$74107	PART\$74109
PART\$7411	PART\$74111	PART\$74112
PART\$74113	PART\$74114	PART\$7412
PART\$74121	PART\$74122	PART\$74123
PART\$74125	PART\$74126	PART\$74128
PART\$7413	PART\$74131	PART\$74132
PART\$74133	PART\$74134	PART\$74138
PART\$74139	PART\$7414	PART\$74148
PART\$7415	PART\$74150	PART\$74151
PART\$74153	PART\$74157	PART\$7416
PART\$74160	PART\$74161	PART\$74162
PART\$74163	PART\$74164	PART\$74165
PART\$74166	PART\$7417	PART\$74175
PART\$7420	PART\$7421	PART\$7422
PART\$7423	PART\$7424	PART\$74244
PART\$74245	PART\$7425	PART\$74257
PART\$7426	PART\$7427	PART\$7428
PART\$7430	PART\$7431	PART\$7432

```

/HDR/PODLIB$PODLIB/
/HDR/PODLIB$PODLIB/POD$3548/
    PODDB$POD_FILE      PROGRAM$QWK_RD      PROGRAM$QWK_WR
/HDR/PODLIB$PODLIB/POD$3949/
    PODDB$POD_FILE      PROGRAM$QWK_RD      PROGRAM$QWK_WR
/HDR/PODLIB$PODLIB/POD$4050/
    PODDB$POD_FILE      PROGRAMSQWK_RD      PROGRAM$QWK_WR
/HDR/PODLIB$PODLIB/POD$8031/
    PODDB$POD_FILE      PROGRAM$QWK_RD      PROGRAM$QWK_WR
    PROGRAM$QWK_RAM      PROGRAM$QWK_ROM      PROGRAM$QWK_FILL
    PROGRAM$RD_PORT      PROGRAM$WR_PORT      PROGRAM$TESTPORT
/HDR/PODLIB$PODLIB/POD$8041/
    PODDB$POD_FILE      PROGRAM$QWK_RD      PROGRAM$QWK_WR
/HDR/PROGLIB$PROGLIB/
    PROGRAM$A_TABLE      PROGRAM$BINSTALL      PROGRAM$BACKUP

/HDR/HELPLIB$HELPLIB/
    TEXT$INDEX           TEXT$ROM4             TEXT$RAM1
    TEXT$BUS1            TEXT$ROM1             TEXT$ROM2
    TEXT$ROM3            TEXT$RAM2             TEXT$RAM3
    TEXT$RAM4            TEXT$RAM5             TEXT$BUS2
    TEXT$BUS3            TEXT$RAM6             TEXT$RAM7
    TEXT$BUS4            TEXT$BUS5             TEXT$RAM8
    TEXT$RAM9            TEXT$POD1             TEXT$IOMOD1
    TEXT$RAM10           TEXT$POD2             TEXT$POD3
    TEXT$POD4            TEXT$POD5             TEXT$POD6
    TEXT$POD7            TEXT$UNKNOWN1         TEXT$ROM5
    TEXT$ROM6            TEXT$ROM7             TEXT$RAM11
    TEXT$RAM12           TEXT$POD8             TEXT$POD9
    TEXTS$OD10           TEXT$POD11            TEXT$POD12
    TEXTS$OD13           TEXT$BUS6             TEXT$POD14
    TEXT$POD15           TEXT$PROBE1           TEXT$CLKMOD1
    TEXT$IOMOD2          TEXT$POD16            TEXT$IOMOD3
    Info

/HDR/UUT$ABC/
    REF$REFLIST          RESPONSE$ADDR_OUT     NODE$NODELIST
    PROGRAM$TEST1        PROGRAM$TEST2         PROGRAM$POD_SYNC
    PROGRAM$EXT_SYNC     Info                  PROGRAM$ADDR_OUT
    PROGRAM$RECOVER

```

## Print the MEDIA.DIR File

To print a hardcopy of the MEDIA.DIR file, use the following procedures:

To print from the Application Interface:

1. Select the MAIN MENU PRINT function (F4 Softkey), and enter a null UUT (space key). The TEXTFILE entry should be MEDIA.DIR, and the port should be PORT1 or PORT2 depending on where the printer is connected. (Use SETUP to configure the port.)
2. Press the ENTER/YES key to initiate printing once all parameters are entered correctly.

To print from the Programmers Interface:

1. Select the COPY (F4) softkey to print the file.
2. At the prompt 'FROM NAME', enter /HDR/MEDIA.DIR.
3. At the prompt 'TYPE', press the field select key to select TEXT.
4. At the prompt 'TO NAME', enter /PORT1 if the printer is connected to PORT1, or /PORT2 if the printer is connected to PORT2.
5. At the prompt 'TYPE', press the field select key to select PORT.

