HP250 Utilities Manual

Manual Part No. 45260-90061

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Printing History

New editions of this manual will incorporate all material updated since the previous edition. Update packages may be issued between editions and contain replacement and additional pages to be merged into the manual by the user. Each updated page will be indicated by a revised date at the bottom of the page. Note that pages which are rearranged due to changes on previous page are not are not considered revised.

The manual printing date and part number indicate its current edition. The printing date changes when a new edition is printed. (Minor corrections and updates which are incorporated at reprint do not cause the date to change.) The manual part number changes when extensive technical changes are incorporated.

November 1981 ... First Edition
January 1982 ..... Update No.1
January 1983 ... Second Edition

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Preface

HP 250 Utility Revision Codes

The revision code of each HP 250 Utility appears in the upper left corner of the screen in the form X.##.##.Y, where X.##.## indicates the currently loaded operating system, and Y indicates the revision code of the particular utility in use. This table shows the revision code for each HP 250 Utility that was included in the most recent releases of the HP 250 Utilities Package.

Utility Name	---Operating System Version--- A.03.04	B.04.02	B.05.00
CONFIG	D	E	F
AFIG	B	B	C
MFIG	D	D	E
RFIG	D	E	F
TFIG	none	none	B
XFIG	none	A	C
BACKUP	A	D	E
CFORM	C	C	D
DBLOAD	D	D	E
DBMODS	B	B	C
DBUNLD	D	D	E
DUPL	D	E	F
EDITOR	B	B	C
FVBACK	none	E	F
INIT	C	F	G
LK3000	C	C	D
MFORM	C	C	D
PFORM	B	B	C
RECOVR	A	C	D
REPACK	none	none	A
ROUTIL	D	D	E
SCHEMA	B	B	C
TAPEFIX	none	A	B
TEST	C	B	C
WORK	B	B	C
XREF	B	B	C

Description of HP 250 DROMs

EUROPE: allows lexical comparison of strings of non-US ASCII characters.

PACK: allows packing and unpacking string data in IMAGE/250.

IMAGE: allows use of the HP 250 data base structure.

SORT: is used in data base selection and sort routines.

REPORT: allows use of the HP 250 Report Writer.

FORMS: allows use of HP 250 forms.

EUR71: allows European characters to be printed on the HP 9871.

RIO: allows use of workstations other than the integral desk workstation. RIO is automatically loaded on systems other than the desk model.

TIO: allows use of asynchronous data communications.

TRACE: allows use of the program TRACE feature in BASIC.

P2608: allows use of the HP 2608 printer.

TRIG: allows use of trigonometric functions in BASIC.

MATRIX: allows manipulation of matrices in BASIC.

SPOOL: allows printing reports to spool files on disc, to be printed later with the COPY DROM.

CS250: allows synchronous data communications capabilities. See the DSN/INP manual.

MEDIA: allows use of flexible discs formatted by the IBM 3740, and flexible discs and tape cartridges in HP Interchange Format.

IMAGE2: allows predicate data base locking in IMAGE/250.

TASK: allows use of background (secondary) tasks.

COPY: allows printing of spool files created with SPOOL DROM.

IMAGEU: allows use of data base utilities in IMAGE/250.

TIMER: tracks the date and time.

CTRACE: allows tracing of synchronous data communications, described in DSN/INP manual. **P2601**: allows use of the HP 2601 or HP 2602A printer.

SYSRR: prints the system status report after a system error or crash.

DCACHE: provides the Disc Directory Cache feature.

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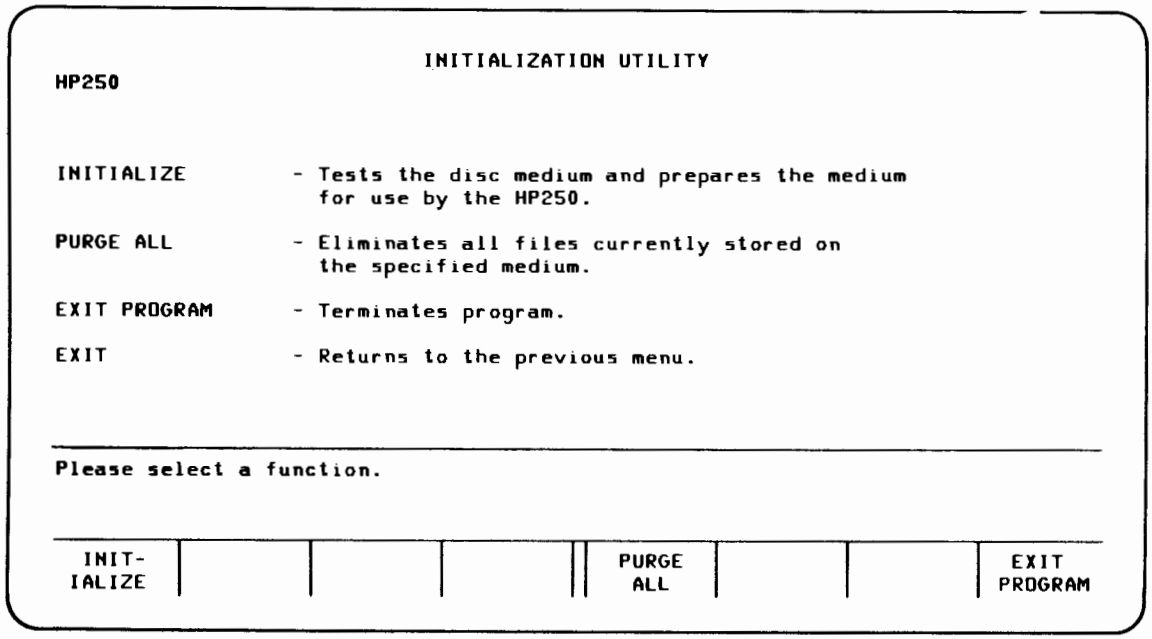
CHAPTER 1
Media Initialization

The INIT Program

The INIT program is a run-only BASIC language utility which tests media for defective tracks, establishes physical records, and creates both main and spare file directories. To run the program, first be sure that the medium containing utilities is on-line. Then execute the following:

```
RUN"INIT"
```

The initial menu is:

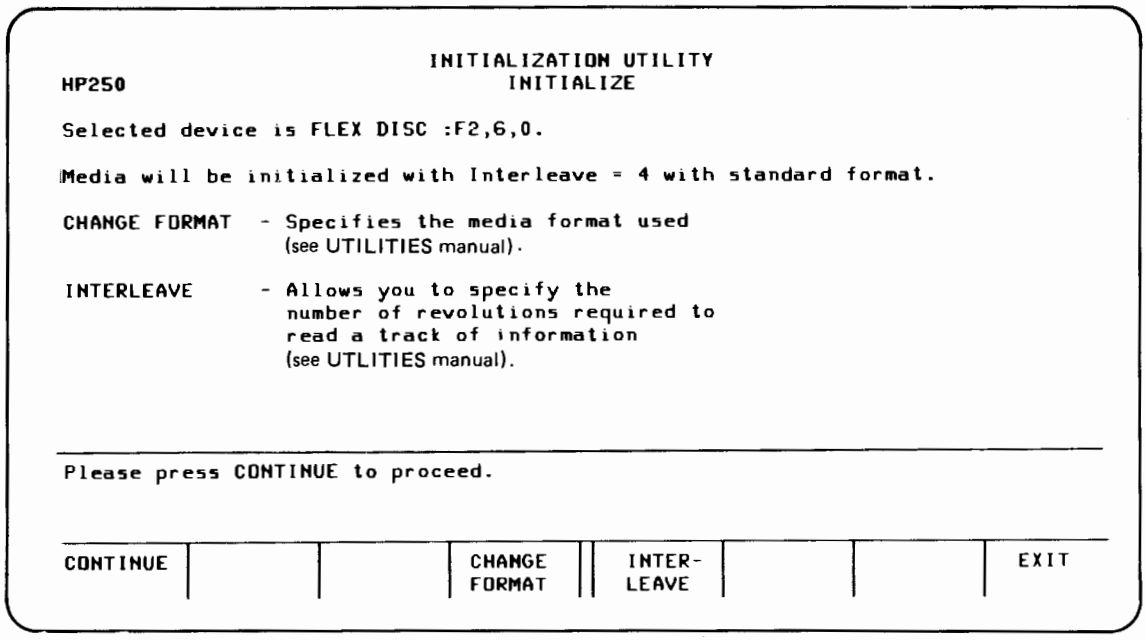


To initialize a blank medium, first press the INITIALIZE softkey. The display now indicates the mass storage devices which are on-line; "unavailable" indicates an empty drive; "uninitialized" indicates a blank medium.

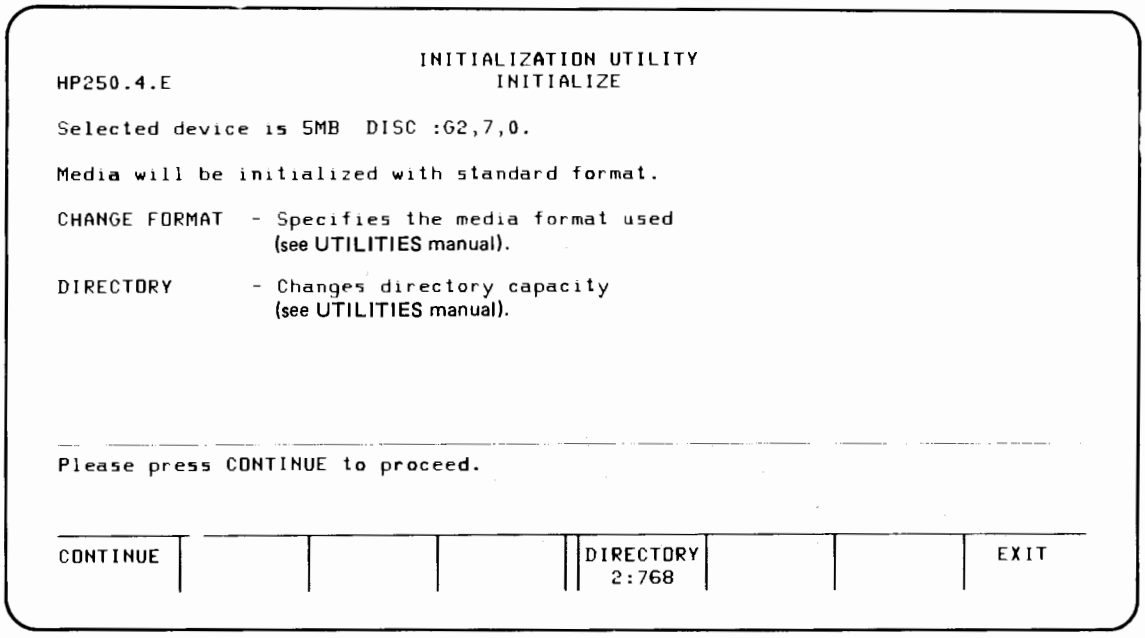
Initialize

Press the appropriate softkey to select the medium to be initialized. The next menu will be similar to one of the following:

Flexible Disc



5 Mb. Disc



Change Format

To specify an alternate media format, press CHANGE FORMAT until the desired format appears on the screen. The HP interchange format allows you to use the media on other compatible HP systems. The IBM format allows you to use the media on both HP 250 and compatible IBM systems.* A disc interleave of 1 should be used with the IBM format.

Interleave

Track Interleave refers to the number of disc revolutions needed to read a complete track of information from a disc. You may want to alter the disc interleave for certain less common applications. Refer to the chart below for the default interleave and legal range for each disc.

Disc	Default Interleave	Possible Interleave Values
7910	1	1
7908	1	1-29
7906	1	1
Flexible	4	1-29
7911	1	1-29
7912	1	1-29
5 Mb. Disc	1	1
10 Mb. Disc	1	1

To specify an alternate interleave format, press the INTERLEAVE softkey and enter the desired format number for the disc.

Directory

Applications involving a large number of files may necessitate an increase in the size of the directory. The directory softkey displays the current number of tracks specified for the directory itself and the number of files that the directory may contain.

See the table of Directory Sizes.

NOTE

When duplicating one disc from another, both discs must have the same directory sizes.

---

*Specifying the IBM initialization format only allows flexible discs to be used on either an HP 250 or an IBM system. It does not enable one system to read data written on the disc by the other system; that requires unique software. In addition, an IBM data structure may need to be established on the disc. Refer to the Media/250 Programming Manual for more details.

If a message indicates that a tape is unavailable when a tape is really in the drive, you may have one of these situations:

1) Disc is uninitialized. In this case, switch from disc buffered mode to memory buffered mode. Use the DIRECT command as described in Chapter 6 of the BASIC manual.

2) Tape was removed from another drive. Run TAPFIX as described in Chapter 6 of this manual to check the status of the tape.

3) Drive is waiting for another tape. Run TAPFIX as described in Chapter 6 of this manual to check the status of the tape.

4) Tape is not loaded properly. Eject the tape from the drive, and reinsert it, allowing it to load properly.

Directory Sizes

Tracks for Directory		File Entries
5 Mb. Disc and 10 Mb. Disc		
1	default (5 mb)	368
2	default (10 mb)	768
3		1168
4		1568
5		1968
6		2352
7		2752
8		3152
9		3552
10		3952
11		4336
12		4736
13		5136
14		5536
15		5936
7906		
1	default	592
2		1200
3		1824
4		2432
5		3056
6		3664
7		4272
8		4896
9		5504
10		6128
11		6736
12		7344
13		7968
14		8576
15		9200
7908		
1		352
2		720
3		1104
4	default	1472
5		1840
6		2224
7		2592
8		2960
9		3344
10		3712
11		4080
12		4464
13		4832
14		5200
15		5584

Tracks for Directory		File Entries
7910		
1		384
2	default	800
3		1200
4		1616
5		2032
6		2432
7		2848
8		3248
9		3664
10		4080
11		4480
12		4896
13		5296
14		5712
15		6128
7911 and 7912		
1		656
2		1344
3	default	2032
4		2704
5		3392
6		4080
7		4752
8		5440
9		6128
10		6800
11		7488
12		8176
13		8848
14		9536
15		10224
Flexible Disc		
1		352
150 Ft. Tape		
6		4080
600 Ft. Tape		
6		4080

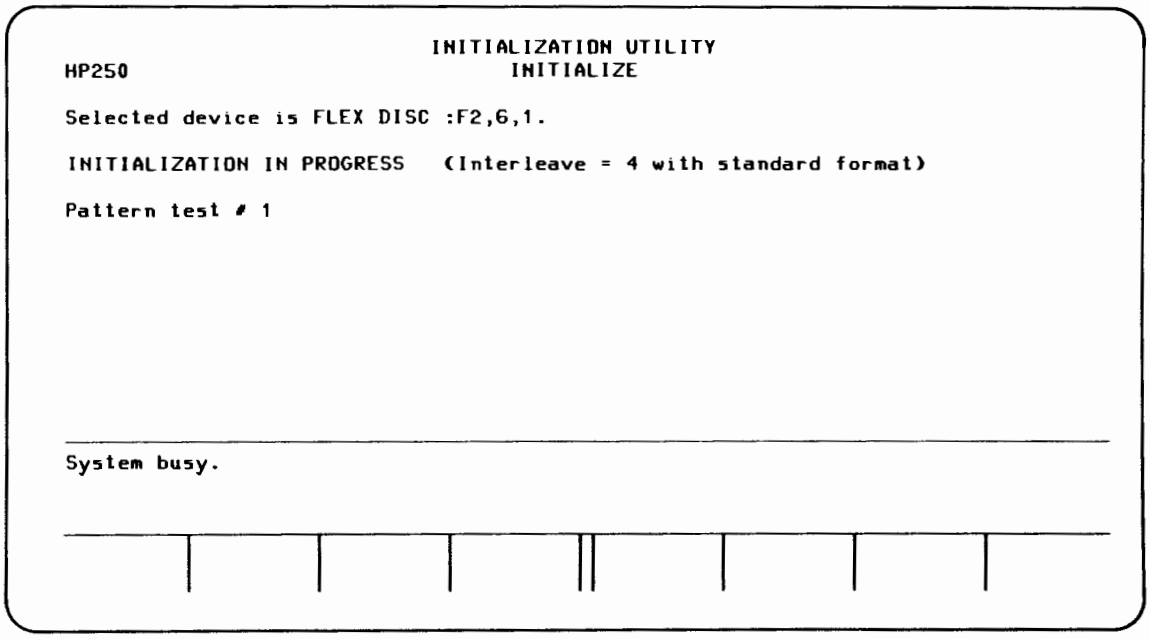
A tape cartridge has a fixed directory size. 384 sectors allow for 4080 file entries.

To begin initialization, press CONTINUE. Times are as follows:

Disc	Size	Initialization Time*
7910	11.7 megabytes	2 minutes
7912	64 megabyte	35 minutes
7911	27.5 megabyte	15 minutes
7908	16.7 megabyte	25 minutes
7906	9.8 megabyte	30 seconds
Flexible	1.2 megabyte	10 minutes
5 Mb. Disc	4.7 megabyte	6 minutes
Tape	16 megabyte	20 minutes
Tape	67 megabyte	70 minutes
10 Mb. Disc	9.4 megabyte	13 minutes

* These times may vary if bad tracks/sectors/blocks are spared.

The display indicates each test being performed. If a defective disc track is found, its number remains displayed. For tapes, only the total number of spared blocks is displayed.



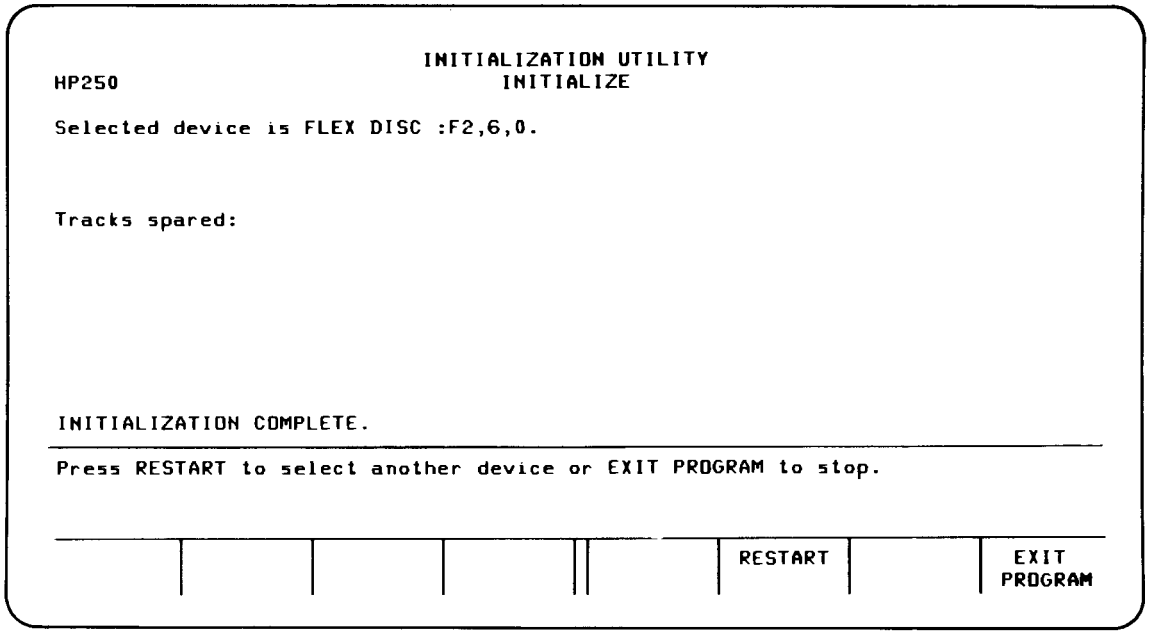
While tape initialization is done with one pattern test, disc initialization is performed with varying numbers of pattern tests. Each media has its own limit in regard to the tolerated number of spared tracks. (See the charts on the next page.)

Disc	Pattern Tests	Maximum Tracks Spared Before Media is Unusable
7910	1	6
7912	8	15
7911	8	15
7908	8	15
7906	1	20
Flexible	5	4
5 Mb. Disc	1	1 sector per track spared (no track sparing)
10 Mb. Disc	1	

If you do not exceed these limits, the number of tracks "spared" or substituted for defective tracks is shown. As mentioned previously, block sparing not track sparing, is done on tapes.

Tape	Pattern Tests	Number of Blocks Spared Before Tape is Unusable
150 ft.	1	32
600 ft.	1	128

The final display is:

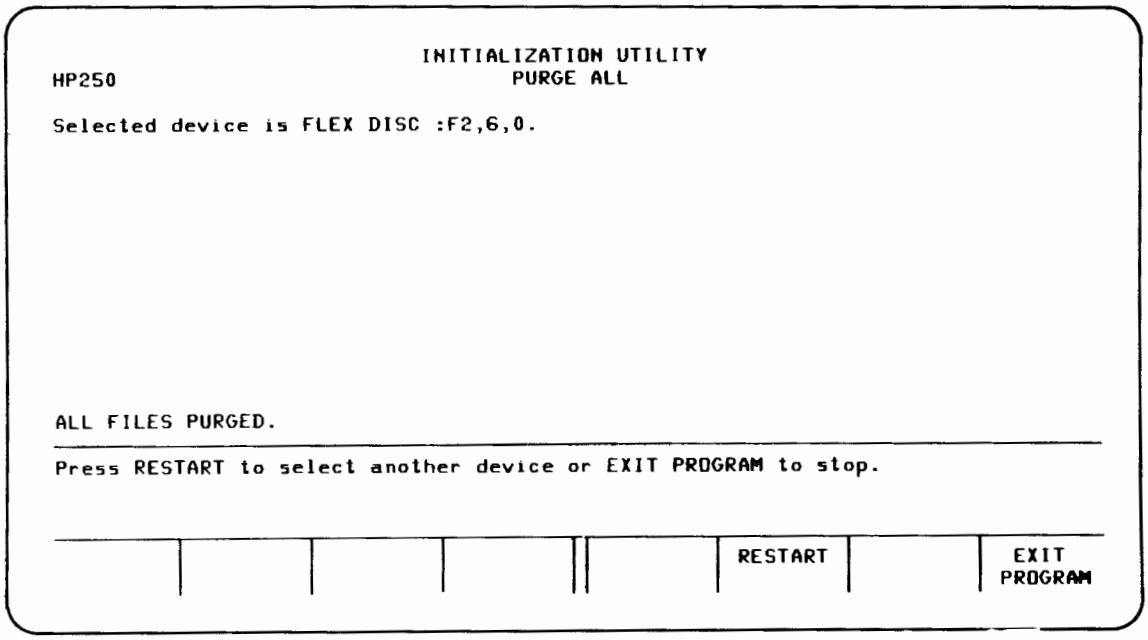


If a data-recovery error occurs during initialization, the utility cannot read data from the media. This may be caused by a defective media, or dust on the media surface. To verify the error, attempt to initialize the media again.

Purge All

The purge-all routine re-initializes the main and spare directories on a medium, in effect performing a "fast initialization". This routine does not test the entire media, and cannot be used on new (blank) media.

To purge all files, first press the PURGE ALL softkey. Then select the drive holding the medium to be purged. Next, press the CONTINUE softkey to start the routine. PURGE ALL takes only a few seconds.



CHAPTER 2

System Configuration

The CONFIG Program

The CONFIG (configuration) program allows a programmer to review and change system software configuration, read/write memory assignment, default peripheral addresses, and autostart. Software which can be reconfigured to be loaded at power-on includes DROMs (dynamic relocatable option module), primary and alternate keyboard sets, and special I/O driver routines.

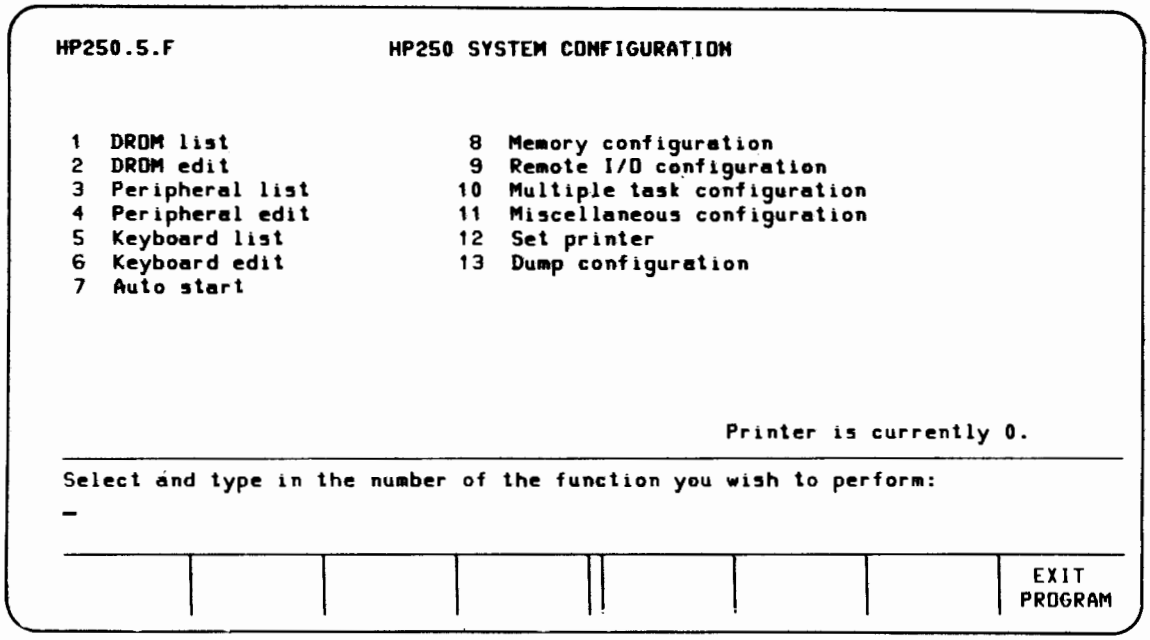
The CONFIG program is a BASIC-language utility which uses binary routines to alter the operating system configuration. Using CONFIG does not erase software, but merely changes the status of each software module to be either loaded or not loaded at power-on. CONFIG is distributed with the operating system on both disc and tape.

The system configuration is a part of the SYSTEM file. If multiple SYSTEM files reside on the system on different discs, the configuration will be read from the SYSTEM file on the MSI device. If no SYSTEM file is found there, all other devices will be searched and the configuration will be read from the first SYSTEM file found.

To run CONFIG, first load the SYSTEM. Then type in and execute the following:

```
RUN"CONFIG"
```

The menu appears:



1,2 DROM List/Edit - Allows you to list and change the "load at power-up" status of DROM files.

3,4 Peripheral List/Edit - Allows you to list or change the device address assigned to any available special I/O drivers.

5,6 Keyboard List/Edit - Allows listing or changing the primary and secondary keyboards loaded at power-on.

7 Autostart - Specifies a message or command to be displayed or executed immediately after the system is loaded at power-on.

8 Memory Configuration - Allows changing the read/write memory configuration established at power-on.

9 Remote I/O Configuration - Allows specifying the type of device to be connected to each I/O port of the data comunications interface.

10	Multiple Task Configuration	- Allows you to associate TASK ID's to workstation ports or secondary tasks, and then specify memory size and execution priority for each TASK ID.
11	Miscellaneous	- Allows you to change the default mass memory device, configure the number of directory cache entries and disable the marking of files as "not backed up".
12	Set Printer	- Allows you to specify the device to output configuration lists.
13	Dump Configuration	- This selection appears when a device other than the display is specified using the Set Printer routine. Selecting Dump Configuration outputs all configuration tables to the currently specified printer.

NOTE

If ERROR 2 occurs while running CONFIG, the computer does not have sufficient user memory to continue. To re-configure the user memory, run the MFIG utility as described in this Chapter. In a configuration sequence make any changes to remote I/O configuration before configuring multiple tasks.

NOTE

Any changes in a configuration do not become effective until the operating system is reloaded. Therefore, power the system off and then on again.

Listing and Editing DROM Status

To list the DROMs which are loaded at power-on, enter l during the initial menu. Here's an example list:

```
                                HP250 SYSTEM CONFIGURATION
HP250                                   DROM LIST

                                  AUTO     CURRENTLY
NAME      REVISION     SIZE       LOAD      LOADED

EUROPE    08/25/81      576
PACK      08/25/81     1334        X          X
IMAGE     08/26/81    17040        X          X
SORT      08/25/81     6702        X          X
REPORT    08/25/81     6578        X          X
FORMS     08/25/81     1186        X          X
EUR71     08/25/81      392
RIO       08/29/81     4390                   X
TIO       08/25/81     5138
TRACE     08/25/81     1914

Please select a function.

CONTINUE                                                              EXIT
```

An X in the AUTO LOAD column means that the corresponding DROM is configured and will be loaded at the next power-on. An X in the CURRENTLY LOADED column means that the DROM was loaded when the system was last powered-on.

Although DROM space can be spread over multiple blocks, a single DROM must fit completely within one block. The "Largest Available Space" refers to the largest space left within one block. The "Total Available Space" refers to the total space remaining over multiple blocks.

NOTE

DROM space is calculated based on the currently LOADED memory configuration - not on the configuration stored on disc.

Press CONTINUE to display the remainder of a long listing.

Press EXIT to return to the initial menu.

To edit DROM status, enter 2 during the initial CONFIG menu. Here's an example menu:

```
HP250.5.F                HP250 SYSTEM CONFIGURATION
                              DROM EDIT

 #  NAME      AUTO LOAD   #  NAME      AUTO LOAD   #  NAME      AUTO LOAD   #  NAME      AUTO LOAD
 1  EUROPE                9  TIO                  17  IMAGE2                25  DCACHE
 2  PACK      X          10  TRACE                18  TASK
 3  IMAGE     X          11  P2608                19  COPY
 4  SORT      X          12  TRIG                 20  IMAGEU    X
 5  REPORT    X          13  MATRIX               21  TIMER
 6  FORMS     X          14  SPOOL                22  CTRACE
 7  EUR71                15  CS250                23  P2601     X
 8  RIO       X          16  MEDIA                24  SYSRR

                                        Largest available space:   5472
                                        Total unused DROM space:   8168

Please select a function.

| EDIT |  |  | RECORD CONFIG | OLD LIST |  |  | EXIT |
```

Now press the EDIT softkey, enter the DROM number from the displayed list, and press ⇧. (A flashing X in the list indicates that there isn't enough room for the DROM in the configuration currently running.) Then press the RECORD CONFIG softkey to change the disc configuration.

To restore the original DROM configuration (before the disc has been updated), press OLD LIST.

Press EXIT to return to the initial CONFIG menu.

Peripheral Address List and Edit

To display a list of I/O driver routines and their current device address assignments, enter 3 during the ini+ial CONFIG menu. Here's a sample list:

```
                              HP250 SYSTEM CONFIGURATION
HP250                               PERIPHERAL LIST

SELECT               DEFINED                               CURRENT
 CODE          DEVICE         DRIVER                DEVICE          DRIVER

   0           *None*         *None*                *None*          *None*
   1           NONSTD         P2608   (66/6)        NONSTD          P2608
   2           *None*         *None*                *None*          *None*
   3           *None*         *None*                *None*          *None*
   4           *None*         *None*                *None*          *None*
   5           *None*         *None*                *None*          *None*
   6           FLEX DISC      SYSTEM                FLEX DISC       SYSTEM
   7           7908/CTD       SYSTEM                7908/CTD        SYSTEM

Please select a function.

                                                                          EXIT
```

The device address assigned to each SYSTEM I/O driver cannot be changed. To change the device address assigned to a non-standard I/O driver, first press EXIT to return to the initial menu. Then enter 4 to run the peripheral edit routine.

```
HP250.5.F                HP250 SYSTEM CONFIGURATION
                              PERIPHERAL EDIT

PERIPHERAL CONFIGURATION:

SELECT                                          DRIVER
 CODE        DEVICE          DRIVER             NUMBER   NAME       TYPE

   0         2631B           SYSTEM               0      *None*
   1         *None*          *None*               1      P2608      Display class
   2         *None*          *None*
   3         7911/CTD        SYSTEM
   4         7908/CTD        SYSTEM
   5         13037           SYSTEM
   6         FLEX DISC       SYSTEM
   7         5MB  DISC       SYSTEM

Please select a function.

 EDIT |      |      | RECORD  | OLD LIST |      |      | EXIT
      |      |      | CONFIG  |          |      |      |
```


The I/O drivers which can be re-assigned are now listed on the right. Press the EDIT softkey, enter the device address (select code) to be changed, and press ⏎ . (The entry will not be accepted if it is already assigned to a SYSTEM driver.) Then enter the driver number to be assigned and press ⏎ . Enter 0 to de-assign a driver from its device address. Press the RECORD CONFIG softkey to change the disc configuration.

If you wish to return to the original configuration list (before it has been updated), press the OLD LIST softkey.

Press EXIT to return to the initial CONFIG menu.

Keyboard List and Edit

To list the keyboards available, enter 5 during the initial CONFIG menu. Here's a sample listing:

```
                          HP250 SYSTEM CONFIGURATION
HP250                           KEYBOARD LIST

KEYBOARD NAME       TYPE          AUTO LOAD

US                  PRIMARY       MAIN
FRENCH              PRIMARY
GERMAN              PRIMARY
ITALIAN             PRIMARY
SPANISH             PRIMARY
SWEDISH             PRIMARY
UK                  PRIMARY
DANISH              PRIMARY
KATAKANA            SECONDARY
QUEBEC              PRIMARY
LINE DRAW           SECONDARY     AUXILIARY       ALTERNATE CHARACTER SET:
                                                     ROMAN EXTENSION

Please select a function.

                                                                    EXIT
```

Press EXIT to return to the initial CONFIG menu.

To change the primary or secondary keyboards loaded during power-up, enter 6 during the initial CONFIG menu:

```
HP250.5.F                 HP250 SYSTEM CONFIGURATION
                                 KEYBOARD EDIT

#    KEYBOARD NAME       TYPE          AUTO LOAD

1    US                  PRIMARY       MAIN
2    FRENCH              PRIMARY
3    GERMAN              PRIMARY
4    ITALIAN             PRIMARY
5    SPANISH             PRIMARY
6    SWEDISH             PRIMARY
7    UK                  PRIMARY
8    DANISH              PRIMARY
9    KATAKANA            SECONDARY
10   QUEBEC              PRIMARY
11   LINE DRAW           SECONDARY     AUXILIARY   ALTERNATE CHARACTER SET:
                                                      ROMAN EXTENSION

Please select a function.

EDIT MAIN |   EDIT    |  CHANGE  |  RECORD  ||OLD LIST |      |      |  EXIT
          | AUXILIARY | CHAR SET |  CONFIG  ||         |      |      |
```

The keyboards currently available are listed. To change the main (primary) or auxiliary (secondary) keyboard, first press either EDIT MAIN or EDIT AUXILIARY. Then enter the keyboard number to be changed. Press RECORD CONFIG to change disc configuration. The new keyboard is loaded during power-up.

NOTE

The auxiliary keyboard is accessed by pressing  on the desk model. On a 2662D, press 

The CHANGE CHAR SET key allows you to change the alternate character set.

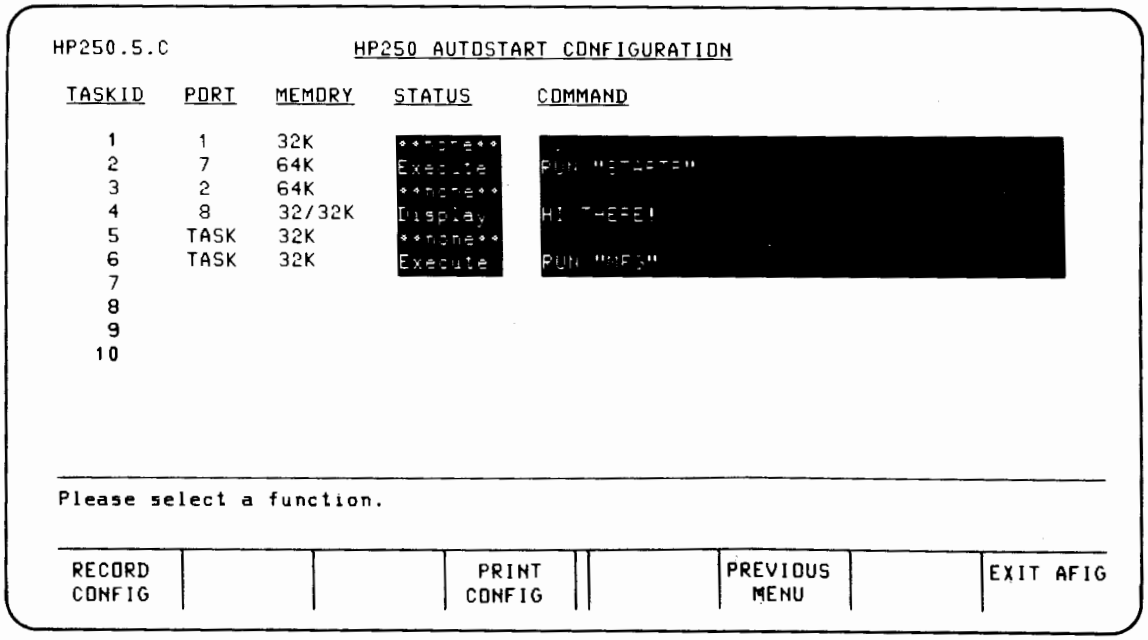
This softkey is available only if the main keyboard is a U.S. keyboard and the auxiliary keyboard is a Line Draw keyboard. This function allows you to select either Katakana or Roman extensions as the alternate character set. For all other keyboard configurations, the alternate character set is defined by the system.

To return to the original keyboard list (before UPDATE is pressed), press OLD LIST.

To return to the initial CONFIG menu, press EXIT.

Autostart Configuration (AFIG)

The autostart routine allows each task to either display a message or execute a command immediately after the system is loaded at power-up. To run the routine, either enter 7 during the initial CONFIG menu or run the AFIG program. The initial menu is as follows:



The screen shows the task ID, I/O port number or "TASK", memory size, and current autostart status for each workstation or background task. Any current autostart message appears in a 40-character inverse video field.

To enter a command message, first position the cursor within the message field and press ALTER FIELD. Then, type in the message and press ⏎. The status is automatically set to EXECUTE the message at power-on. If you wish to only display the message, move the cursor to the status field and press ALTER FIELD. Then press DISPLAY.

To delete a command or message, move the cursor to the appropriate status field and press ALTER FIELD. Then press NONE.

To record the new autostart configuration on disc, first press NEXT MENU. Then press RECORD CONFIG. The new autostart configuration occurs when the operating system is reloaded.

NOTE

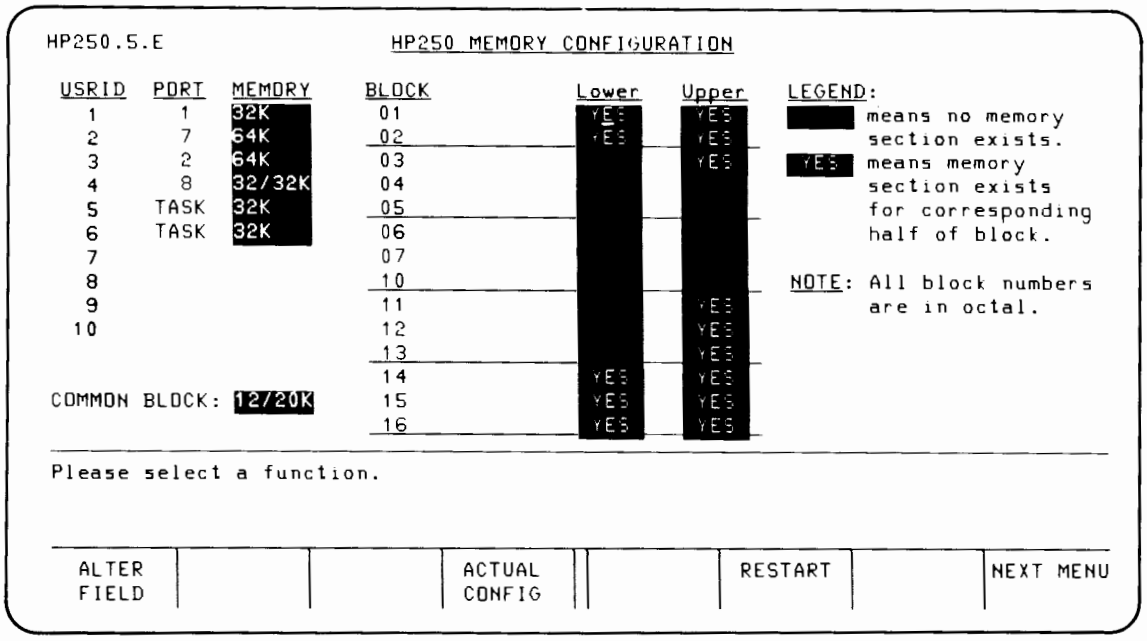
Execution of the autostart command is disabled for the main (or principal) workstation if any error messages appear at power-up.

- Press PRINT CONFIG to print a copy of the autostart configuration. A new set of keys will appear to let you specify where to print.
- Press EXIT AFIG to return to the initial CONFIG memu.
- Press PREVIOUS MENU to return to the initial AFIG menu.
- RESTART - Rereads the existing configuration and lets you start over.
- CLEAR ALL FIELDS - Clears all fields so you can re-enter everything. If pressed by mistake, press RESTART to re-read the existing configuration.

Memory Configuration (MFIG)

The Memory Configuration routine specifies the actual memory configuration of the system, selects the amount of memory for each task, and selects the amount and location of DROM overflow areas.

To run this routine, either enter 8 during the initial CONFIG menu or run the MFIG utility. The initial memory configuration screen will reflect the current configuration.



Press ACTUAL CONFIG to display the current physical system configuration. If any additional memory blocks are present, an UNEXPECTED MEMORY PRESENT message occurred at power-up. If the configuration table calls for a memory block not present, a MEMORY FAILURE message at power-up indicates the missing block. (Any of these messages suppress the Autostart routine.) The operating system is loaded in actual memory; any discrepancies affect the user memory size.

The Port column indicates TASK when the corresponding task-id number is a background task. Otherwise, this field shows the physical port number.

The COMMON BLOCK field indicates the memory area for storing common information used by workstations. In the example above, 12/20K shows 12K allotted to common storage and 20K alloted to DROMS.

You can also assign a DROM area to a portion of each task memory block, or to the common block. DROM space should first be allocated in the common block. Very few applications require the full 13K byte common area, so there is rarely a problem assigning DROM space.

After the common block area is filled, additional DROM space can be allocated in user memory blocks.

To change a field (an inverse-video area) in the table, position the display cursor within the field and press ALTER FIELD. The field either changes immediately, or softkeys offer the alternate selections. When the table is configured as needed, press NEXT MENU, and RECORD CONFIG to update the system disc configuration.

Press PRINT CONFIG to print a copy of the configuration table.

Press PREVIOUS MENU to return to the initial MFIG menu.

Press EXIT MFIG to return to the initial CONFIG menu.

Press RESTART to re-read the existing configuration and start over.

NOTE

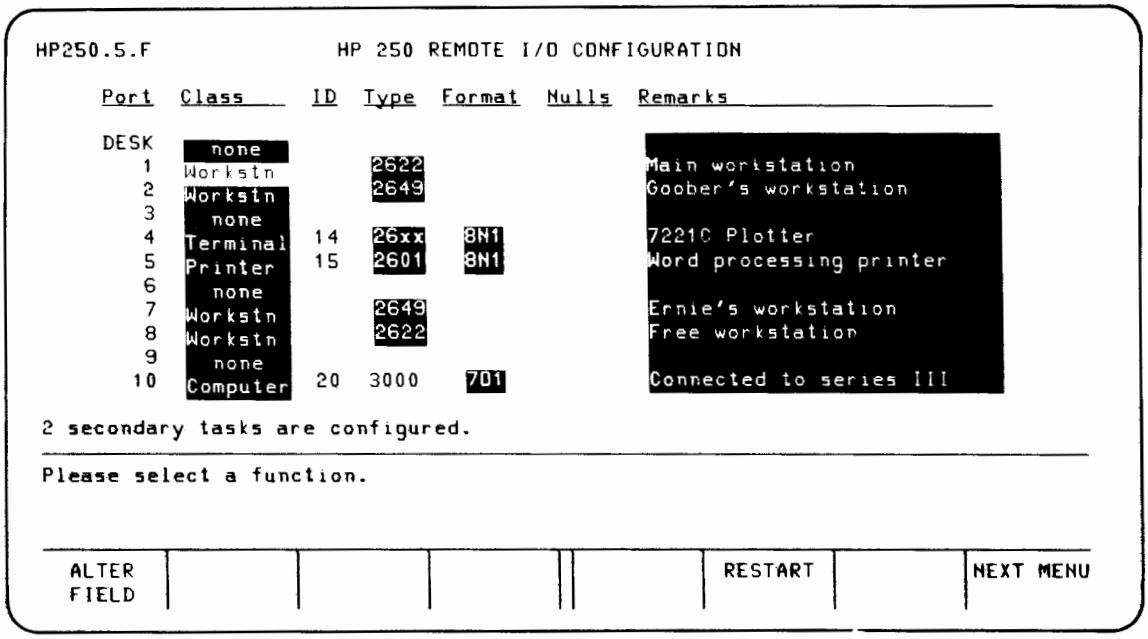
A 32K byte memory board must always be configured as an upper block.

NOTE

On multi-user systems, the DROM overflow area should be defined in the COMMON BLOCK, so that no task area is limited.

Remote I/O Configuration (RFIG)

To review and/or change the configuration for each I/O port, either enter 9 during the initial CONFIG menu or run the RFIG program. The initial menu is as follows:



This screen shows the device class (computer, terminal, printer, or workstation), device type, and data transfer format. The appropriate information of each I/O port is entered when a device is added to your system and should not be altered until system configuration changes. Here's a summary of each field:

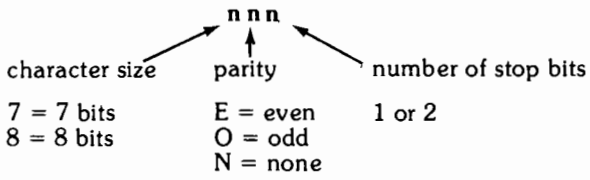
ID - Device address for each port.

Class - Device class designation: terminal, printer, computer, workstn, or none.

Port - I/O port number on ASI, or DESK for integral workstation.

Type - Specific HP product number or general class (e.g., TTY indicates teletype). Default type is entered for each class, but should be altered to indicate product number.

Format - This code summarizes the data format used:



The format needed for each device is shown in the device manual.

Nulls - indicates the number of null characters sent after every carriage return. This is to ensure that the remote device has sufficient time to do a carriage return and linefeed before it receives additional data. The manual accompanying the device describes the number of nulls necessary. (Used only if type field is TTY.)

Remarks - a 27 character field for task comments.

When system configuration is changed (e.g., a new terminal is added, or printer is removed), the appropriate line(s) in the table must be altered to reflect current configuration. To alter each field, position the cursor within the field and press the ALTER FIELD softkey.