## HARD DISK DIRECTORY

The /HDR DIRECTORY softkey allows you to create a file on the 9100A that lists all the directories, subdirectories, and files contained on the hard disk. This information is stored in a text file called BACKUP.DIR. This file can be read or printed using the 9100A programmers workstation.

The following is a sample listing of the BACKUP.DIR text file:

### NOTE

*The following sample listing is not the entire directory.*

Contents of directory /HDR/

Filename	Size	Write Protected	Date	Time
backup_dates	70	Protected	88/09/16	13:56
MEVALID	0	Protected	88/03/16	16:04
ndisks	2	Protected	88/09/08	08:49
TEXT\$BACKUP.DIR	60322		88/09/16	14:16
TEXT\$MEDIA.DIR	17894		88/09/16	14:13

Contents of directory /HDR/HELPLIB\$HELPLIB/

Filename	Size	Write Protected	Date	Time
Info	40	Protected	87/04/13	15:30
TEXT\$BUS1	545	Protected	00/05/04	00:23
TEXT\$BUS2	538	Protected	00/05/04	00:24
TEXT\$BUS3	534	Protected	00/05/04	00:24
TEXT\$BUS4	537	Protected	00/05/04	00:24
TEXT\$BUS5	537	Protected	00/05/04	00:25
TEXT\$BUS6	653	Protected	00/05/04	00:28
TEXT\$CLKMOD1	0	Protected	00/05/04	00:29
TEXT\$INDEX	1097	Protected	00/05/04	00:22
TEXT\$IOMOD1	80	Protected	00/05/04	00:25
TEXT\$IOMOD2	253	Protected	00/05/04	00:29
TEXT\$IOMOD3	101	Protected	00/05/04	00:29

TEXT\$POD1	120	Protected	00/05/04	00:25
TEXT\$POD10	172	Protected	00/05/04	00:27
TEXT\$POD11	123	Protected	00/05/04	00:28
TEXT\$POD12	159	Protected	00/05/04	00:28
TEXT\$POD13	356	Protected	00/05/04	00:28
TEXT\$POD14	519	Protected	00/05/04	00:28
TEXT\$POD15	145	Protected	00/05/04	00:28

Contents of directory /HDR/PARTLIB\$PARTLIB/

Filename	Size	Write Protected	Date	Time
Info	40	Protected	88/02/04	11:27
PART\$146818SP	441	Protected	88/01/28	10:22
PART\$1797	301	Protected	88/01/28	10:19
PART\$2016	372	Protected	88/01/28	10:18
PART\$2444	47	Protected	88/01/28	10:19
PART\$2531	57	Protected	88/01/28	10:18
PART\$2674	1391	Protected	88/01/28	10:18
PART\$2675	513	Protected	88/01/28	10:17
PART\$2681	1286	Protected	88/01/28	10:18
PART\$27128	512	Protected	88/01/28	10:17
PART\$27256	497	Protected	88/01/28	10:17
PART\$28S42	348	Protected	88/01/28	10:22
PART\$4000	109	Protected	88/01/28	10:14
PART\$41128	130	Protected	88/01/28	10:18
PART\$4164	125	Protected	88/01/28	10:17
PART\$4256	200	Protected	88/01/28	10:19
PART\$68000	397	Protected	88/01/28	10:19
PART\$7400	90	Protected	88/01/28	10:14
PART\$7401	89	Protected	88/01/28	10:14
PART\$7402	89	Protected	88/01/28	10:14
PART\$7403	90	Protected	88/01/28	10:14
PART\$7404	87	Protected	88/01/28	10:14
PART\$7405	87	Protected	88/01/28	10:14
PART\$7406	87	Protected	88/01/28	10:14
PART\$7407	87	Protected	88/01/28	10:14
PART\$7408	90	Protected	88/01/28	10:14
PART\$7409	90	Protected	88/01/28	10:14
PART\$7410	91	Protected	88/01/28	10:14

Contents of directory /HDR/PODLIB\$PODLIB/

Filename	Size	Write Protected	Date	Time
Info	40	Protected	88/03/02	11:54

Contents of directory /HDR/PODLIB\$PODLIB/POD\$1802/

Filename	Size	Write Protected	Date	Time
PODDB\$POD_FILE	1361	Protected	87/08/31	14:12
PROGRAM\$CLR_MBIO	231	Protected	35/11/30	01:10
PROGRAM\$DMA_IND	395	Protected	35/11/30	01:11
PROGRAM\$DMA_OUTD	400	Protected	35/11/30	01:11
PROGRAM\$QWK_IO_R	998	Protected	35/11/30	01:11
PROGRAM\$QWK_IO_W	1237	Protected	35/11/30	01:11
PROGRAM\$QWK_RD	967	Protected	35/11/30	01:11
PROGRAM\$QWK_WR	1259	Protected	35/11/30	01:11
PROGRAM\$RD_DMAR	309	Protected	35/11/30	01:12
PROGRAM\$RD_TRV	319	Protected	35/11/30	01:12
PROGRAM\$SET_DMAR	958	Protected	35/11/30	01:12
PROGRAM\$SET_MBIO	1154	Protected	35/11/30	01:12
PROGRAM\$SET_TRV	816	Protected	35/11/30	01:12
PROGRAM\$WR_DMA_V	681	Protected	35/11/30	01:12