For example, to alter the printer "TYPE" field in the previous table: Set the cursor in the field labelled 2601, press ALTER FIELD and then press TTY.

```
HP250.5.F              HP 250 REMOTE I/O CONFIGURATION

     Port  Class     ID  Type  Format  Nulls  Remarks

     DESK  none
        1  Workstn       2622                Main workstation
        2  Workstn       2649                Goober's workstation
        3    none
        4  Terminal  14  26xx  8N1
        5  Printer   15  TTY   8N1     ---    Word processing printer
        6    none
        7  Workstn       2649                Ernie's workstation
        8  Workstn       2622                Free workstation
        9    none
       10  Computer  20  3000  701             Connected to series III

2 secondary tasks are configured.

Please select a function.

 ALTER FIELD |  |  |  |  |  | RESTART |  | NEXT MENU
```

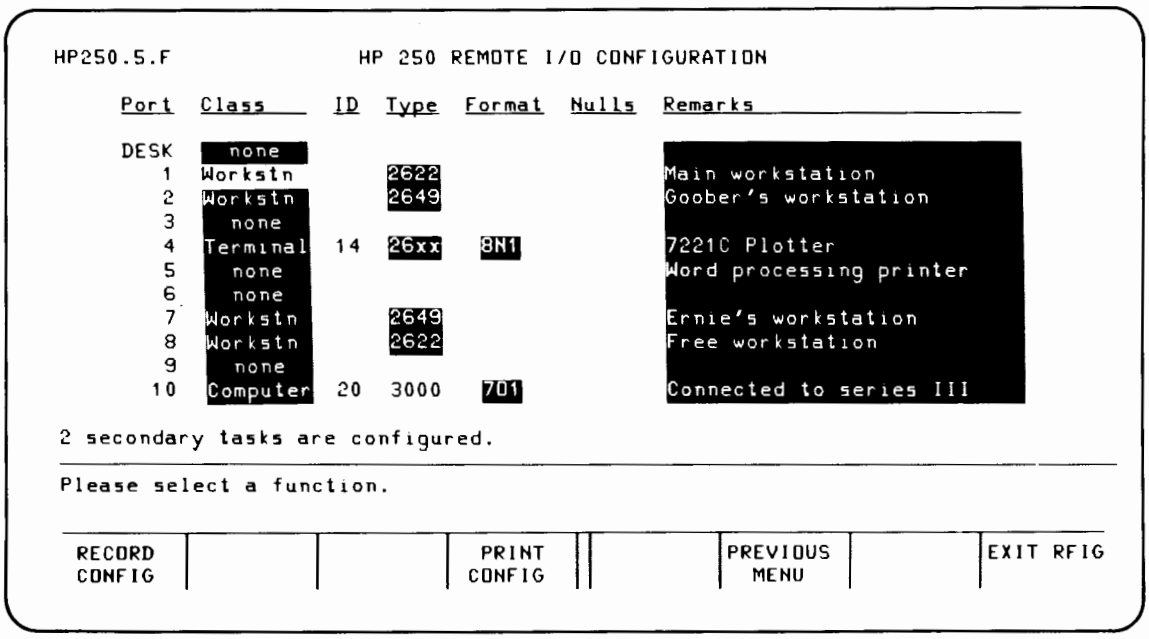
Now select a new assignment for port 5 by positioning the cursor in the field labelled Printer. Press "ALTER FIELD", then "none". To alter the Remarks line for port 5, move the cursor to the field and press ALTER FIELD:

```
HP250.5.F              HP 250 REMOTE I/O CONFIGURATION

     Port  Class     ID  Type  Format  Nulls  Remarks

     DESK  none
        1  Workstn       2622                Main workstation
        2  Workstn       2649                Goober's workstation
        3    none
        4  Terminal  14  26xx  8N1             7221C Plotter
        5    none                             Nothing here now
        6    none
        7  Workstn       2649                Ernie's workstation
        8  Workstn       2622                Free workstation
        9    none
       10  Computer  20  3000  701             Connected to series III

2 secondary tasks are configured.

Please select a function.

 ALTER FIELD |  |  |  |  |  | RESTART |  | NEXT MENU
```

Type the new remark and press ⏎ .

When an HP 2622D or HP2649D personal workstation is connected to a port, the configuration of that port must be changed. Move the cursor to the "TYPE" column for the port, and select ALTER FIELD. Two keys will appear and you select the type of workstation you have connected to the port.

To record the new I/O configuration, press NEXT MENU and then RECORD CONFIG. The new I/O configuration is not loaded, however, until the operating system is reloaded.



RECORD CONFIG - Records the cofiguration (including changes just made) on the disc. Re-boot the operating system to use the new configuration.

PRINT CONFIG - Prints a copy of the current remote I/O configuration.

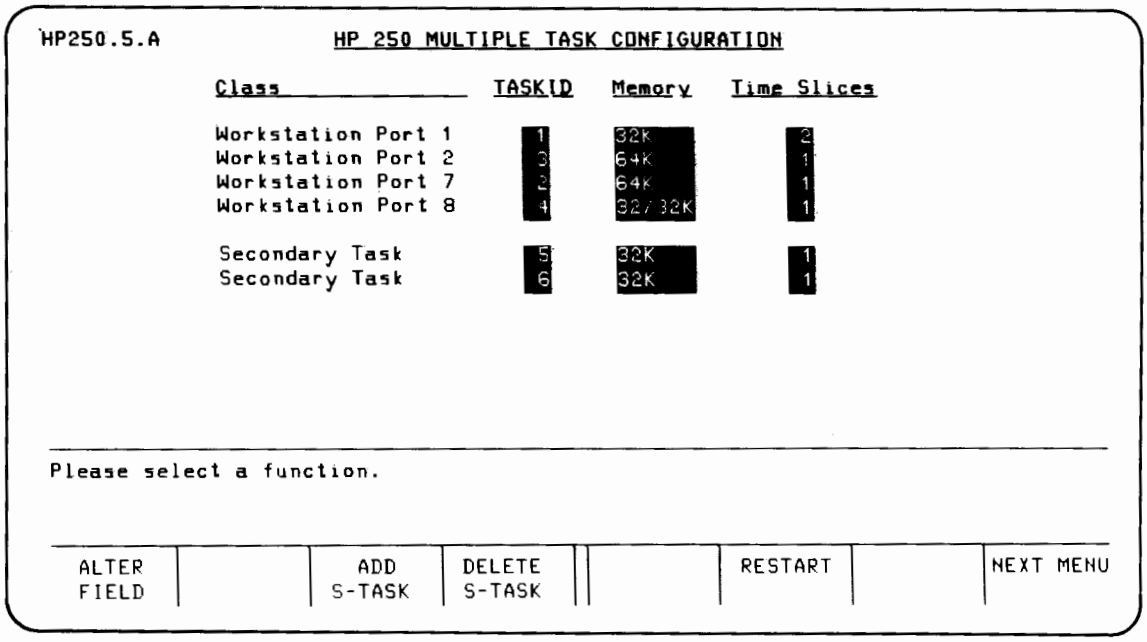
PREVIOUS MENU - Returns you to the initial I/O configuration menu.

EXIT RFIG - Returns you to the initial CONFIG menu.

RESTART - Re-reads existing configuration and lets you start over.

Multiple Task Configuration (TFIG)

TFIG lets you associate TASK ID's to workstation ports or secondary tasks, and then specify memory size and execution priority for each TASK ID.



TASKID - indicates the order that memory will be assigned to tasks at system startup time. If insufficient memory is available, memory will not be assigned to tasks with higher TASKID numbers.

MEMORY - indicates the size of the block of memory assigned to the workstation. A value after a / mark represents memory allotted to DROM overflow.

TIME SLICES - A time slice is the period of time given to each task in turn to execute. Although tasks appear to run concurrently, each task is actually sharing the CPU for a proportion of time indicated by its time slice value.

Normally, all tasks are assigned a time slice of 1 for equal processing time. To increase the performance of one task, at the expense of others, use the TIME SLICE key. A value in the range 1 to 99 can be entered.

Overall system performance cannot be improved by adjusting the time slices. When adjusting time slices, remember:

1. When input/output is in process for a task, the task relinquishes use of the CPU. Therefore, raising the time slice of an I/O-intensive application will not increase its speed much.

2. Total system performance is fixed. The speed of one task is increased at the expense of the others.

ALTER FIELD - To change an item, set the cursor there and press ALTER FIELD until the desired value appears.

ADD S-TASK - Press to add a secondary task. (Does not appear if 11 tasks are already configured.)

DELETE S-TASK - Press to delete a secondary task. (Does not appear if no secondary tasks are configured.)

RESTART - Press to display original configuration and start over.

NEXT MENU - Press to obtain softkeys for RECORD CONFIG and PRINT CONFIG.

RECORD CONFIG - Records the configuration (including changes just made) on the disc. Restart the system to use the new configuration.

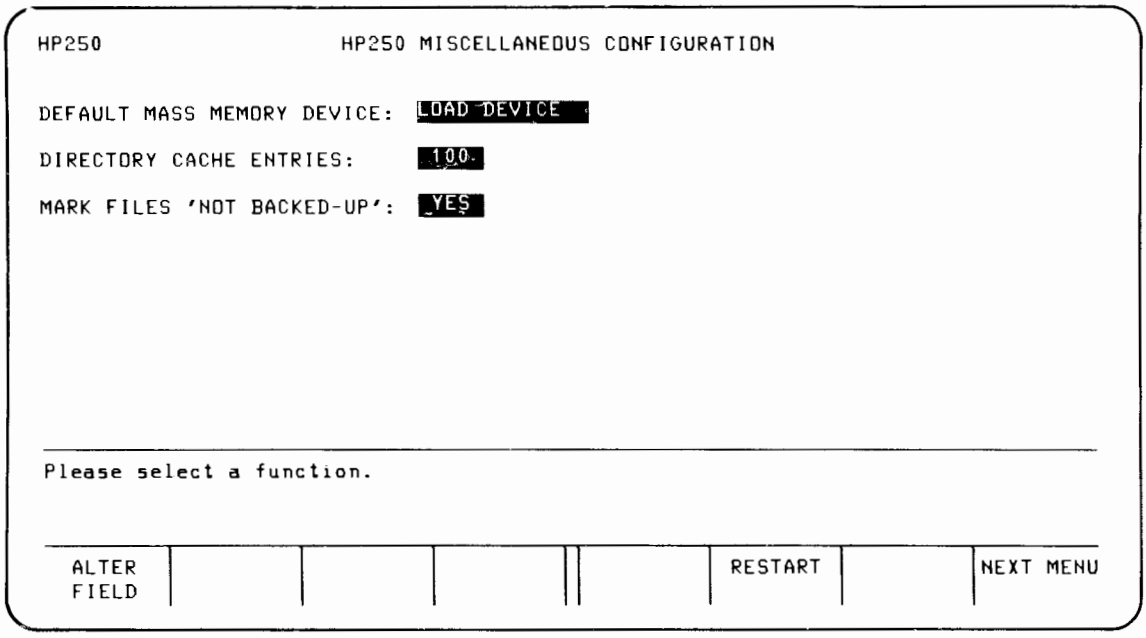
PRINT CONFIG - Prints a copy of the current Multiple Task Configuration.

EXIT TFIG - Returns you to the initial CONFIG menu.

Miscellaneous Configuration (XFIG)

The miscellaneous configuration allows you to change the default mass memory device, configure the number of directory cache entries, and disable the marking of files as "not backed up."

To run this routine, either enter 10 during the initial CONFIG menu or run the XFIG utility. The initial menu shows the configuration currently specified on the system disc.



DEFAULT MASS MEMORY DEVICE - (also called the default MSI) is the mass memory device used after the system is powered on or when CNTL-HALT is pressed. To modify the default MSI, set the cursor in the field and press ALTER FIELD. The system will ask the device specifier of the device you intend. To select the device from which the system file was loaded, enter "LD".

DIRECTORY CACHE ENTRIES - to record the maximum number of entries in the DCACHE list. The DCACHE list, only available if the DCACHE DROM is configured, helps improve directory search times by keeping track of directory entries. The list resides in memory, and occupies 12 bytes of common block storage per entry. For example, if 200 entries are configured, the common storage area is reduced by 2400 bytes.

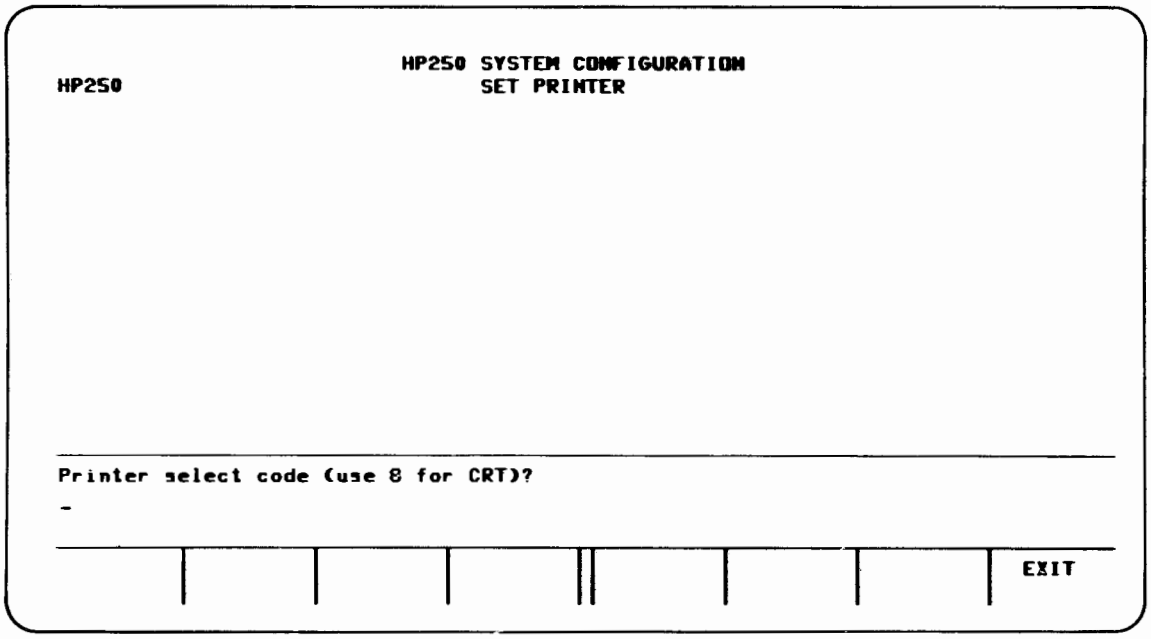
If you specify 0, or do not configure the DCACHE DROM to load, there will be no improvement in directory search times.

NOTE: The DCACHE list holds the most recently used directory entries. When an entry is added, the least recently used entry is deleted (if the list is full).

MARK FILES - Each file in the directory contains a flag to note whether the file has been backed up since the last access. If MARK FILES is set to YES, use of this flag is enabled. Otherwise, non-backed-up files will not be marked. If you perform a daily backup with HP's BACKUP utility, set this to YES.

Set Default Printer

To print DROM, peripheral, and keyboard lists, enter 12 during the initial CONFIG menu:



Now enter the device address and press [0] . This number must correspond to the address set on the device. If that device is switched off or is not connected, an error occurs.

CONFIG automatically returns to the initial menu after an address is entered.

CHAPTER 3

Backup and Software Duplication

The Full Volume Backup Utility

The FVBACK (full volume backup) program is a BASIC-language utility which allows you to rapidly copy the entire contents of a disc to a backup file contained on a cartridge tape. These backup files may also be restored from the tape to a disc using this program. Your system must have either an HP 7908, 7911, or 7912 disc with an integrated cartridge tape drive (CTD) to use this program.

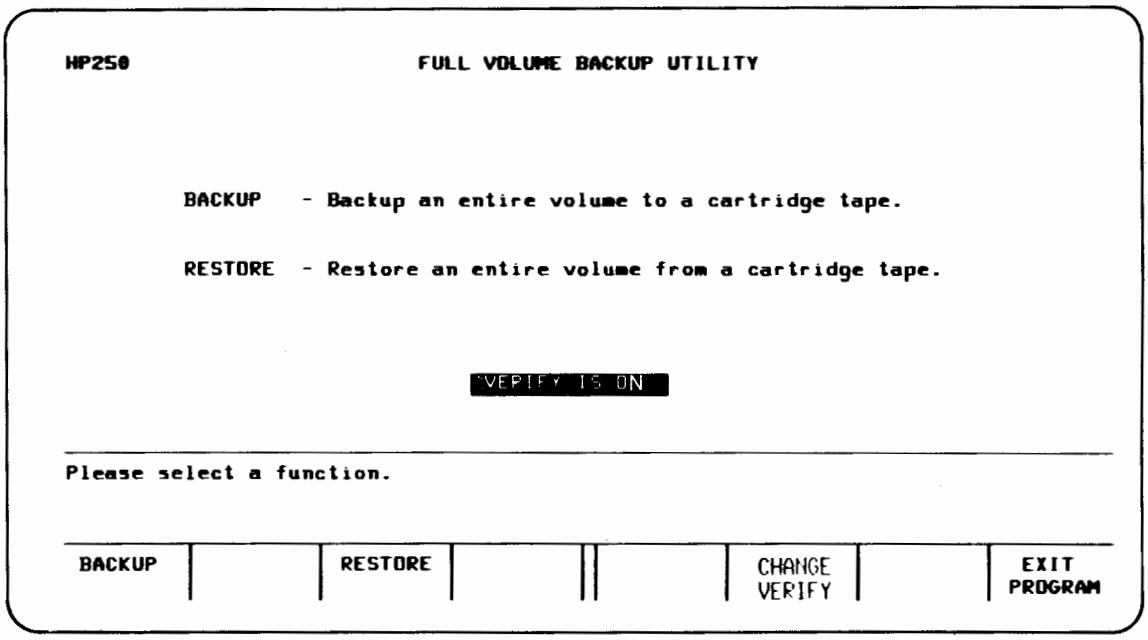
The FVBACK program is not file oriented; it copies entire volumes. If a selective file backup is desired, use the BACKUP program described in this chapter.

A special file type, BKUP, is used for the backup data. When more than one BKUP file is required because the source device is larger than 65535 sectors, the FVBACK program will automatically allocate additional BKUP files. Additional files will be named the same as the first, but with a number appended to the name. Example: If the first backup file is name BACK, the second will be BACK1. If the first is BACKUP, the second will be BACKU1, and the third will BACKU2.

To run FVBACK, execute the following:

```
RUN "FVBACK"
```

The initial menu is:



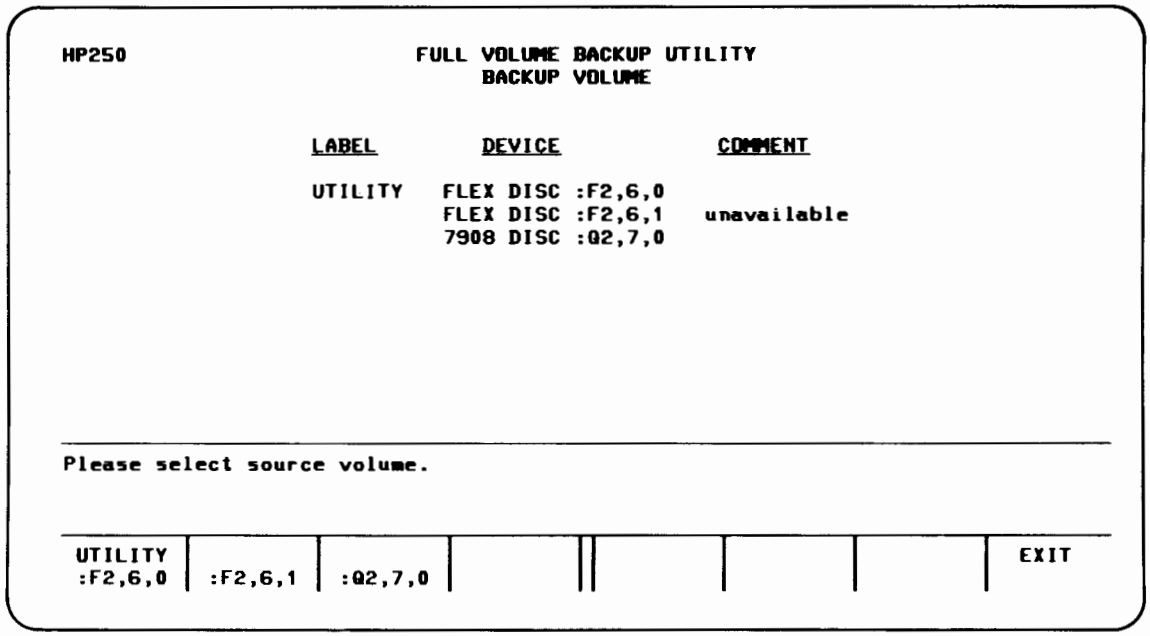
To copy a disc to a tape file, press the BACKUP key.

To restore a disc from a previously created backup file on the tape, press the RESTORE key.

The VERIFY key will toggle the verify mode from ON to OFF or from OFF to ON.

To exit the utility, press EXIT PROGRAM.

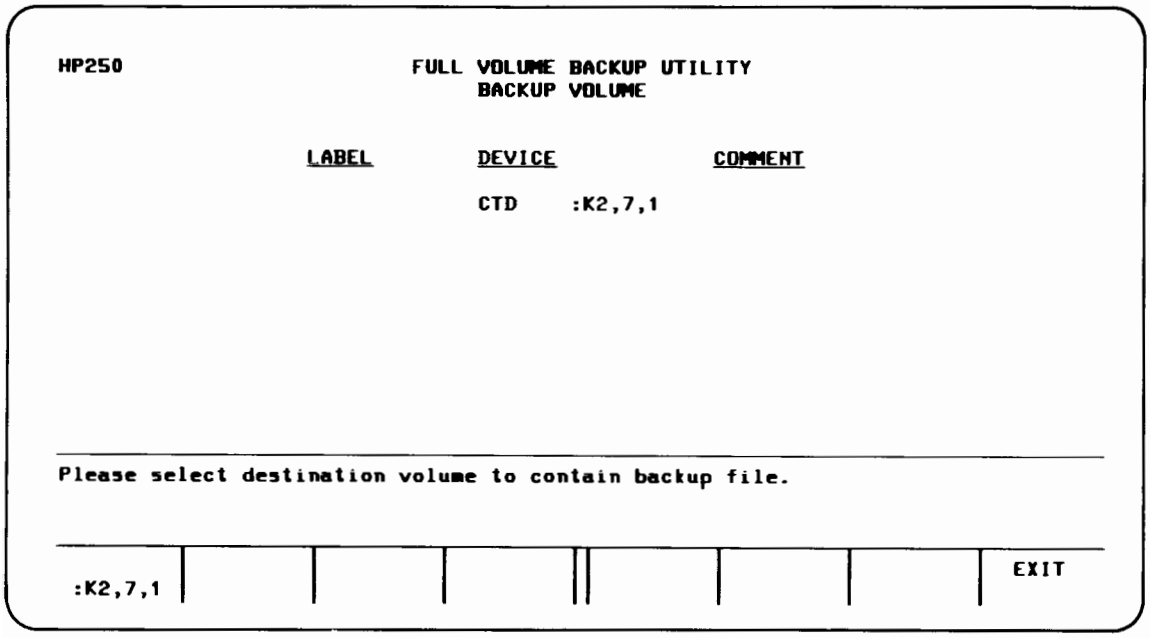
When the BACKUP key is selected in the initial menu, the program prompts you for the source volume and the volume to contain the destination file. A menu displaying all discs on the system appears in the format shown on the following page.



Press the key labeled with the disc you wish to backup.

The EXIT key causes the program to return to the main menu.

After the source device has been selected, the program prompts you for the destination device. A menu displaying all of the Cartridge Tape Drive (CTD's) on the system appear. The menu looks like the following:



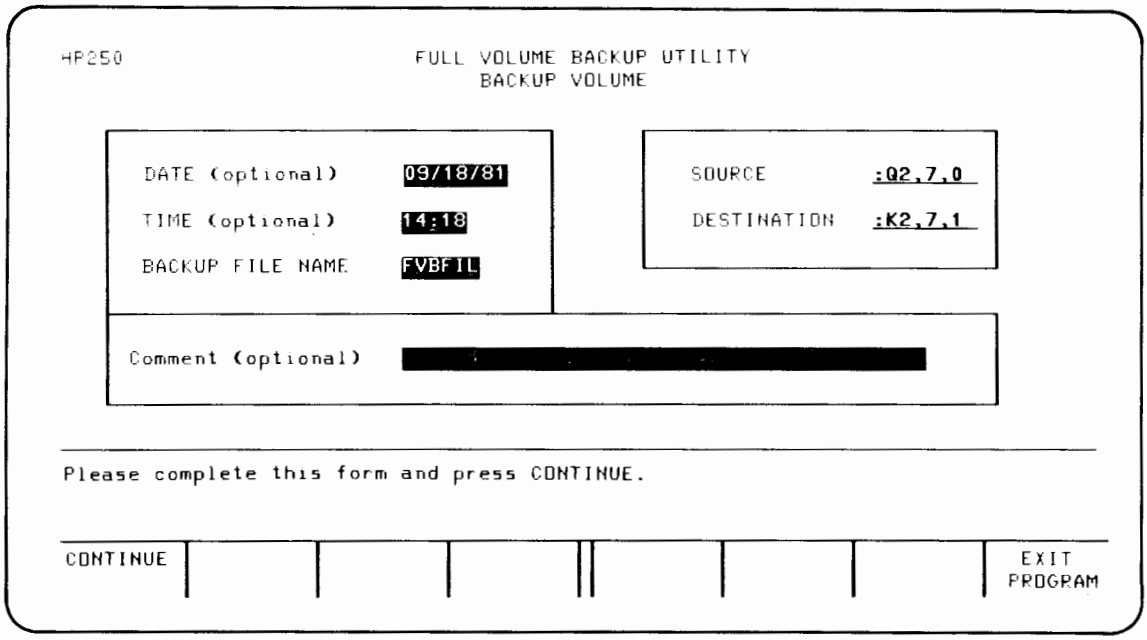
Press the key labeled for the tape to contain the backup file.

NOTE

Performance is maximized when a disc containing an integrated CTD is backed up to that CTD.

Press the key labeled EXIT to return to the main menu.

After the devices have been selected, the following form is displayed:



The DATE, TIME and COMMENT fields need not be filled in. If the TIMER DROM is loaded and the date and time are set, they are automatically displayed. The date and time are stored in a header for the backup file. The COMMENT field is also stored in the backup file header. The default backup file name is filled in by the program. You can change this to any valid file name. If you want to have more than one backup file on a tape, the files must have different names.

The source and destination devices are displayed only, and cannot be changed on this screen.

When the data is correct, press the CONTINUE key to continue with the backup.

The EXIT key causes the program to return to the main menu.

If the backup file already exists, the program prompts:

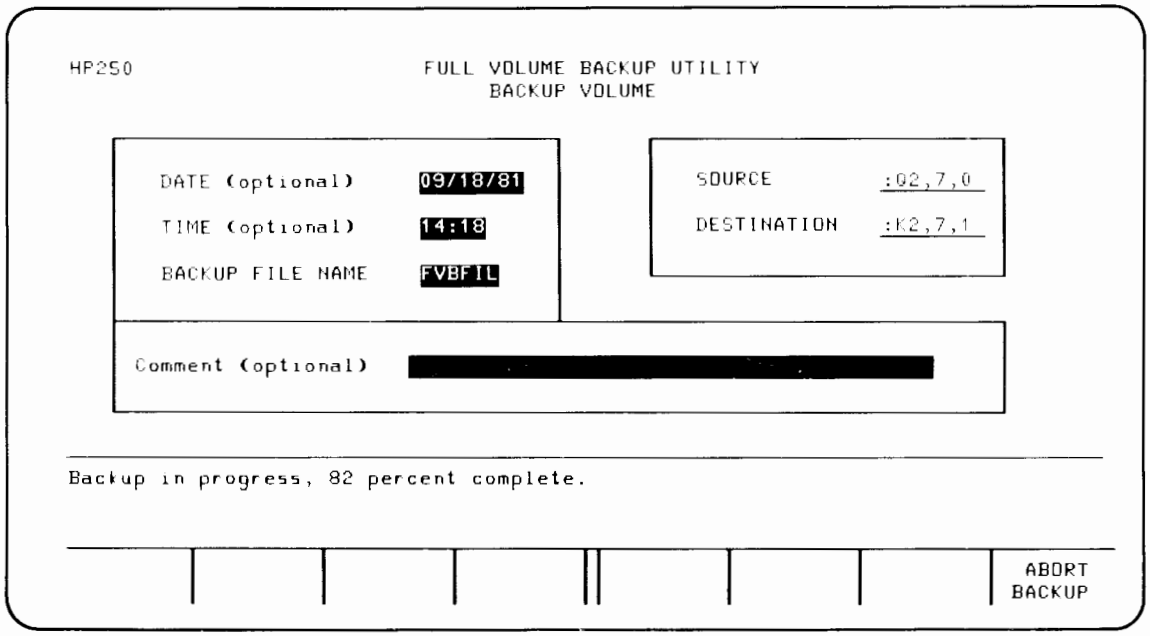
FVBIL already on :K2,7,1. Purge?

Press the key labeled "PURGE & CONTINUE" to purge the existing backup file and create a new one. Press the key labeled "NO PURGE & RETURN" to avoid purging the existing backup file and return to the main menu.

After the CONTINUE key is pressed and the information validated the program proceeds with the backup. The message:

Backup in progress. nn% complete.

will be displayed. The key labeled ABORT BACKUP can be used to stop the backup. If the backup is ABORTED, the backup file that was created is marked invalid and cannot be used to restore a volume.



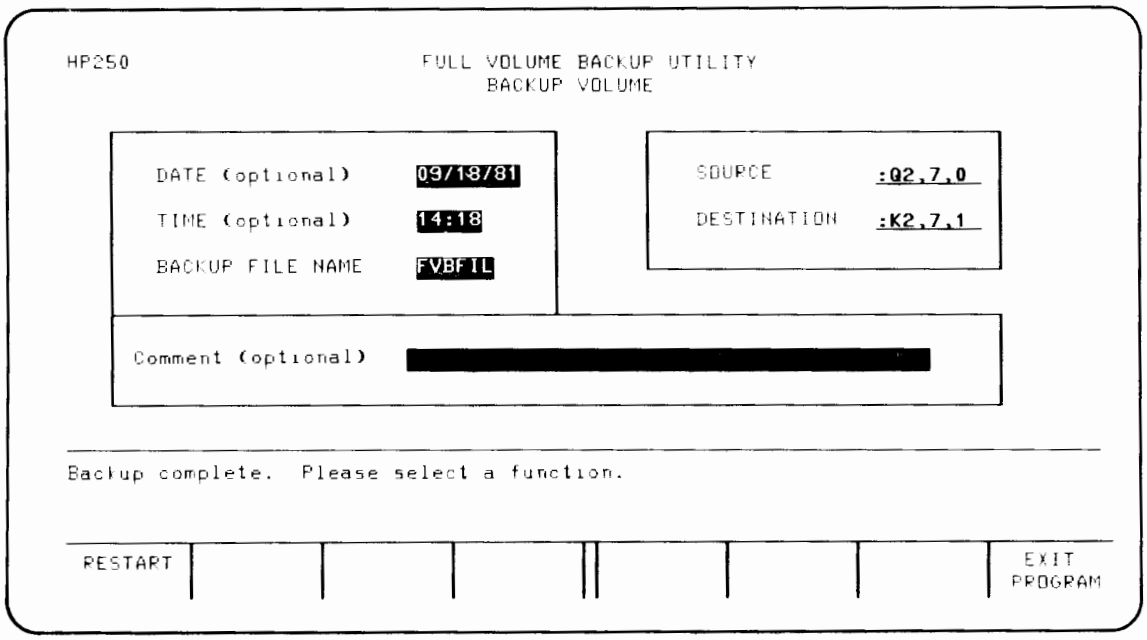
The data that is copied from an HP 7908, HP 7911 or HP 7912 disc to its integrated tape is transferred in one megabyte increments. This results in fast operation of the tape. The "% complete" message is updated every 1 megabyte, so don't be surprised when it jumps from 0% to 50% for a backup of 2 megabytes.

If the verify mode was ON (see screen #1), the backup file will be verified after the backup is complete. The verify will be slightly faster than the backup. The message:

Verify in progress, n% complete.

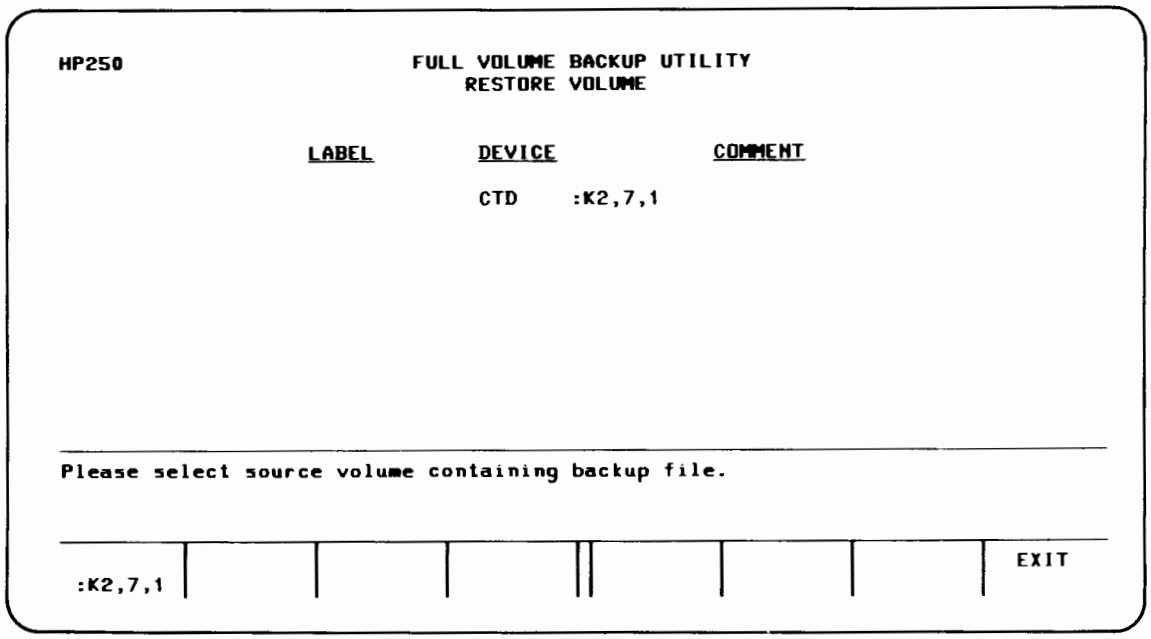
will be displayed and updated once for every megabyte of data verified. Note that the verify mode only ensures that the data on the tape can be read. It does not compare the data on the tape to the data on the disc.

When the backup and optional verify are complete, the following screen will be displayed:

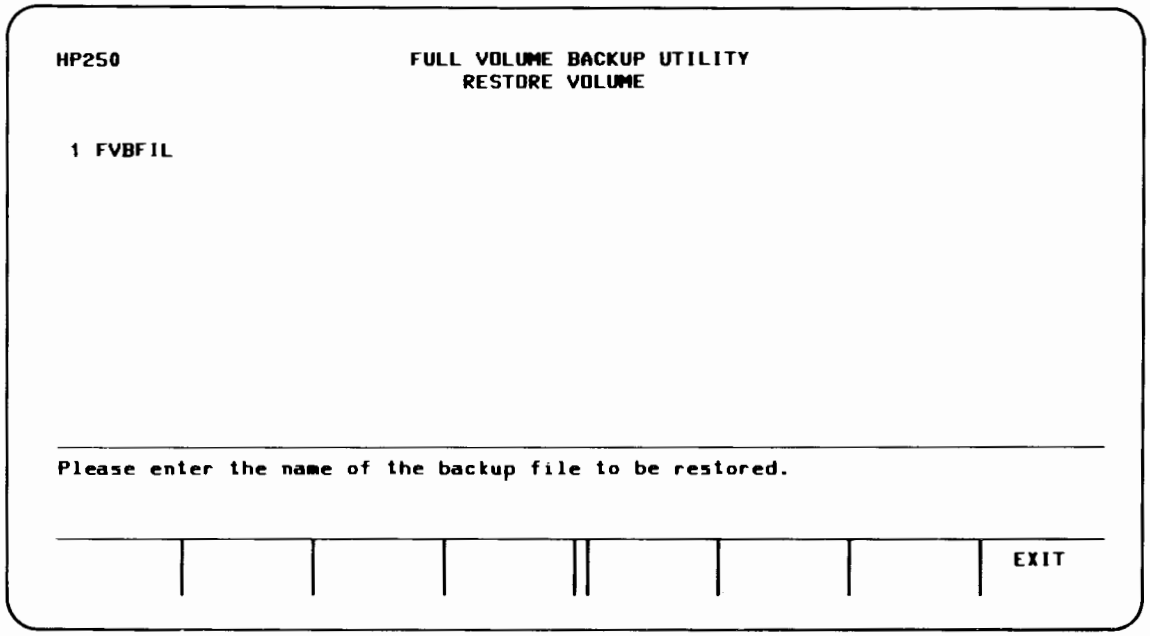


Restore

When the RESTORE key in the main menu is selected, the program prompts you for the source volume containing the backup file you want to restore. A menu displaying all of the CTD's on the system is displayed. Press the key with the label of the CTD you want to restore from.

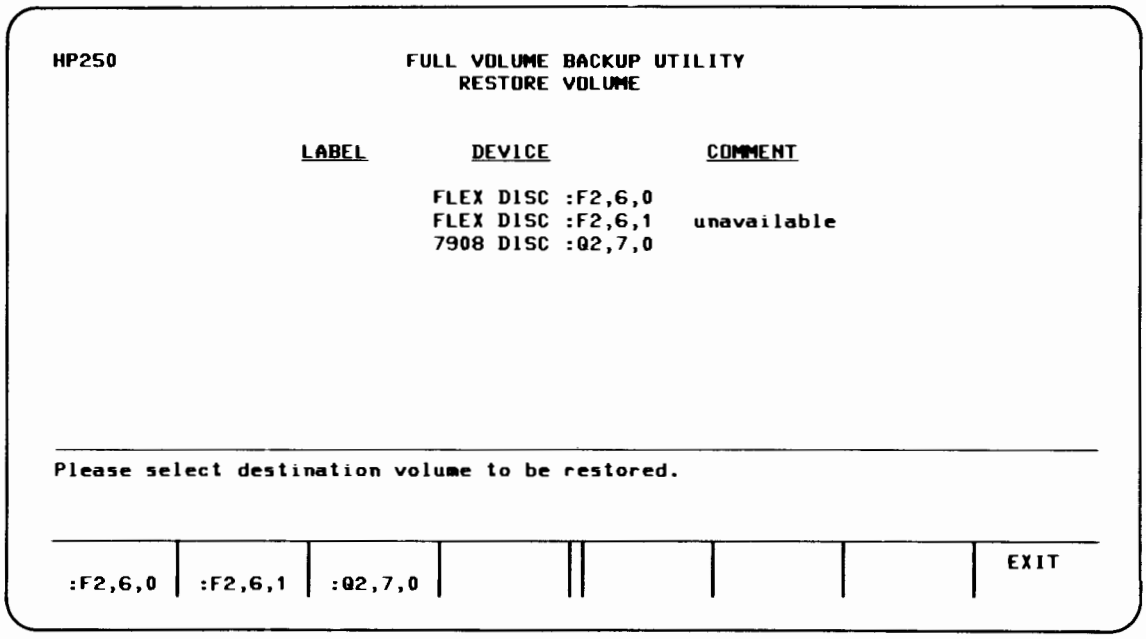


The program checks for BKUP files on the source tape. The following display will appear.



At this point you should type in the name of one of the BKUP files in the list to be restored. The EXIT key causes the program to return to the main menu.

The header of the backup file selection is read by the program to determine the type of device. A 7908 disc backup can only be restored to a 7908 disc, for example. After determining the type of device the backup file is for, the program displays the screen on the following page.



Press the key of the device that is to be restored from the previously selected backup file.

The EXIT key causes the program to return to the main menu.

At this point, you should check to make sure that all the displayed information is correct. The DATE, TIME, and COMMENT fields show the information stored in the backup file.

Press CONTINUE to start the restore operation.

Press EXIT to return to the main menu.

When the CONTINUE key is pressed, the message:

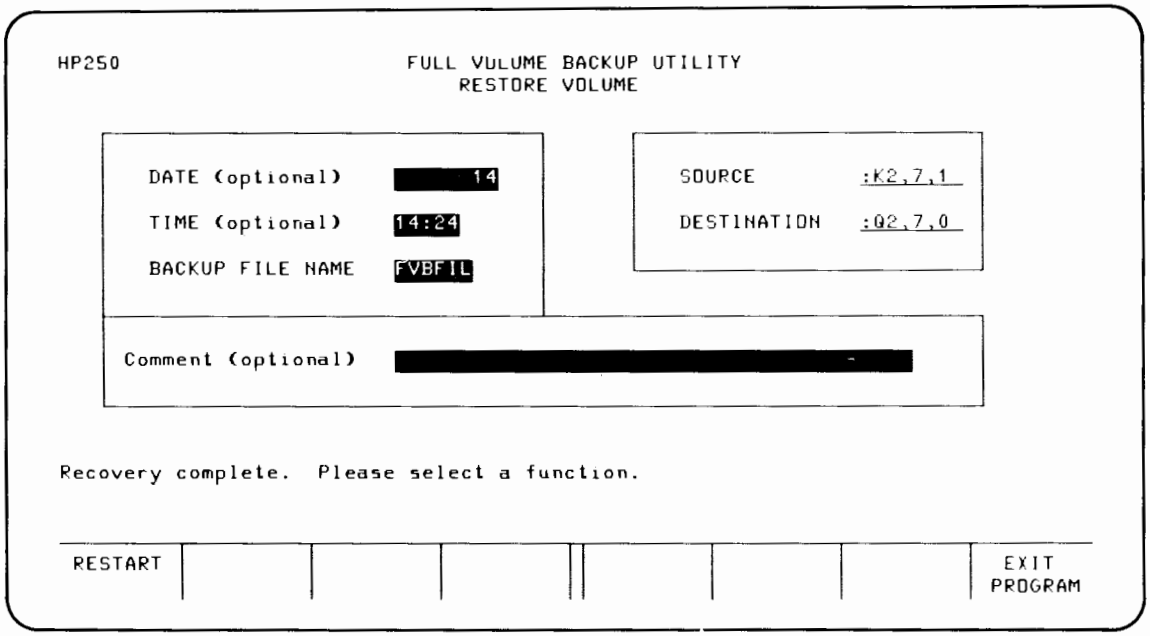
Restore in progress. nn% complete.

is displayed. The key labeled ABORT RESTORE will also be present. Press the ABORT RESTORE key to stop the restore operation.

If the VERIFY ON mode was selected in the main menu, the destination device is verified with checkreads of the data as it is restored.

NOTE
If a restore is aborted, the destination device will have no files on it.

When the restore is complete, the following screen appears:



To return to the main menu, press the key labeled RESTART.

To exit the program, press the key labeled EXIT PROGRAM.

Multi-User Considerations

The backup program will not work if other users are accessing the disc being backed up. An error message is displayed to inform you of this problem. Any other users of the tape will see a significant performance degradation during the backup. Therefore, it is good practice to make sure that all users of the system are idle during any backup or recovery.

Performance

Here are approximate times for backup and recovery operations. Remember that these are only approximate times to help you with system planning.

Worst Case Disc Size And Time

Disc Type		Without Verify	With Verify
FLEXIBLE DISC	1.2 Mbyte	4 minutes	5 minutes
7910 DISC	12 Mbyte	13 minutes	20 minutes
7906 CARTRIDGE	10 Mbyte	8 minutes	14 minutes
7906 FIXED	10 Mbyte	8 minutes	14 minutes
7908 DISC *	16 Mbyte	9 minutes	18 minutes
5 Mb. DISC	5 Mbyte	7 minutes	10 minutes
10 Mb. DISC	10 Mbyte	14 minutes	20 minutes
7911P DISC*	27.5 Mbyte	15 minutes	30 minutes
7912P DISC*	64 Mbyte	----no data available----	

* Time applies to disc backed up to its own built-in cartridge tape.

Media Duplication (DUPL)

The DUPL (duplicate) program is a BASIC-language utility which allows you to rapidly copy the entire contents of one disc to another compatible medium. DUPL is distributed with the other utilities on either disc or tape. A typical DUPL application would be copying an HP 7906 cartridge to an HP 7906 fixed disc. Upon completion, the program optionally prints a label on the new medium. The DUPL process also allows you to produce duplicates of flexible discs by using a temporary file on a hard disc.

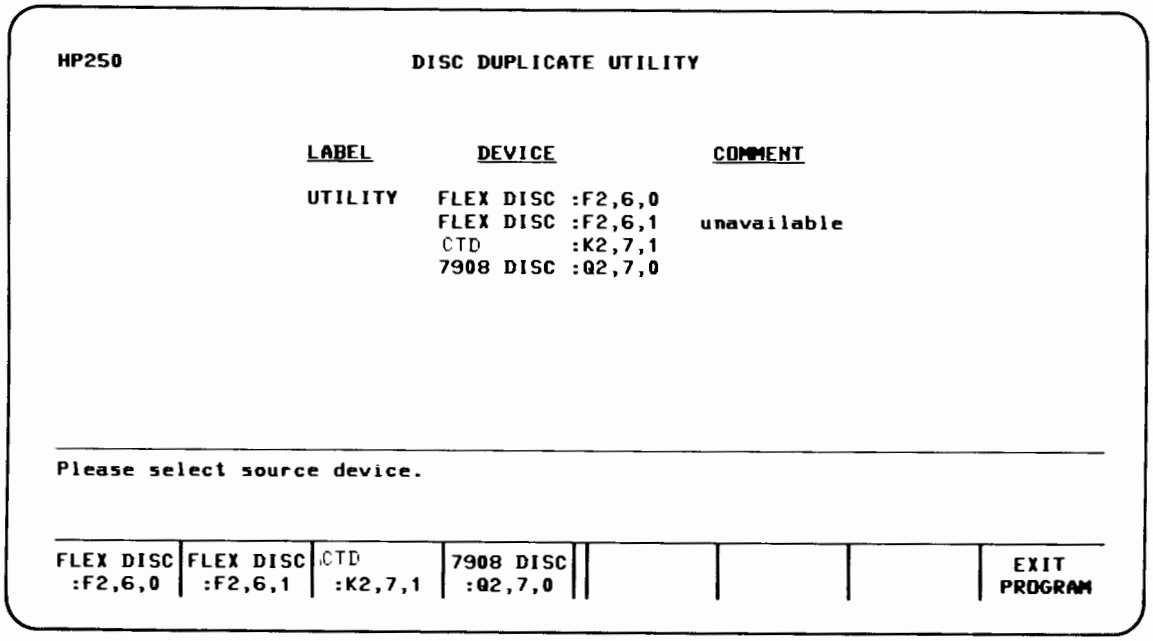
NOTE

The destination (new) disc must be initialized before DUPL can run. See "The INIT Program" in Chapter 1.