Contents of directory /HDR/PROGLIB\$PROGLIB/

Filename	Size	Write Protected	Date	Time
PROGRAM\$A_TABLE	19873	Protected	00/05/04	00:20
PROGRAM\$BACKUP	75	Protected	88/08/24	22:27
PROGRAM\$BINSTALL	87	Protected	88/08/24	22:28

Contents of directory /HDR/SYSDISK/

Filename	Size	Write Protected	Date	Time
PI_START	8	Protected	88/09/14	14:06

Contents of directory /HDR/SYSDISK/HELP/

Filename	Size	Write Protected	Date	Time
DEBUG	1840	Protected	88/09/15	09:19
HELPLIB	2458	Protected	88/09/15	09:20
NODE	2512	Protected	88/09/15	09:20
PART	2709	Protected	88/09/15	09:20
PARTLIB	2063	Protected	88/09/15	09:20
POD	2015	Protected	88/09/15	09:20
PODLIB	2071	Protected	88/09/15	09:20
PROGLIB	2361	Protected	88/09/15	09:20
PROGRAM	33656	Protected	88/09/15	09:20

REF	1865	Protected	88/09/15	09:20
RESPONSE	3053	Protected	88/09/15	09:20
TEXT	2430	Protected	88/09/15	09:20
USERDI5K	3686	Protected	88/09/15	09:20
UUT	5036	Protected	88/09/15	09:20
VTERM	2835	Protected	88/09/15	09:20

## Contents of directory /HDR/SYSDISK/PROFILES/

Filename	Size	Write Protected	Date	Time
DEBUG	219	Protected	88/09/15	09:19
HELPLIB	190	Protected	88/09/15	09:19
NODE	223	Protected	88/09/15	09:19
PART	203	Protected	88/09/15	09:19
PARTLIB	189	Protected	88/09/15	09:19
POD	201	Protected	88/09/15	09:19
PODLIB	181	Protected	88/09/15	09:19
PROGLIB	189	Protected	88/09/15	09:19
PROGRAM	234	Protected	88/09/15	09:19
REF	203	Protected	88/09/15	09:19
RESPONSE	245	Protected	88/09/15	09:19
TEXT	216	Protected	88/09/15	09:19
USERDISK	210	Protected	88/09/15	09:19
UUT	241	Protected	88/09/15	09:19
VTERM	189	Protected	88/09/15	09:19

## Contents of directory /HDR/TMP/

Filename	Size	Write Protected	Date	Time
=====	=====	=====	=====	=====

## Contents of directory /HDR/UUT\$ABC/

Filename	Size	Write Protected	Date	Time
Info	40	Protected	87/02/05	09:16
NODE\$NODELIST	525	Protected	88/02/09	15:19
PROGRAM\$ADDR_OUT	4895	Protected	88/02/16	14:07
PROGRAM\$EXT_SYNC	2092	Protected	88/02/08	16:50
PROGRAM\$POD_SYNC	1388	Protected	88/02/08	16:47
PROGRAM\$RECOVER	2751	Protected	88/02/03	10:31
PROGRAM\$TEST1	2782	Protected	88/02/08	16:40
PROGRAM\$TEST2	444	Protected	88/02/08	16:43
REF\$REFLIST	321		87/04/30	07:42
RESPONSE\$ADDR_OUT	196		88/02/25	16:33

## Print the BACKUP.DIR File

To print a hardcopy of the BACKUP.DIR file use, the following procedures:

To print from the Application Interface:

1. Select the MAIN MENU PRINT function (F4 Softkey), and enter a null UUT (space key). The TEXTFILE entry should be BACKUP.DIR, and the port should be PORT1 or PORT2 depending on where the printer is connected. (Use SETUP to configure the port.)
2. Press the ENTER/YES key to initiate printing once all parameters are entered correctly.

To print from the Programmers Interface:

1. Select the COPY (F4) softkey to print the file.
2. At the prompt 'FROM NAME', enter /HDR/BACKUP.DIR.
3. At the prompt 'TYPE', press the field select key to select TEXT.
4. At the prompt 'TO NAME', enter /PORT1 or /PORT2 depending on which port the printer is connected.
5. At the prompt 'TYPE', press the field select key to select PORT.

## FORMAT TAPE

Format the tape prior to backup. Press the FORMAT TAPE softkey to start the format program running and return it to the softkey menu. Because the formatting process takes approximately 30 minutes to complete, the format program runs in the background. You can continue editing or running TL/1 programs while the formatting progresses.