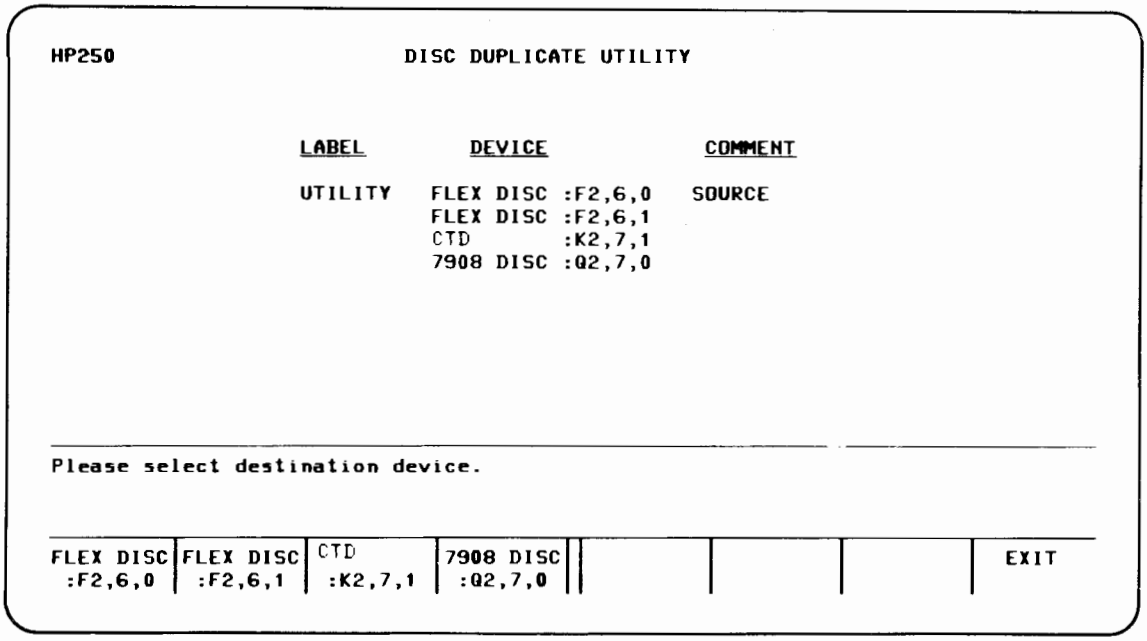
To run DUPL, execute the following:

```
RUN"DUPL"
```

The initial menu is:



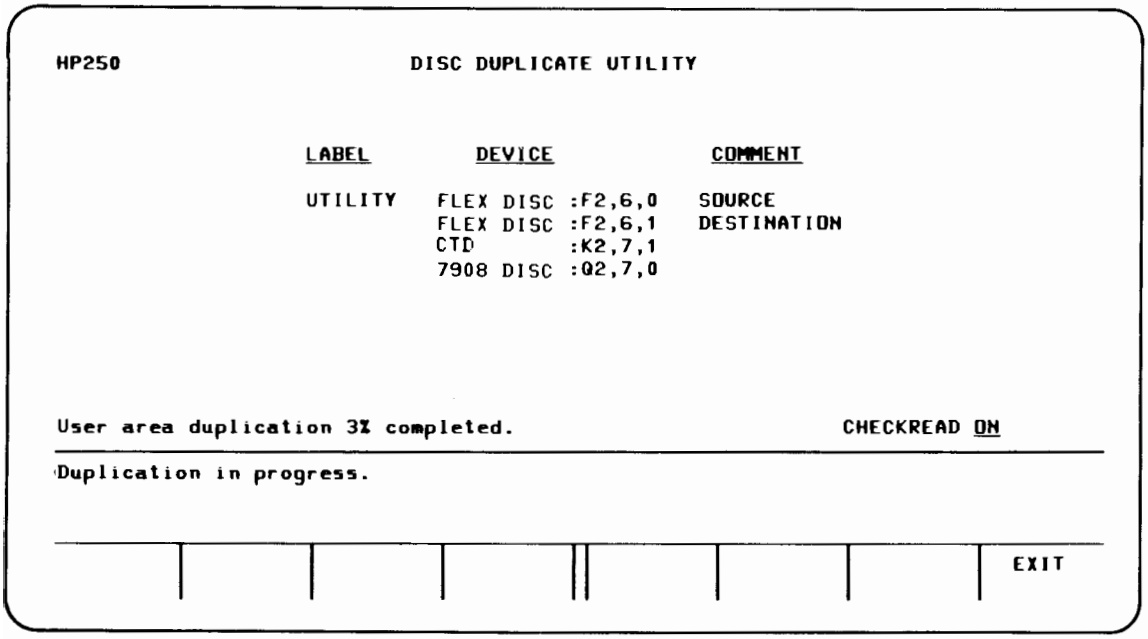
The device table lists the drives on-line and the label of each disc inserted. "Unavailable" indicates that either a disc is not inserted or the medium is not initialized. Now insert the source (original) disc and the destination (new) disc, and press the appropriate source disc key. Refer to the Indirect Duplication section if you want to copy a flexible disc and have only one flexible drive.



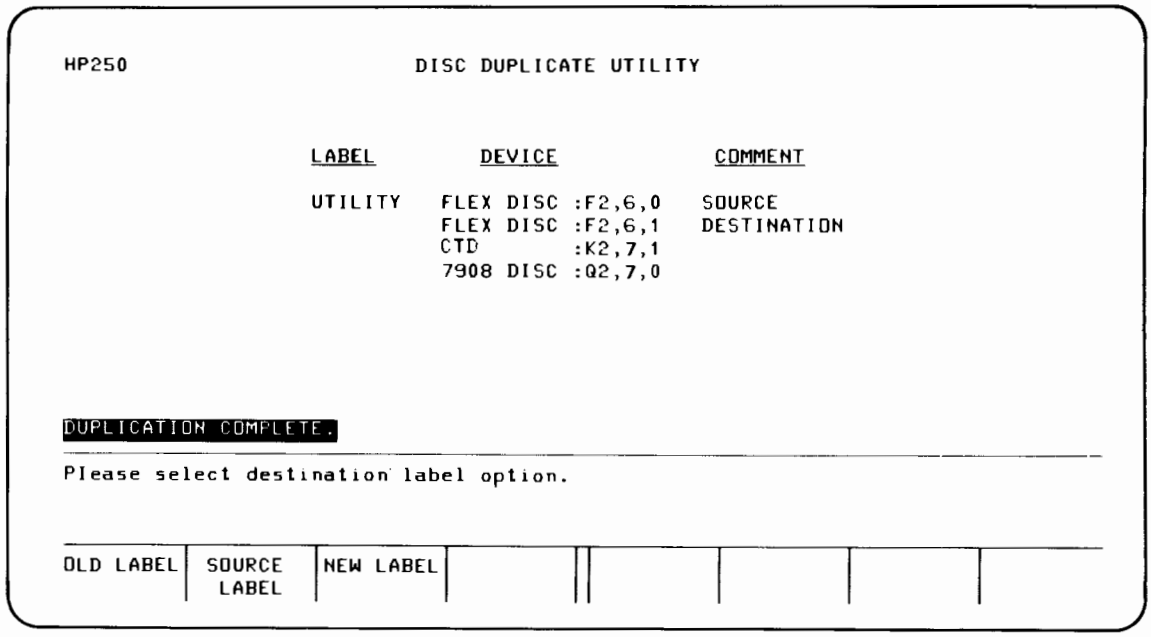
To identify the drive containing the destination disc, press the appropriate softkey. The utility is now ready to duplicate.

If you do not wish to automatically checkread each file as it is duplicated, press CHANGE CHECKREAD. (The duplicate process takes longer with CHECKREAD ON, about 6 minutes for a 1.2 megabyte disc.) If the destination disc already contains data files, a warning message appears. An ERROR message indicates the media are not compatible for duplication.

To begin duplication, press CONTINUE. The file directory on the destination media is cleared. Then, a message indicates that the duplication process is in progress.



After DUPLICATION COMPLETE is displayed, select the destination disc label by pressing the OLD LABEL or SOURCE LABEL softkeys or press the NEW LABEL softkey, type a new label and press ⇧ .

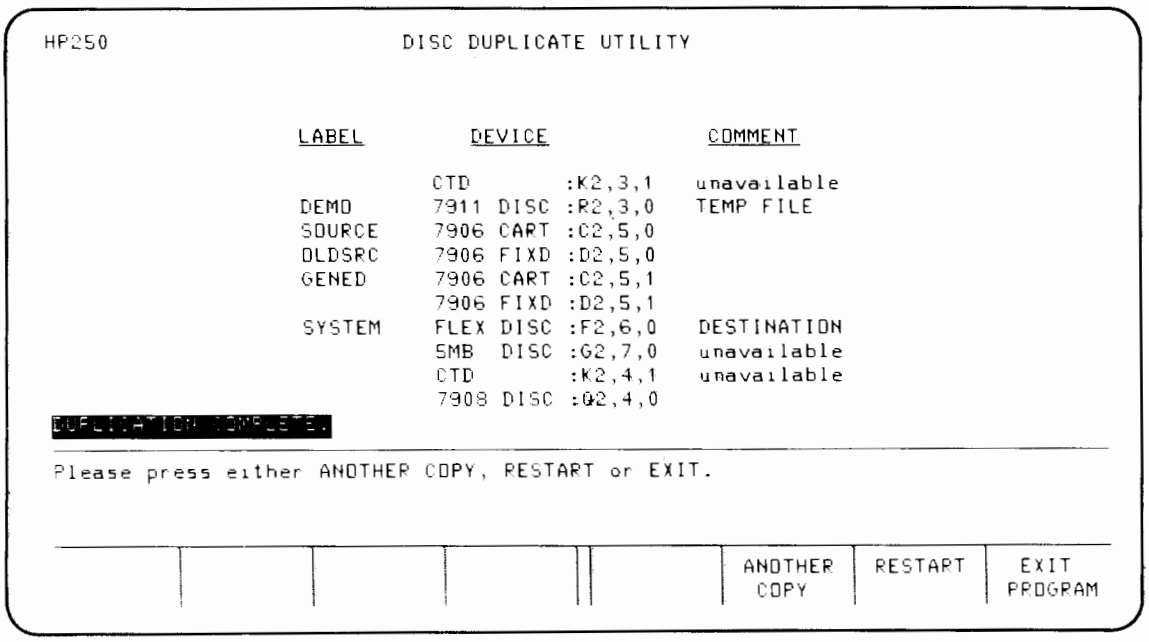


Press RESTART to duplicate another disc or EXIT to exit BACKUP.

Indirect Duplication

The DUPL utility allows copying the contents of one flexible disc to another by establishing a temporary file on another mass storage device. DUPL copies the disc to the temporary file and then recopies it to a second disc inserted in the source drive.

To perform an indirect disc duplication, run DUPL as described earlier, but specify the same drive as both source and destination devices. Then specify the device to hold the temporary file. After the disc is copied to the temporary file, DUPL instructs you to remove the source disc, insert the destination disc, and press CONTINUE. When the indirect duplication is complete, DUPL asks if you want to make another copy from the temporary file. This lets you make multiple copies. The temporary file is purged when you press RESTART or EXIT.



Data Integrity

There are no fixed rules which determine the level of protection you need against loss of data. You will have to determine the level of assurance which best suits your needs based on the following criteria.

1. Duplication Frequency

   Duplication may be performed, for example, twice daily (once at noon and once at the end of the day), giving a very high level of assurance in the integrity of data. Duplication could also be performed daily (either before or after the working day), or weekly (each Friday evening).

2. Levels of Data Integrity Checks in the Duplication

   Duplication with checkread provides the highest possible level of assurance for data integrity; data is copied, then read to make sure that the new copy matches the original. This mode is as simple to use as duplication without checkread, but it is more time consuming.

3. Data Space Available for Applications

   It is faster and easier to duplicate one fixed disc, rather than several removable cartridges. This means that you gain a major advantage if you can restrict application data bases and files to a fixed disc. Application programs, overlays, forms, and other non-changing files are then stored on the removable cartridge (preferably along with the system files so that the cartridge can be used to power up the machine).

You may decide that you best choice is a mix of duplication strategies. For example, you may schedule a daily backup without checkread and a weekly backup with checkread.

You should also be aware that such things as the cleanliness of the machine environment, proper storage of the duplicative cartridges, etc. can be crucial to the integrity of your data.

The BACKUP Program

The BACKUP program is a BASIC-language utility which allows you to store the contents of several non-database files into one backup file. The source and backup files can be on different types of media. The BACKUP utility will support a backup of any media type to any other media type. Typical applications would be putting parts of several flexible discs into one backup disc, or copying the contents of a fixed disc into a backup file on a removable cartridge. The BACKUP process takes about 9 minutes to load 1 floppy's worth of data from a hard disc. The volume containing the BACKUP utility must be on-line during the operation of the utility. The performance of this utility will be greatly enhanced if it resides on a hard disc. The ROUTIL utility may be used to copy the BACKUP utility from the distribution medium onto hard disc.

NOTE

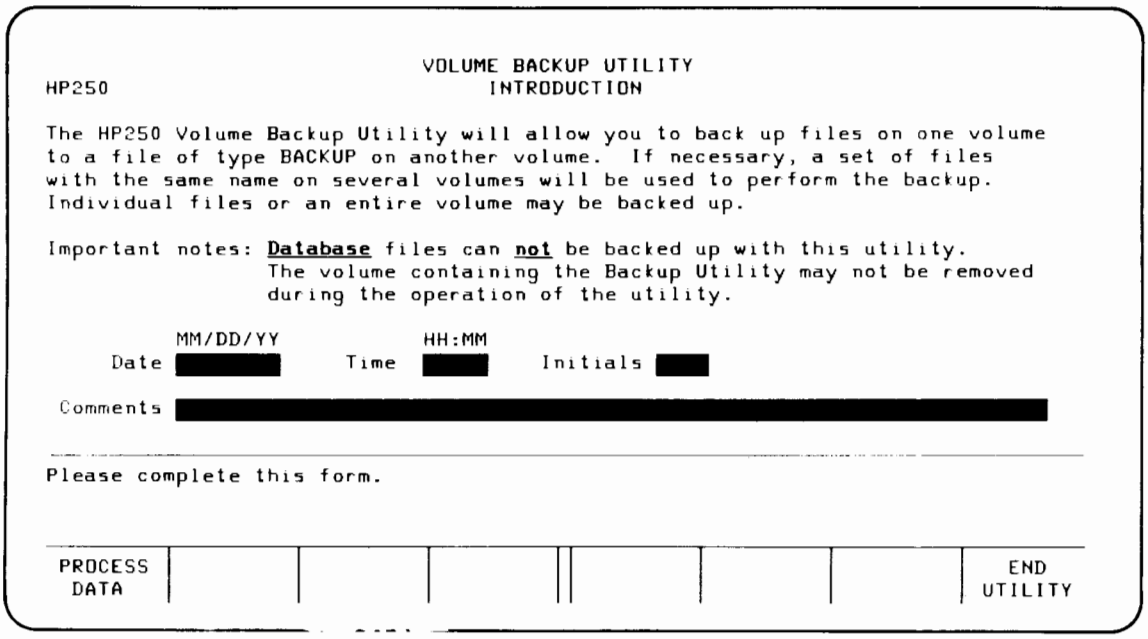
Data base files are not included in this backup. See the DBSTORE and DBRESTORE statements in the DBSTOR binary.

The volume containing the BACKUP utility may not be removed during the operation of the utility.

To run BACKUP, execute the following:

```
RUN "BACKUP"
```

The initial menu appears:



This screen requests that you provide bookkeeping information to the system. The "comments" field on this form allows you to enter up to 67 characters of notes you might want to make about this backup. When the softkey PROCESS DATA is pressed, a syntax check is made of the data entered. Errors cause a series of messages to appear indicating problems and asking for new input. The utility is now ready for you to input the backup mode.

```
                              VOLUME BACKUP UTILITY
HP250                          BACKUP MODE SELECT                    10/31/81

The HP250 Volume Backup Utility provides three modes for backing up volumes.
Select any one of the three.  Remember: None of them will backup databases.

WEEKLY BACKUP    This mode backs up all files on the volume you will specify.

DAILY BACKUP     This will backup every file on the volume which has been
                 accessed since it was marked as backed up.

SELECTED FILES   Backup individual files.  You will be asked for the names
                 of up to 50 files on one volume that you want backed up.
                 Files will not be marked as backed up in this mode.

BATCH SELECTED   Backup individual files whose names have been placed in a
                 DATA file.

Please select a function.

 WEEKLY   | DAILY    | SELECTED | BATCH    |          |          |          | END
 BACKUP   | BACKUP   | FILES    | SELECTED |          |          |          | UTILITY
```

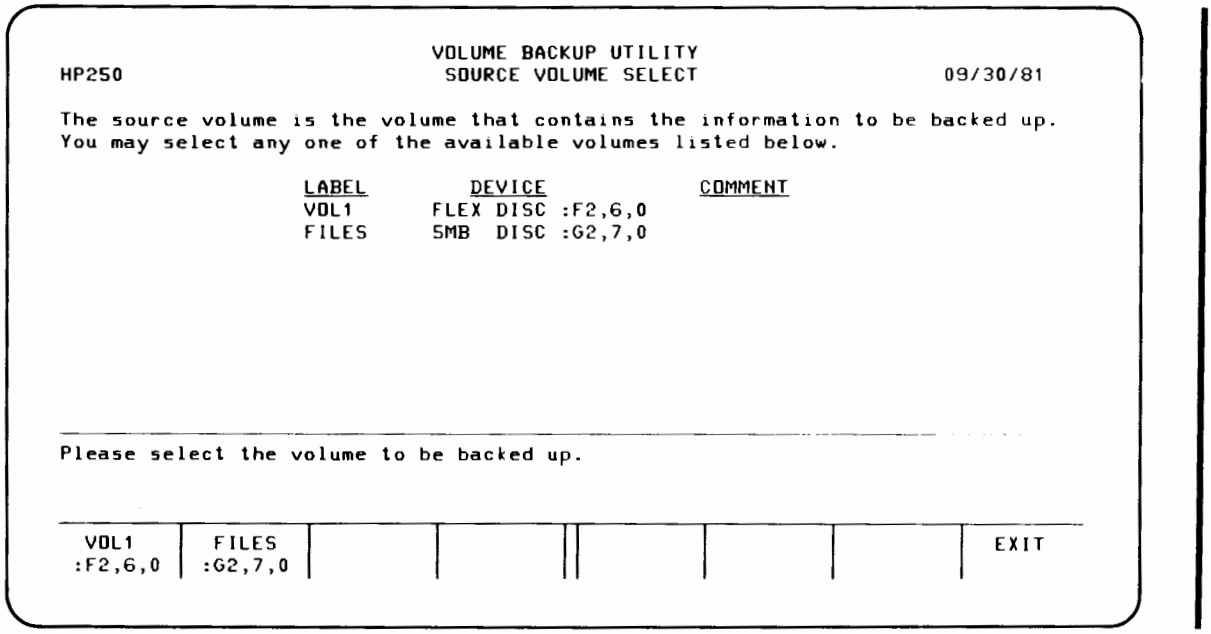
If you press WEEKLY BACKUP, DAILY BACKUP OR SELECTED FILES, the next screen appears. Files backed up in the SELECTED FILE mode will not be marked as "backed up" so that when you do the next daily backup, these files will be included. If you press BATCH SELECTED, the computer will ask for the name of an editor file where you have listed the file names to back up (one name per line).

```
                              VOLUME BACKUP UTILITY
HP250                          OPTION SELECT                         09/30/81

CHECKREAD OPTION     Perform checkread on the backup file.

PRINTER              You may change the destination for the backup report.
                     It is recommended that the report be sent to a printer.

MARK FILES AS SAVED  Mark the files as backed up.


BACKUP MODE:WEEKLY BACKUP     CHECKREAD OPTION:YES   MARK FILES AS SAVED:YES
PRINTER:    8

Please select a function.

 CHANGE    | CHANGE   | CHANGE   | CONTINUE |          |          | CHANGE   | END
 CHECKREAD | PRINTER  | MARK FILE| BACKUP   |          |          | MODE     | UTILITY
```

The BACKUP mode selected from the previous screen is displayed, along with the default values for the checkread option, mark files option, and printer select code. If you wish to change any of the options listed, press the appropriate softkey. When you have the options you desire, press CONTINUE BACKUP and the next screen will appear, asking you for source file selections.

If you change the printer, you will be asked to input a new printer select code. It is highly recommended that you respond with the select code for a hard copy device. This will give you a reference listing of all the backed up files as well as the usual CRT displays that the utility is operating. Changing the checkread to "NO" means that an automatic checkread will not be performed on each file as it is duplicated, saving some time, but sacrificing some reliability.

The Source Volume Select screen lists the drives on-line and the label of each disc inserted. "Unavailable" in the comments field indicates that a disc is not inserted, the medium is not initialized, or the disc has an IBM format.

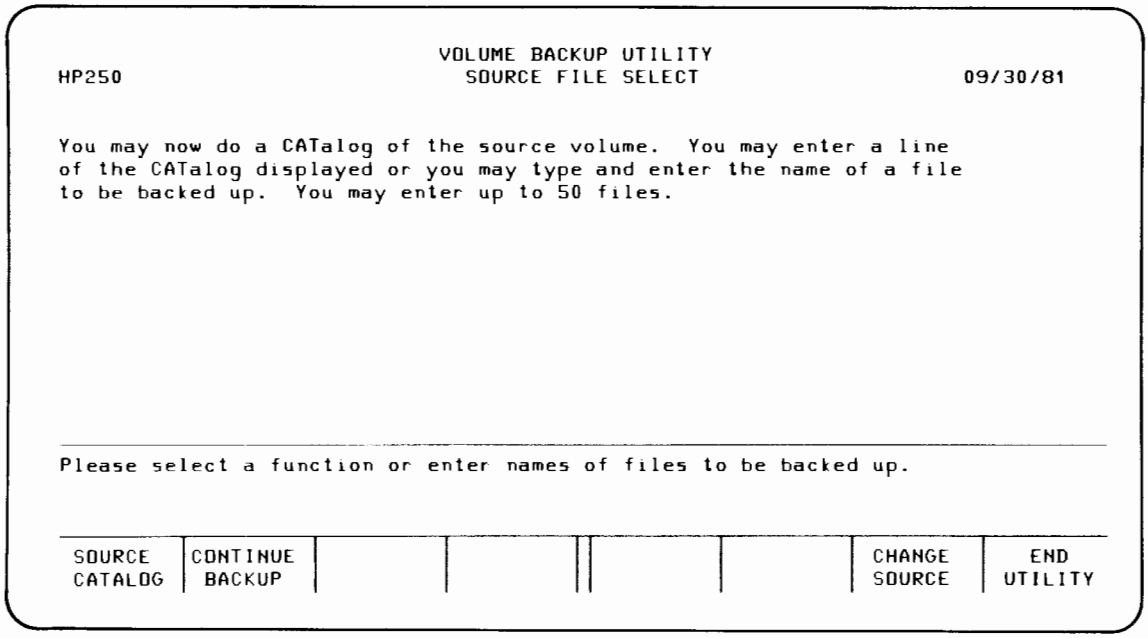


Softkey #7 will be set to MORE DEVICES if there are more than seven volumes on-line. Pressing this key will cause up to 4 more device softkeys to be set.

The key for an empty disc drive, or a drive with an uninitialized disc will be labeled NOT AVAILABLE. Nothing will happen when this key is pressed.

If you choose the Selected Files Mode, the Source File Menu will appear next. Otherwise, you will go directly to the Destination Volume Select.

When you identify the drive containing the source disc by pressing the appropriate softkey, the new menu appears.



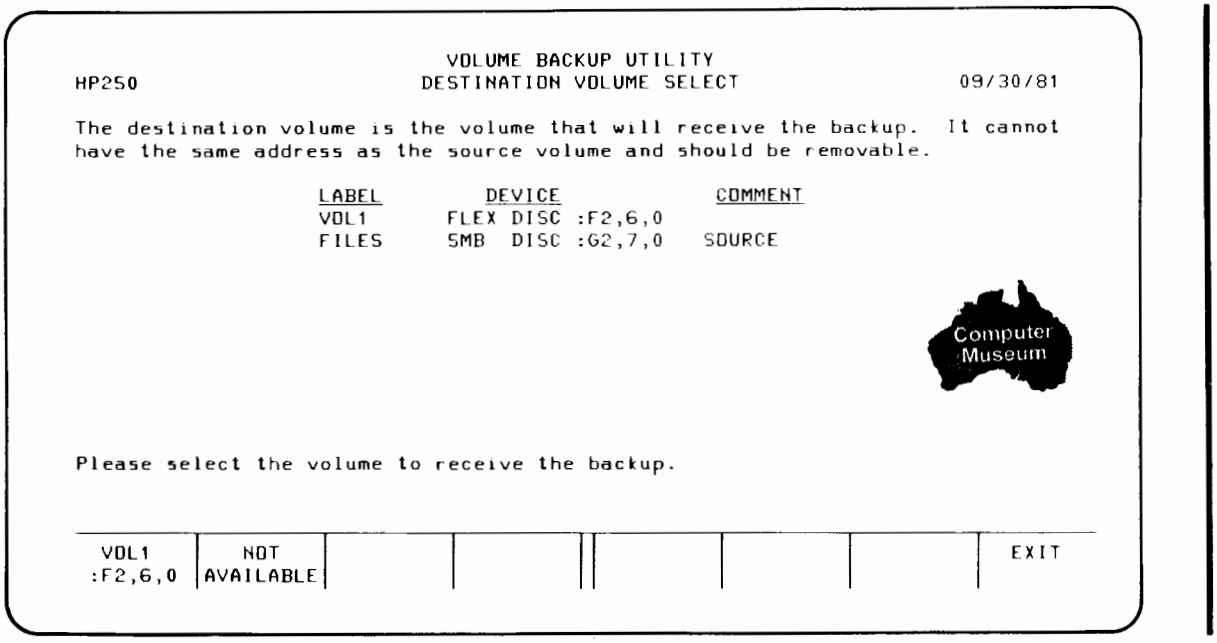
If you enter file names in response to this menu, each name is checked to be sure that it exists and is not a data base file. If you made a mistake, an error message appears next to the incorrect file name and you will be asked to correct the information.

If you press the SOURCE CATALOG softkey a catalog of the source volume will appear one-screen-at-a-time. During the time the catalog is being displayed, the following softkeys change function:

softkey 1 becomes CONTINUE CATALOG
softkey 8 becomes STOP CATALOG

All other softkeys cease to function until the catalog is stopped. When there are no more files to be displayed in the catalog, the CONTINUE CATALOG softkey is erased.

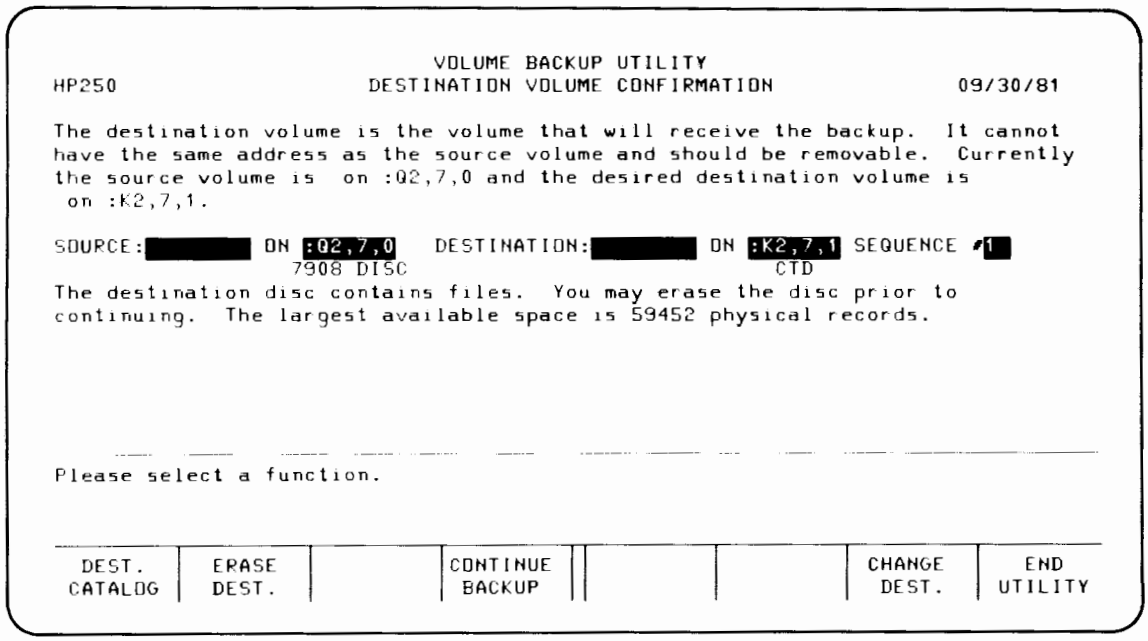
Pressing CONTINUE BACKUP causes the destination volume select screen to appear.



After selecting the source volume, the next menu appears. To identify the drive containing the destination volume, press the softkey with the appropriate label. The destination medium cannot be the same as the source medium, and should be removable. The "Device" column shows the drives on-line and the label of each media inserted. "Unavailable" in the comments column indicates that either a media is not inserted or that the medium is not initialized. "SOURCE" in the comments column means that this volume cannot be used for the destination.

When you press the softkey to choose your destination volume, a volume confirmation form appears.

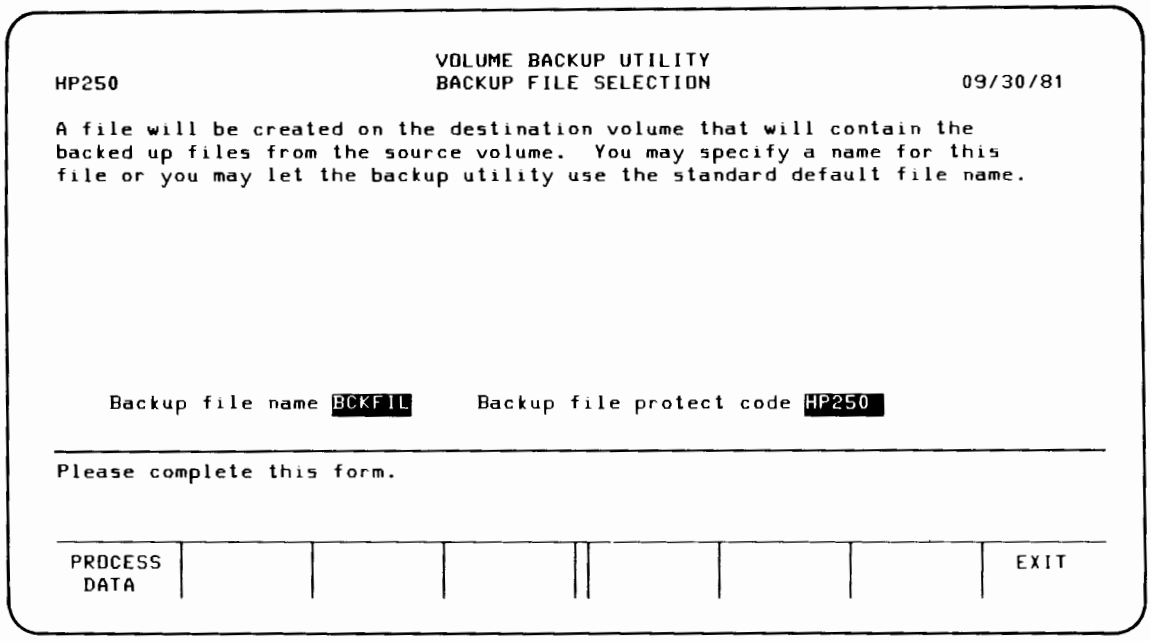
The Confirmation Menu lists the source volume name and address, the destination volume and location, and a sequence number. The sequence number is the current number of the backup volume.



At this time, you can ask for a catalog of the destination volume, change the destination volume, or erase the volume.

Pressing DEST. CATALOG produces the same kind of catalog produced for the source volume. The ERASE DEST. label only appears if there are files on the destination disc. Pressing softkey #2 will cause a menu to appear in which you are asked to CONFIRM ERASE or CANCEL ERASE. The RELABEL DEST. label only appears if the medium label does not match what you have specified.

To begin duplication, press CONTINUE BACKUP.



If the destination volume is filled before all of the source volume is backed up, a screen appears, asking for the label of the next volume you want to use.

When you have filled in the label, press PROCESS DATA to continue. The next screen that appears is the Destination Volume Select Menu. Press the softkey with the volume label you want to use to continue. This causes the Confirmation screen to reappear so that you can change, erase, or catalog the destination volume. A warning will also appear if the disc you chose did not have the label you previously specified. Softkey #3 will be labeled "RELABEL DISC." If you press this key, the chosen disc is relabeled with the specified label.

When the backup is completed, a message will appear giving the number of files backed up, the number of errors, and the number of warnings.

```
Backup completed.

Number of files backed up - 1
Number of errors          - 0
Number of warnings        - 0
-------------------------------
Please select a function.

Backup completed successfully.
-------------------------------
```

Procedures and Recommendations

A "weekly" backup saves all of the files which are on the volume being processed. A "daily" backup saves all of the files which have been created or accessed since the last backup. (An access is any operation on that particular file. Running a program is an access of that program file. Assigning to a data file is an access of that data file. Doing a catalog of a disc is not an access to a file, since no particular file was specified.)

If your HP 250 installation regularly creates or updates non-IMAGE files, you should back up your system on a daily basis. If your disc crashes, work done since the last backup may be lost.

A simple procedure would be to perform a weekly backup on Friday and daily backups on Monday through Thursday. Be careful not to erase any of the backup files until the next weekly backup is completed! A weekly backup will generally require more time to perform than a daily backup. However, regular weekly backups are desirable because recovery of a volume requires the processing of all of the daily backups since the last weekly backup. If you have a month of daily backups to process, recovery will take a long time.

It is often useful to maintain a backlog of the last several weekly backups to insure against losing files which were accidentally purged. It is good business practice to maintain a recent backup at a different site to protect your business records against an accident such as fire.

The RECOVR Program

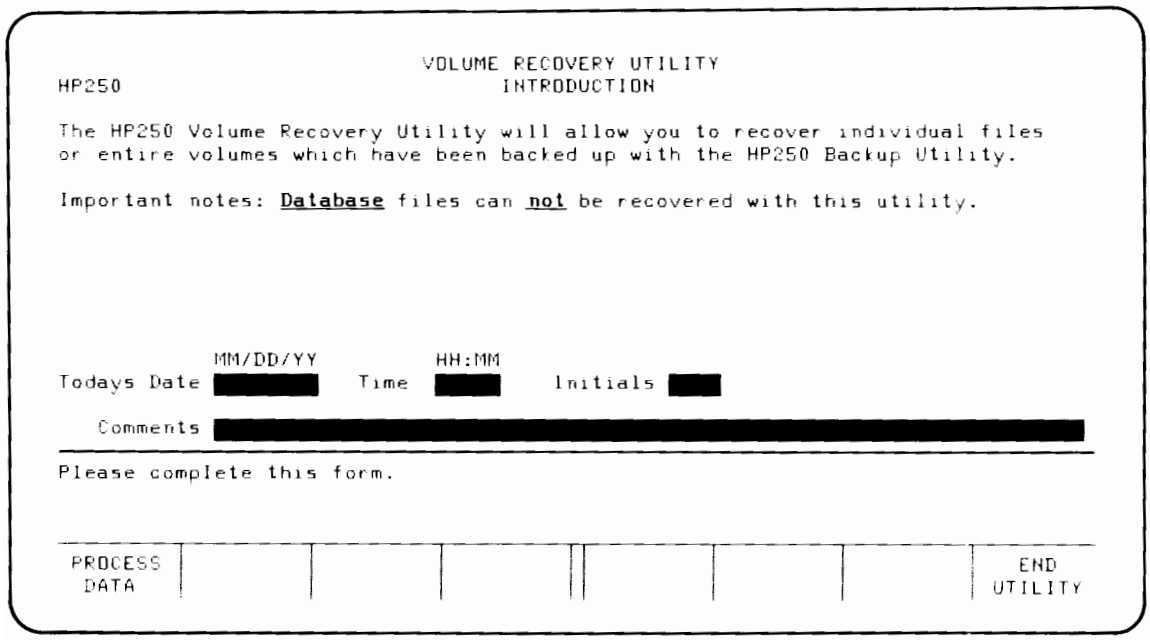
The RECOVR program is a BASIC-language utility which allows you to recover the contents of BACKUP files. The BACKUP file and files recovered can be on different disc types. The RECOVR program will support the recovery of either the entire BACKUP volume or selected files within this volume. A typical application of this program would be the recovery of a BACKUP file sequence on flexible discs and their output on a disc.

The volume containing the RECOVR utility must be on-line during its operation. It cannot be removed during the operation of the utility, and must be disc resident. The performance of the utility will be greatly enhanced if it resides on a hard disc. The ROUTIL utility may be used to copy the BACKUP utility from the distribution medium onto hard disc.

To run RECOVR, execute the following:

```
RUN "RECOVR"
```

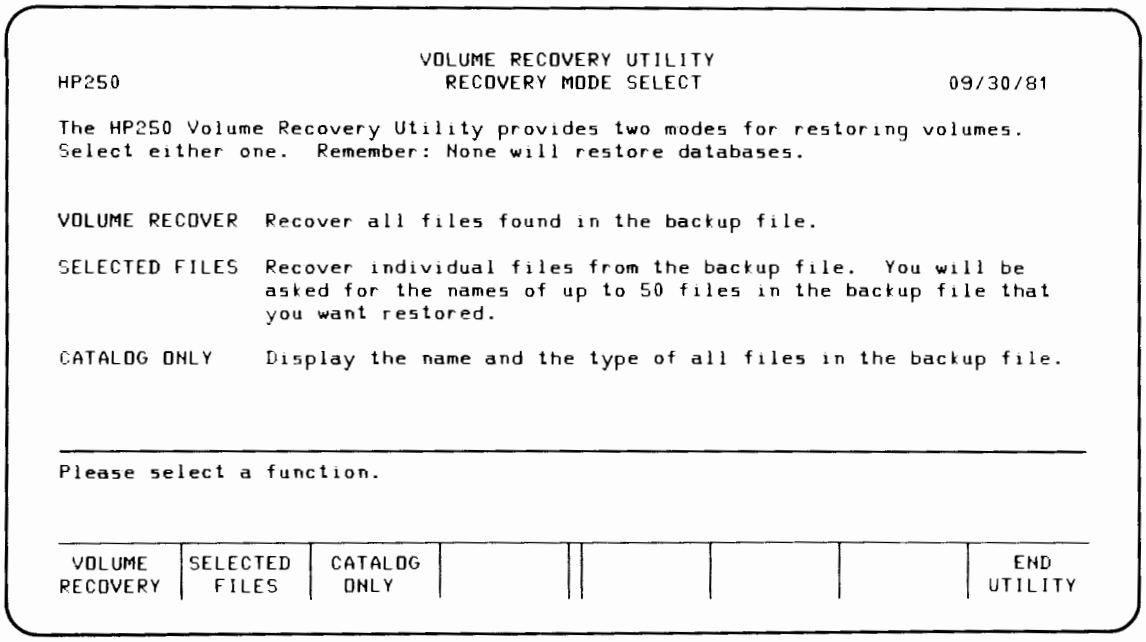
The following menu will then appear:



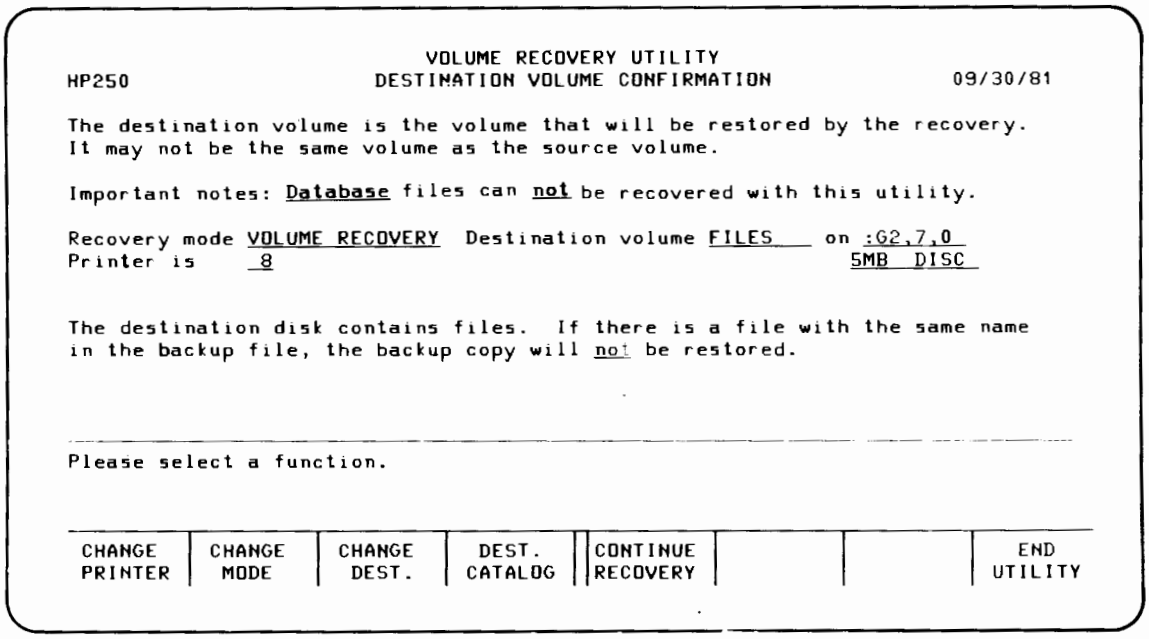
This screen requests bookkeeping information from you. The "comments" field on this form allows you to enter up to 67 characters of notes that you might want to make about this recovery. When the softkey PROCESS DATA is pressed, a syntax check is made of

the data entered. Errors cause a series of messages to appear indicating the problem and asking you for new input.

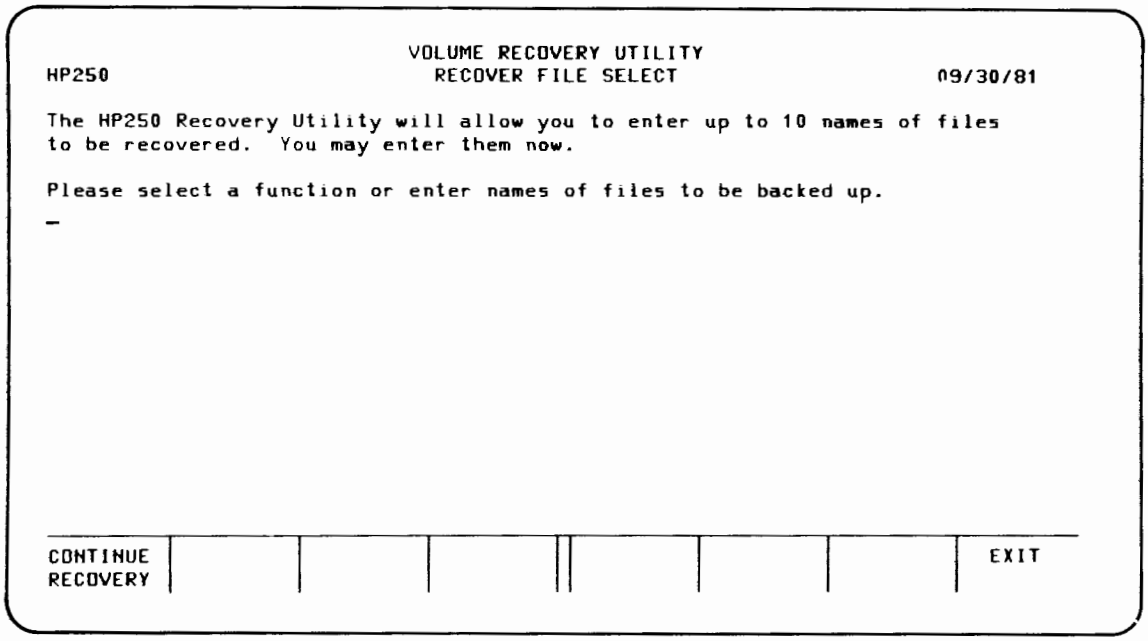
If no errors are found, the Recovery Mode screen appears.



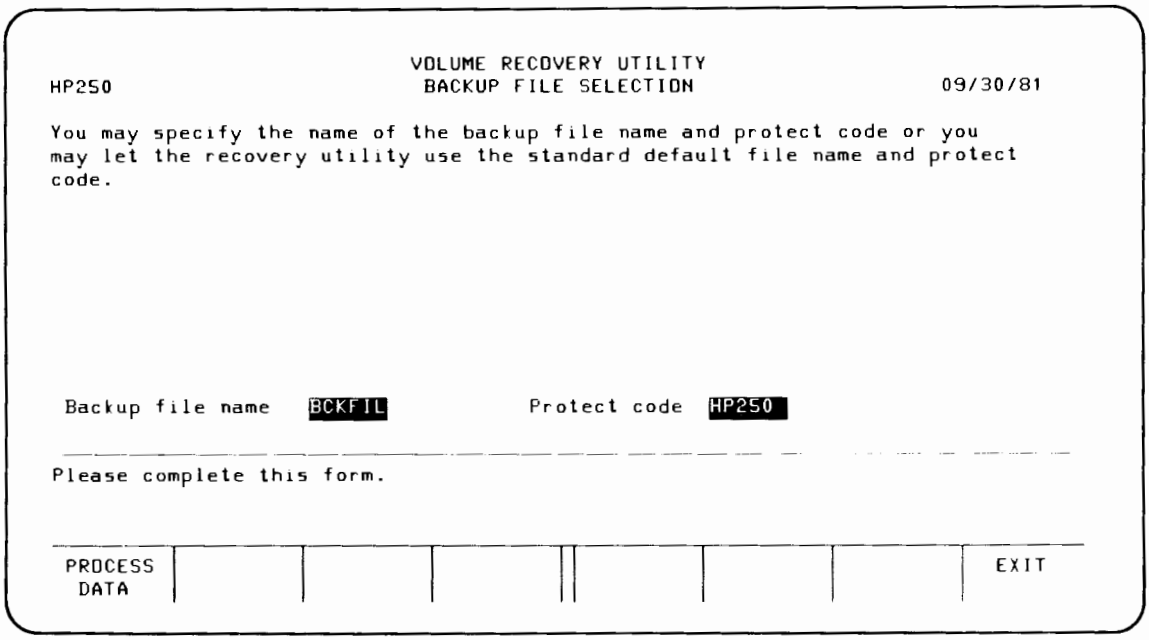
Pressing the softkeys for either the VOLUME RECOVERY or SELECTED FILES causes the Destination Volume Select screen to appear. This screen is exactly like the screen described in the BACKUP utility program. The screen displays fields "labels", "device", and "comments", referring to the volume that will receive the recovery. The disc you choose cannot have the same address as the BACKUP file. After you press the softkey to choose the destination volume, the Confirmation screen appears.