### *NOTE*

*Once the formatting process has begun, the tape drive acts on its own to perform the process and ignores commands from the 9100A. The process continues until the entire tape is formatted.*

## UNLOAD TAPE

Unload the tape in the tape drive before storage. Press the UNLOAD TAPE softkey to rewind the tape and transfer it onto the opposite reel. The unload process takes approximately 20 seconds. When the tape finishes unloading, the program returns to the backup menu.

## ERROR MESSAGES

### Error Messages During Backup Operations

Error messages that you may encounter during backup operations are divided into three categories. Category I is a list of error messages that may occur due to a user error, (the file or directory name not entered in correctly, the file or directory does not exist), or a media failure (the tape or floppy disk is bad). Category II is a list of error messages that may occur due to internal hard disk, floppy disk, or external tape operation. Category III is a list of error messages that may occur due to a system software failure.

The following is a list of Category I error messages:

```
Can't open medium on <device>  
Can't open target device  
Can't open backup device  
Can't set path description options
```

The operating system was unable to open a channel to the backup hardware. Typically this occurs if the hardware driver software is not loaded. In that case, it may be necessary to reload the software from the master backup disk. Problems also result from a powered-down tape drive or a broken SCSI cable between the drive and the 9100A.

```
Error occurred writing a file mark
```

The tape driver reported an error when the backup program attempted to write a 'file mark' onto the tape.

```
<pathname> is not a directory  
Can't find target dir <pathname>  
Can't open destination path
```

The pathname during a backup or restore operation may be entered incorrectly.

```
File spread over too many media
```

The backup software has a built-in limitation for any one file to be distributed over a maximum of four disks. It is not possible to archive a file larger than 2.4 megabytes onto floppy disks.

```
Error saving <filename>
```

A write error occurred on the backup media while copying the specified file onto it.

```
ID block checksum wrong. Stored: <hex number>,  
  calculated: <hexnumber>  
Can't read file mark  
Read error on drive  
File header checksum bad  
Indent data block is corrupt  
Error reading tape volume  
Error while clearing tape mark block  
Can't seek to index  
Can't read media  
Can't read file mark  
Device returned read error  
Can't write to this media, try another
```

The media is so damaged that the backup program cannot use it.

Error while rewinding tape

The tape driver reported an error when it tried to rewind the tape drive.

Read error on first block of volume

The backup program couldn't read the tape or disk when it attempted to check the write/readability of the media.

Wrong disk for this dir: <directory>  
Wrong tape for this dir: <directory>

The wrong tape or disk from a backup set was inserted.

Can't read index structure Index not found

The backup operation was aborted before the index was written onto the media.

This tape is empty!

No data has been placed on the tape.

The following is a list of Category II error messages:

```
Can't get index info from temp file
Can't seek on temp file
Can't get tempfile options
Can't create tempfile '<filename>'
```

The backup programs build a potentially large temporary file to keep an index tree of the files on the backup media. This message results when a failure occurs while trying to create or use this file.

```
Can't acquire path to working directory

<filename> can't be fully restored
Can't create '<filename>'
Can't open '.'
Can't open <filename>, it's being skipped
Can't open current working directory
Can't create file: <filename>
Can't make dir: <directory>
Can't create: <filename>
Can't delete <filename>
<filename> can't be restored
Error writing <filename>
Warning, can't open <filename>
Warning, can't get fd for <filename>
Can't cd to <directory>, it's being skipped
Can't reopen <filename> -err <OS system error>
Can't seek to file
Can't seek in <filename> -err <OS system
error>
```

A read or write error has occurred on the hard disk.

Backup dates file has an improper format

The backup dates log file has been damaged.

Couldn't get current directory

The program 'pd' is missing from the disk and may need to be reloaded. (See "Software Installation".)

The following is a list of Category III error messages:

Couldn't allocate enough memory  
Couldn't allocate file buffer  
Can't allocate buffer space, couldn't allocate  
memory

Not enough memory was available to create the  
block buffers used by the program.

## **Error Messages from Main Menu**

The following fault messages are displayed when an error  
occurs in the 9100A during backup or restore operations:

Error running format program  
Error running backup program  
Error running restore program

The program was not executable. It may have  
become damaged and you may need to reload it.  
(See "Software Installation")

Memory too fragmented to run

The program could not allocate a large enough  
block of memory from the system. It may be nec-  
essary to reboot the machine to consolidate the  
memory. At least 3M bytes of system memory  
(RAM) are required.

Tape device is busy

The message occurs if any operation is attempted  
on the tape drive while tape format is in progress.

Can't open the tape descriptor!

The information file for the tape driver was not present or was damaged. It may need to be reloaded from the master backup disk using the TL/1 'bininstall' program.