If you press the softkey CHANGE PRINTER, you will be asked to enter a new printer select code. It is recommended that you respond with the select code for a hard copy device. This will give you a reference listing of the recovered files and all of the CRT displays. If you CHANGE MODE to "selected files" or have previously chosen this mode and now press CONTINUE RECOV, the next screen to appear will ask you to input the names of the files to be recovered. Otherwise, the next screen will be the Source Volume Select.



The next screen asks you to specify the name of the BACKUP file and the protect code. The recovery displays entries for both fields, which you may alter. When you have entered the required information, press PROCESS DATA to continue. This causes the Source Volume Select to appear. Having provided the names of individual files and the name of the BACKUP file in which they reside, you are now asked to mount and select the appropriate disc.



To begin the recovery, press the softkey with the appropriate label. The utility reports back with the name of the file being recovered and its size. When the recovery is complete, the utility reports the following information:

Number of files read.
Number of files recovered.
Number of name conflicts.
Number of space failures.
Number of total errors.

Procedures and Recommendations

To recover files spread over a weekly and several daily backups, start with the most recent daily and work back to the most recent weekly.

Database Backup

The DBSTORE Statement

The DBSTORE binary statement copies portions of a data base to a backup file. The backup file may be used to restore the data base following a hardware failure or other error.

DBSTORE root file spec[;maintenance word][,set list] TO file spec[ON volume list]

The parameters are:

root file spec	A string identifying the data base name. An optional volume label or unit specifier may be appended to the data base name.
maintenance word	A string expression identifying a security password. This expression can be from 1 through 16 characters in length.
set list	A string expression identifying particular data sets. Data sets are specified by either name or number. Set identifiers are separated by commas.
file spec	A string expression specifying the name of the backup file to be created by DBSTORE. IF the ON parameter is not specified, an optional volume label or unit specifier may be appended to the backup file name.
volume list	A string expression used to identify the volume name(s) where the data base is to be copied. Each volume name is separated by a comma.

The DBSTORE binary statement copies the entire data base or selected data sets to a backup file. This statement is used whenever a backup copy of the data base is required. Once a data base has been copied to a backup file, it may be restored to the state at which the DBSTORE was executed by using DBPURGE and DBRESTORE. The backup file may span multiple volumes. When DBSTORE is executed from the keyboard, it displays either the set number of the set being stored or an * when the root file is being stored.

When a set list is supplied, DBSTORE copies only the sets specified to the backup file. Sets may be identified by name or number. If the first entry of the set list is an * (e.g., "*, 1, 2, CUSTOMER"), the root file is also copied to the backup file. If a set list is not specified, the entire data base, including the root file, is copied to the backup file. When no set list is given, the sets are copied in an order determined by the set's volume name and the set number.

When no volume list is supplied, DBSTORE creates the backup file on the default mass-storage device, or on the device appearing in the backup file specifier. If a volume list is supplied, DBSTORE creates the backup file on the first volume specified in the list, ignoring any volume in the backup file specifier. Once the backup file has been created, DBSTORE begins copying the specified sets to the backup file. Requests are automatically made to insert backup volumes and data set volumes as needed.

If there is insufficient space for the entire backup file on the first volume, the file is continued on additional volumes. Additional volume names are obtained from the volume list, if specified. If an insufficient number of volume names are given in the volume list, or if no volume list is specified, DBSTORE requests additional volumes names as needed.

The DBRESTORE Statement

The DBRESTORE binary statement uses the backup file created by DBSTORE to restore a data base to its state at the time DBSTORE was executed.

DBRESTORE file spec [ON volume spec]

The parameters are:

file spec	A string expression identifying the name of the backup file. An optional volume label or mass-storage unit specifier may be appended to the backup file name.
volume spec	A string expression identifying the volume (label) or mass-storage device (unit specifier) where the root file and sets with a default label are to be stored.

The DBRESTORE binary statement restores the data sets (or the entire data base) using the backup file created by DBSTORE. Only the portion of the data base stored by DBSTORE is restored. Before executing DBRESTORE, a DBPURGE command should be executed to purge all data sets to be restored. If the root file was stored using DBSTORE, the root file must also be purged using DBPURGE. When executed from the keyboard, DBRESTORE displays either the set number of the set being restored or an * when the root file is being restored.

The volume specifier is used to specify the location of the root file. If the root file was stored using DBSTORE, DBRESTORE creates and restores the root file on the specified volume. If the root file was not stored, the volume specifier is used to specify the location of the existing root file. If no volume specifier is supplied, the default mass-storage device is used. Data sets stored by DBSTORE that were defined in the schem without a volume specifier are restored on the root file volume.

NOTE

When the root file is stored using DBSTORE, only those data sets stored with the root file are associated with the data base following a DBRESTORE. All other data sets are considered "uncreated" by IMAGE, and cannot be accessed. These data sets must be purged using a special mode of DBPURGE, and then created using DBCREATE before they may be used.

Data Base Utility Programs

The two utility programs, DBUNLD and DBLOAD, are used to copy data entries in data base restructuring operations, and in data recovery operations. These programs utilize a backup file (which may span several volumes) to store the data entries of all or selected data sets. The backup files used here are not compatible with the files created by DBSTORE, although both files are type BKUP. Both utility programs request data set volumes and backup volumes as needed. These programs require exclusive access to the data base (i.e., the data base cannot be open).

The DBUNLD Program

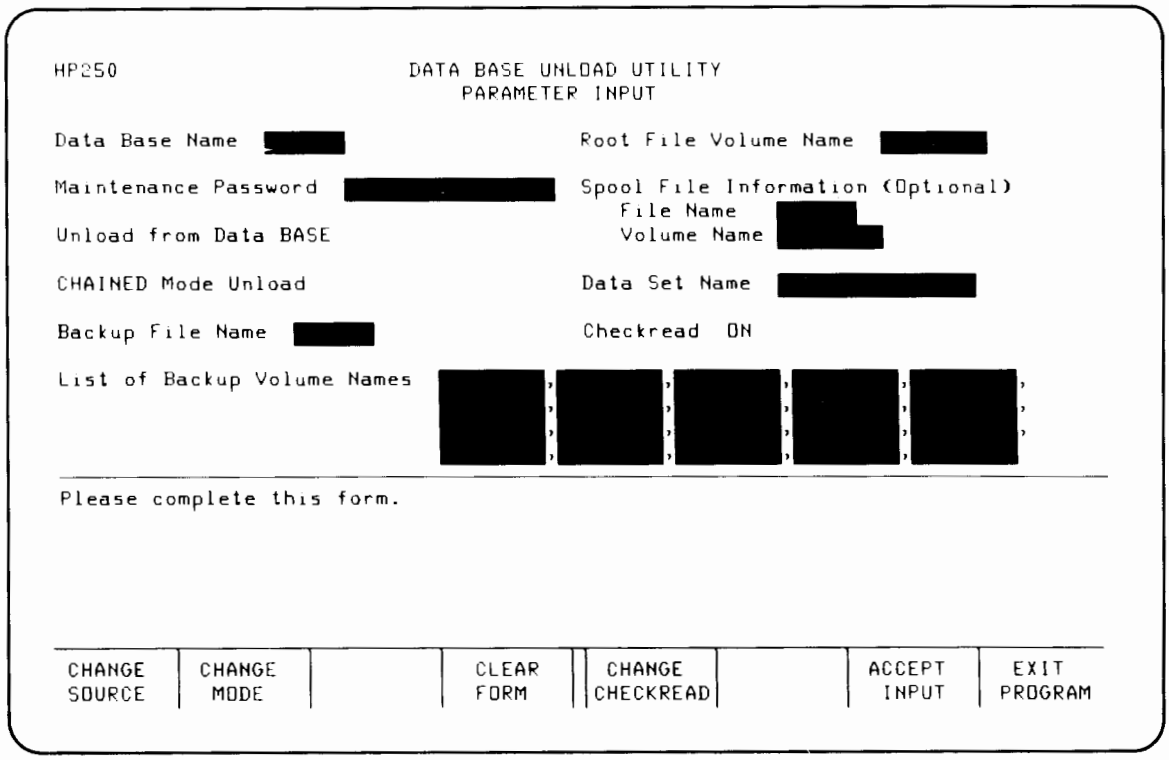
The DBUNLD utility program (data base unload) copies data set entries to a backup file. This program is divided into two parts, having the program names DBUNLD and DBULD. The FORM files* DBMFlx and DBFM2x must appear on the same disc as the program files. An error file, UNERRx, is used but is not required for program operation. Error numbers and messages are listed in Appendix A.

To run the DBUNLD program, execute the command:

RUN"DBUNLD[volume spec]"

The volume specifier must appear when the DBUNLD program is not on the default mass-storage device. DBUNLD operates correctly regardless of which device contains the DBUNLD program files, and which device has been designated to be the default disc drive (using the MSI command).

Once the RUN command has been executed, DBUNLD displays this form:



*The last character is a revision code from A through Z.

Data Base Name	Name of the data base to be loaded.
Root File Volume Name	Blank reponse defaults to default disc.
Maintenance Password	Defined by initial DBCREATE.
Spool File Name	Name of the error message log file.
Spool Volume Name	Volume to hold the error message log file.
Backup File Name	Name of file created by DBUNLD.
First Backup Volume Name	Location of first backup file segment.
Data Set Name	Used only when unloading single data set.
Backup File Set Number	Used only when unloading single data set.

To log error messages while BUNLD is running unattended, enter the name and volume of the spool file to which the errors should be logged. To use this feature, the SPOOL DROM must be loaded. Use the COPY command to list the contents of the log file after DBUNLD finishes. The COPY DROM must be loaded to execute this command.

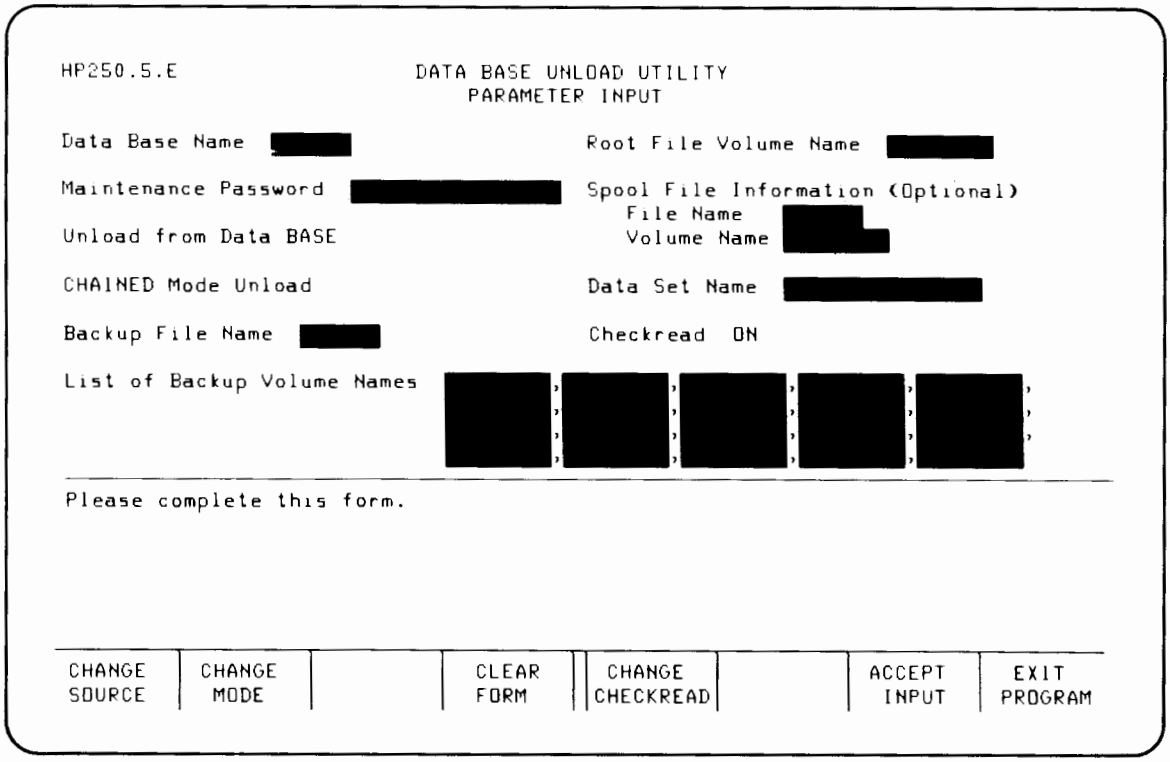
CAUTION

Do not remove the volume containing the error log file during the unloading process. Error 142 will occur, and DBUNLD will halt.

Press the CLEAR FORM key (or SFK 12) any time during form entry to erase all entries in the form. Press the EXIT PROGRAM key (or SFK 16) to terminate the program.

DBUNLD may be used to either unload an entire data base (all data set entries except automatic-master set entries) or a particular data set. The currently selected option (either unload data base or unload data set) is displayed on the form. When a single data set is to be unloaded (unload data set option), the data set name must be entered into the form. The data set name entry is ignored when the unload data base option is selected.

Data entries in detail data sets may be unloaded in either serial mode or chained mode (all master data sets are unloaded in serial mode). The currently-selected unload mode, either serial or chained, is displayed on the form. Press CHANGE MODE (or SFK 10) to change the selected unload mode.



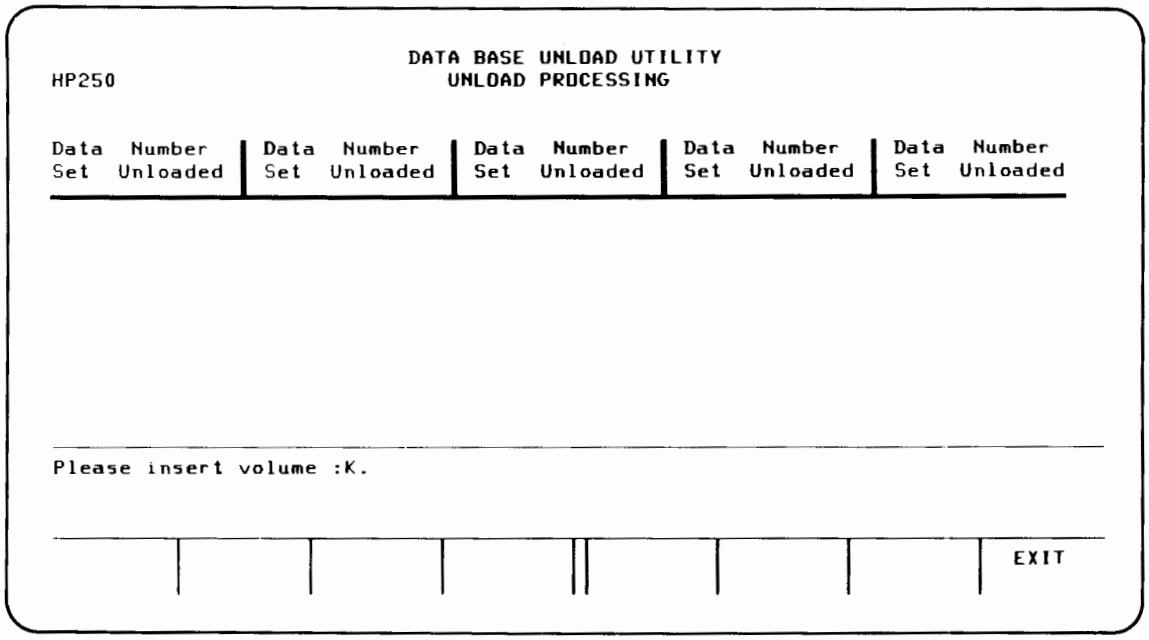
In serial mode, detail data sets entries are unloaded in physical order. This mode is somewhat faster than chained mode, since disc head movement is reduced. Data bases that have been marked corrupt by IMAGE must be unloaded in serial mode.* In addition, an attempt is made to recover as many entries as possible in a data set following a read data error (errors 87 and 88) on the data set.**

In chained mode, detail data set entries are unloaded along the primary path. This mode is somewhat slower than serial mode. The chained mode, used in conjunction with DBERASE and DBLOAD, is used to improve the access time for chained access along a detail data set's primary path. Entries can be unloaded and reloaded with entries in chained order, thus reducing disc head movement during chained access.

* If chained mode is selected and the data base is corrupt, DBUNLD will issue an error and terminate. Corrupt databases must be unloaded serially since chain information may be wrong.

**If, following a read data error, DBUNLD detects that one or more entries have been lost due to the error, the unloaded process is terminated following the unloading of that data set. If the unload database option was selected, any data sets not unloaded following the error may be unloaded using the unload data set option.

When all entries have been entered into the form, and all options and modes have been selected, press ACCEPT INPUT (or SFK 15) to begin processing. DBUNLD now checks that all required entries have been filled and displays:



Processing then continues, with DBUNLD displaying the data set number and number of entries unloaded. During processing, DBUNLD requests inserting data set volumes, backup volumes, and the volumes containing DBUNLD programs as needed. If an insufficient number of backup volumes is given, the program requests the names of additional backup volumes. Informational messages and requests for operator action are displayed on the line directly below the solid line as shown in the figure. Error messages are displayed on the bottom line.

To terminate the current operation, press EXIT (or SFK 16) anytime during program execution.

The DBLOAD Program

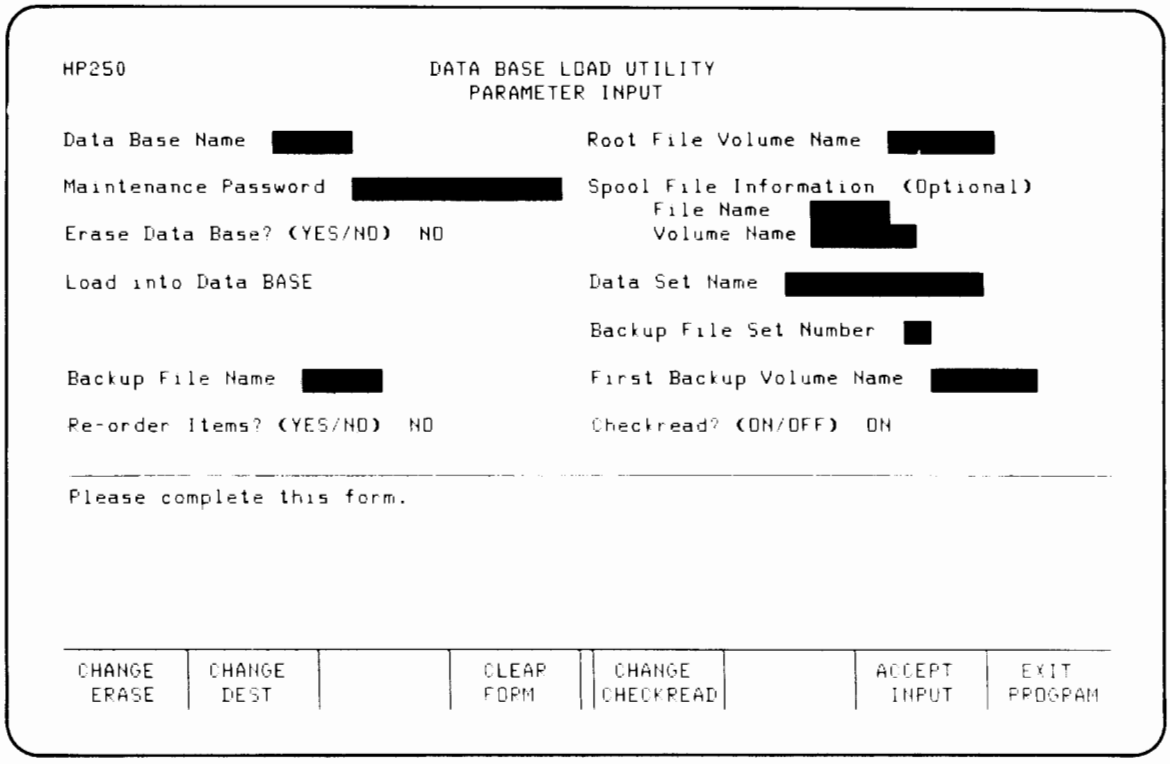
The DBLOAD utility program loads data entries into a data base from a backup file created by DBUNLD. This program is divided into three programs: DBLOAD, DBLOD and DBLD. The FORM files* DBFM3x, DBFM4x and DBFM5x must appear on the same disc as the program files. An error file, LDERRx, is used by DBLOAD to display error messages instead of error numbers, but is not required for program operation. A list of error codes and messages is in Appendix A.

To run the DBLOAD program, execute the command:

RUN"DBLOAD[volume spec]"

The volume specifier must appear when the DBLOAD program is not on the default mass-storage device. DBLOAD operated correctly regardless of which device contains the DBLOAD program files, and which device has been designated to be the default disc drive (using the MSI command).

Once the RUN command has been executed, DBLOAD displays:



* The last character is a revision code from A through Z.

This information may now be entered in any order:

Data Base Name	Name of the data base to be loaded.
Root File Volume Name	Blank reponse defaults to default disc.
Maintenance Password	Defined by initial DBCREATE.
Spool File Name	Name of the error message log file.
Spool Volume Name	Volume to hold the error message log file.
Backup File Name	Name of file created by DBUNLD.
First Backup Volume Name	Location of first backup file segment.
Data Set Name	Used only when unloading single data set.
Backup File Set Number	Used only when unloading single data set.

Press CLEAR FORM (or SFK 12) any time during form entry to erase all entries in the form. Press EXIT PROGRAM (or SFK 16) to terminate the DBLOAD program.

The DBLOAD program can optionally erase the entire data base (using DBERASE) before loading entries. The erase option should be selected when loading a corrupt data base following a serial DBUNLD. An erase operation is not requird if the data base is being restructured, and has just been created using DBCREATE. The current erase option is displayed on the form, and is changed by pressing CHANGE ERASE (or SFK 9).

DBLOAD may be used to load all entries stored in the backup file, or only those entries from a particular data set. The currently-selected option, either load data base or load data set, is displayed on the screen. Press CHANGE DEST (or SFK 10) to change the selected option. When a single set is loaded (load data set option), the name of the data set to be loaded must be entered. The number of the data set in the backup file whose entries are to be used must be entered if its set number is different than the number of the set to be loaded. The data set name and backup file set number entries are ignored when the load data base option is selected.

To log error messages while DBLOAD is running unattended, enter the name and volume of the spool file to which the errors should be logged. To use this feature, the SPOOL DROM must be loaded. Use the COPY command to list the contents of the log file after DBLOAD finishes. The COPY DROM must be loaded to execute this command.

CAUTION

Do not remove the volume containing the error log file during the loading process. Error 142 will occur, and DBLOAD will halt.

CHAPTER 4
Run Only Programs

The ROUTIL Program

The ROUTIL program is a run-only BASIC-language utility that copies and purges run-only programs. ROUTIL can also be used to make program files run-only. (To convert individual programs to run-only by program command, use the RUN-ONLY statement.)

ROUTIL allows you to copy or purge a complete set of files that are part of a single program set. For example, the QUERY program consists of 39 files. ROUTIL automatically handles all of the QUERY programs when the user copies or purges QUERY. By using the EDITOR program (see Chapter 7) to create a data file, you can add your own program sets to those handled by ROUTIL.

To run ROUTIL, execute the following:

```
RUN"ROUTIL"
```

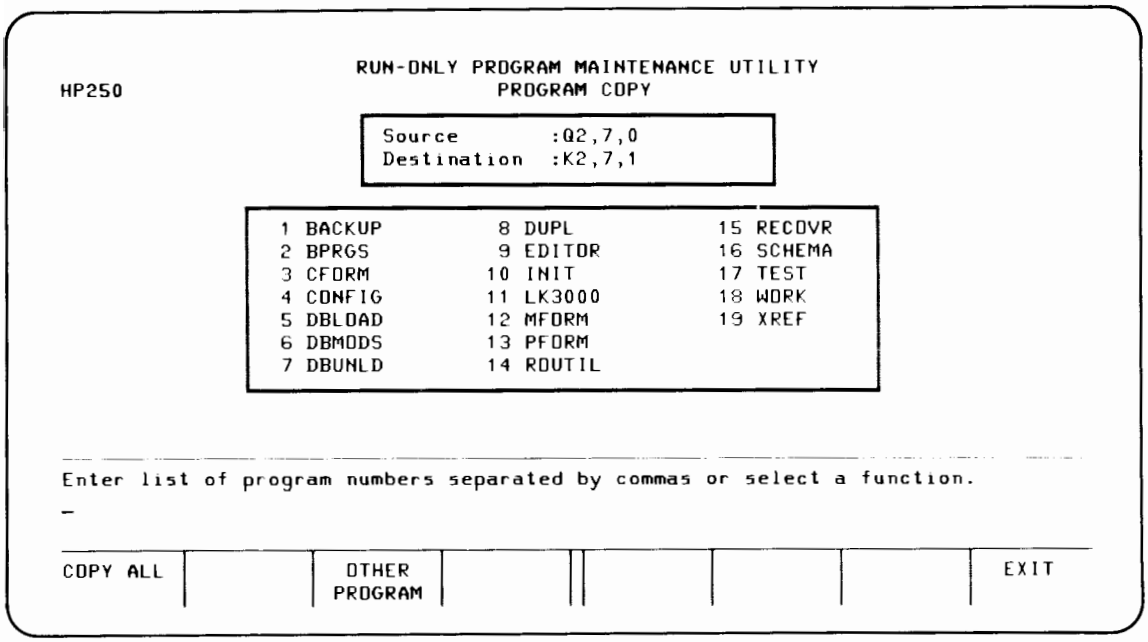
The initial menu is displayed:

```
HP250                RUN-ONLY PROGRAM MAINTENANCE UTILITY
                                MAIN MENU

          COPY              - Copies RUN-ONLY programs between devices.
          PURGE             - Purges RUN-ONLY programs.
          RUN-ONLY          - Makes a specific program RUN-ONLY.
          SYSTEM & DROMS    - Copies or purges SYSTEM and DROM files.
          EXIT ROUTIL       - Terminates program.

Please insert desired volumes and select a function.

| COPY | PURGE |  | RUN-ONLY |  | SYSTEM & DROMS |  | EXIT ROUTIL |
```

Now, insert needed media, and select the desired function.

Copying Run-Only Files

After pressing COPY, select the source and destination volumes for the copy operation. The utility then catalogs and lists the standard run-only programs* on the source volume. For example:

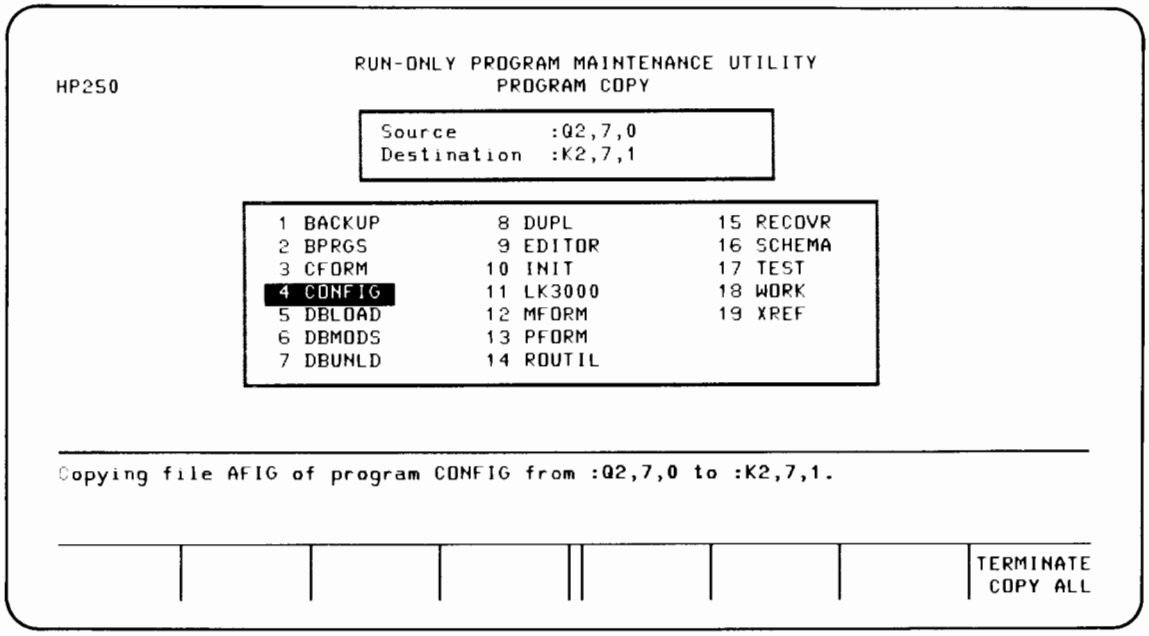


To avoid copying to the wrong volume, verify that source and destination are correct before continuing.

Now you have the options of copying all programs in the list (press COPY ALL), or copying individual programs (enter list of program numbers), or copying another run-only program (press OTHER PROGRAM and enter the program file name). Press EXIT to return to the initial menu.

*To include additional run-only programs in the listing, see "Adding Programs to the ROUTIL List" in this chapter.

When COPY ALL is selected, each program in the list is copied, starting with program #1. Each program name is displayed as it is copied. Here is an example of the copy operation in progress on program #4:



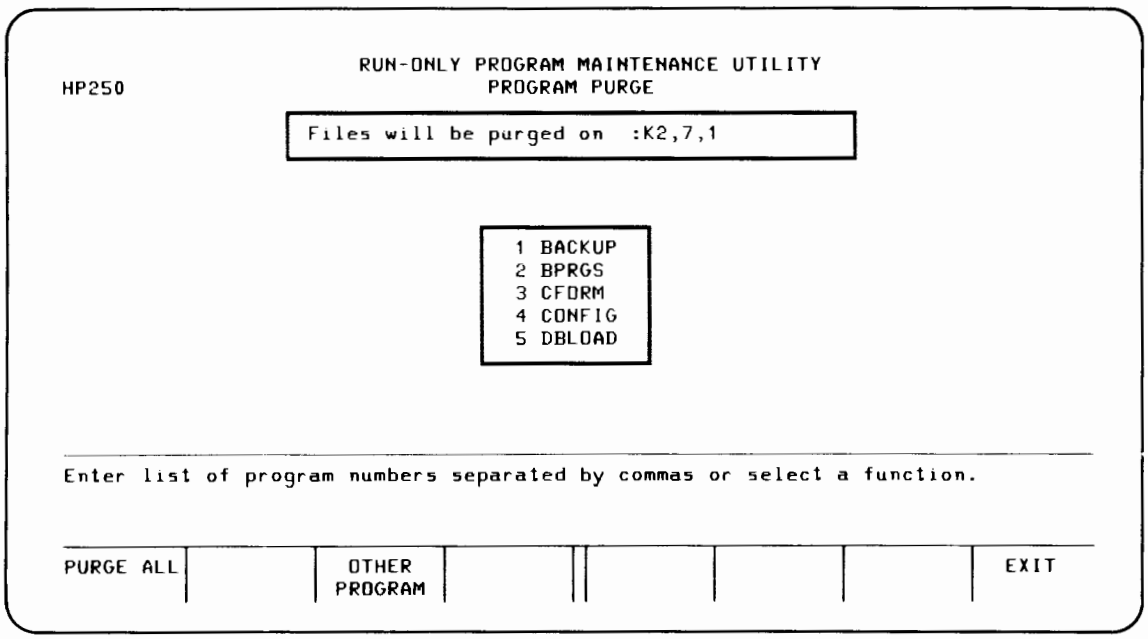
Press TERMINATE COPY to terminate the copy operation.

NOTE

ROUTIL cannot copy data base files. Refer to The XCOPY Utility in Chapter 5 of this Manual.

Purging Run-Only Files

After selecting the PURGE softkey, you are asked to specify a program volume. The utility then catalogs and lists run-only programs on the source volume. To avoid an unwanted purge, make sure that the displayed volume name is correct. For example:



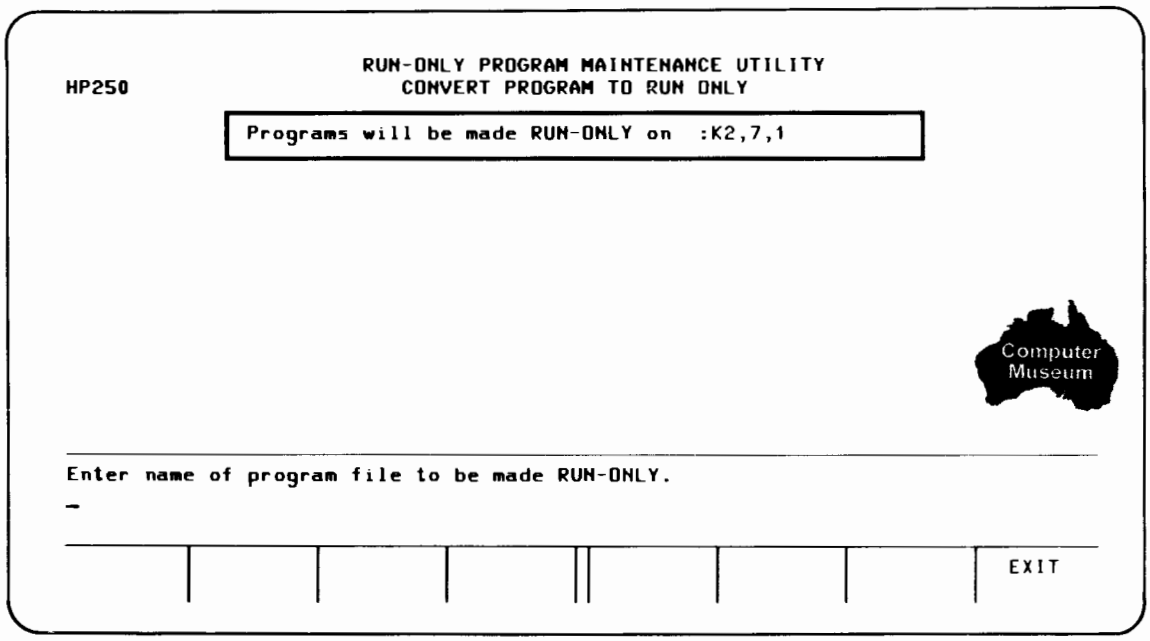
Now you have the option of purging all files for all of the programs in the list (press PURGE ALL), or purging only programs that you specify by number (enter the numbers separated by commas and then press ⏎), or purging a run-only program file that is not in the list (press OTHER PROGRAM and enter the program file name).

Press EXIT to return to the initial menu.

Press TERMINATE PURGE to terminate a purge operation.

Creating Run-Only Programs

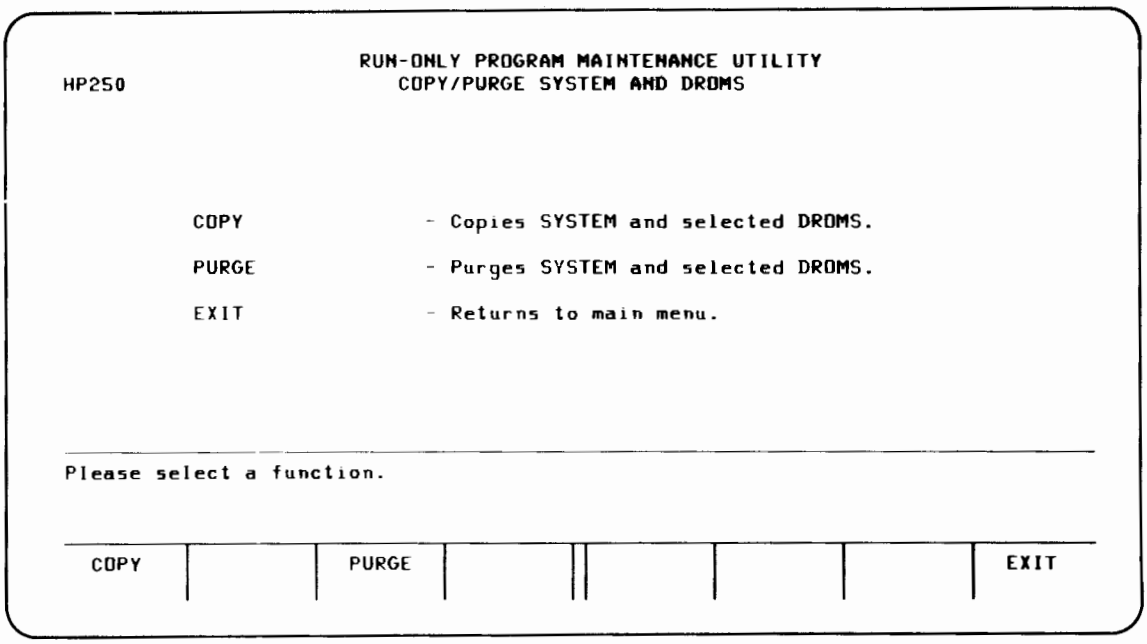
After selecting the RUN-ONLY softkey, specify a program volume name containing a program to be made run-only. After entering the volume name, this menu appears:



Now enter the file name of the program to be made run-only. Only "PROG" files are accepted. Once a program is made run-only, it is impossible to alter its run-only status. Therefore, make sure that a source version or another copy of the program is available before making it run-only. Press EXIT to return to the initial menu.

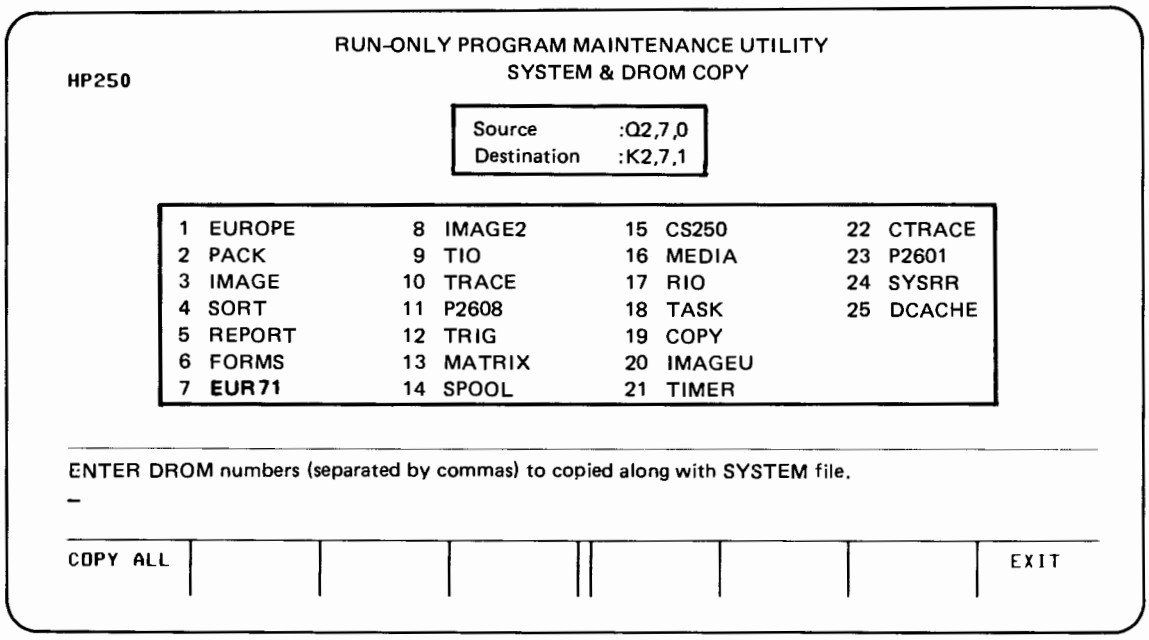
System and DROM Files

Selecting the SYSTEM & DROMS softkey allows you to either copy the SYSTEM file and selected DROMS or purge the SYSTEM file and selected DROMS:



COPY - After pressing COPY, select the source and destination volumes. Then the DROM files on the source volumes are cataloged and listed.

For example:



You have the option of copying only the SYSTEM file (press ⇧), copying the SYSTEM file and all DROM files (press COPY ALL), or copying the SYSTEM file and only the DROM files you indicate by entering a number list. Press EXIT to return to the main menu.

NOTE

The utility will not copy a SYSTEM file over a SYSTEM file of a different revision. First PURGE the old SYSTEM file as described next.

PURGE - After selecting PURGE, select the volume. The DROMS are then cataloged and listed as shown previously. You have the option of purging the SYSTEM file and all DROMs (press PURGE ALL), or purging only those DROMs you specify by entering a number list.

Adding Programs to the ROUTIL List

You can add your own run-only programs to those cataloged by ROUTIL by using the EDITOR program. If a data file named RODATA is on-line, ROUTIL reads RODATA and adds the file names to the lists generated during COPY PROGRAM and PURGE PROGRAM routines. If multiple copies of RODATA are on-line, the file on the default device is read. If no copy of RODATA is on the default device, the on-line devices are searched in the order of their appearance on the READ LABEL command. If a RODATA file is not found, ROUTIL lists only the RUN-ONLY programs.

The syntax of an entry in the file RODATA is as follows:

prog name ; number of files ; file spec$_1$[; file spec$_2$...]

Where:

prog name	The generic name for the set of files. This does not have to correspond to a program or file name. For example, "Bprgs" in the ROUTIL system utilities list refers to a set of binary programs and not to the name of any one program.
number of files	The number of files in the set. This number must match the number of files in the list that follows it.
file spec	A file name optionally followed by a protect key. The protect key, if present, must follow the file name and be enclosed in parentheses.

The format of the file RODATA is simply a protect key on the first line followed by lines consisting of the entries described above. An entry may be continued on more than one line. The following screen is an example of using EDITOR to create RODATA:

```
HP250                              TEXT EDITOR

/ADD

   1    PRKEY
   2    Games,3,SHIPS,OTHELLO,HOBBIT
   3    Ledger,5,LFORM1(LEDGE),LFORM2,LEDOV1,LEDOV2,LEDGER
   4    Misc,10,MISC1,MISC2,MISC3,MISC4,MISC5,MISC6,MISC7
   5    MISC8,MISC9,MISC10

/KEEP "RODATA",UNN

/_
```

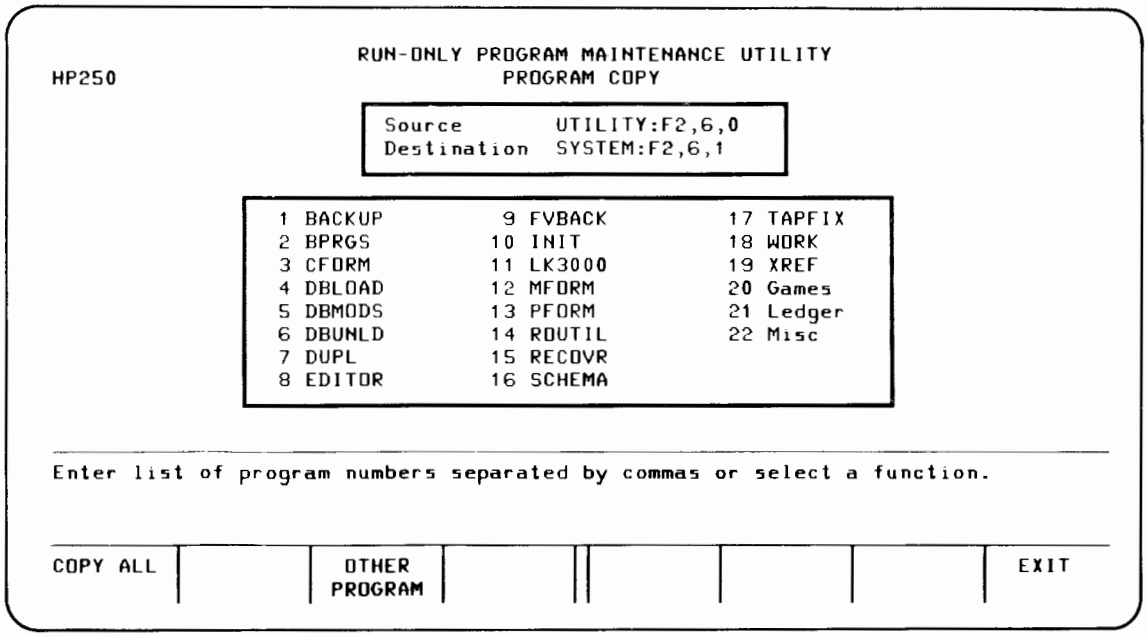
The first line is the protect key for RODATA. In this example, the protect key for RODATA is "PRKEY". Whenever this version of RODATA is copied by ROUTIL, it is protected on the destination device with the protect key in the first line. The protect key for RODATA must be included and must not be null.

The second line defines a set of programs referred to as "Games". The three program files - SHIPS, OTHELO, HOBBIT - are unprotected. The third line defines a set of programs called "Ledger". The Ledger set includes two forms (LFORM1 and LFORM2), two overlays (LEDOV1 and LEDOV2), and a main (also supervisor) program (LEDGER). Note that the form LFORM1 is protected with the protect key "LEDGE" by including "LEDGE" in parentheses after LFORM1. (It is not necessary to include a protect key for a run-only file. It remains run-only after being copied.)

The last two lines comprise a set called "Misc". This set includes the files MISC1 thru MISC10. Note that the "Misc" entry is continued from line 4 thru line 5. When an entry is continued, do not include the comma at the end of the line.

It is good practice to always include the supervisor program for a set of files (the file specified in the RUN command) as the last file in the list. The reason for this is that ROUTIL copies beginning with the first file in the set, and purges beginning with the last. Thus, if the main program is the last in the list, there is no possibility of having a main program on a volume with an incomplete set of files due to an incomplete COPY or PURGE.

Here's how ROUTIL displays the set of files when the above file is included as RODATA:



Note that "Games", "Ledger" and "Misc" are now at the end of the list. Care should be taken to ensure that RODATA is in the correct format because ROUTIL will not run if RODATA contains an inconsistency.

ROUTIL can accommodate 20 additional program sets by using the RODATA file. Up to 50 total files can be in the program sets.

CHAPTER 5

File Copy (XCOPY)

The XCOPY Utility

The XCOPY utility is a binary program which provides the XCOPY statement, an enhanced version of the COPY statement. XCOPY copys any file types except SYST and DROM. To load the XCOPY binary, execute:

```
LOAD BIN "XCOPY"
```

The XCOPY syntax is:

```
XCOPY source file spec, file type,protect code,
                              TO dest file spec [;REPLACE]
```

The source and destination file specs are string expressions containing the file name and, optionally, the volume spec. The file type is a string expression containing the four-digit file type (DSET, ROOT, or BKUP). The protect code is a string expresion containing the protect code or the two-digit set number. For example:

```
XCOPY "REF1", "DSET", "01" TO "REF1"
```

As with the COPY statement, XCOPY creates the specified file on the specified volume and copies the file. If the destination file already exists, add ;REPLACE to copy the source file to the existing file. Error 851 occurs if the files are not compatible when ;REPLACE is used.

When copying data sets, the data base for the source and destination sets must not be open. Copying data sets without the corresponding root file and related data sets causes unexpected results when the data sets are accessed.

CHAPTER 6

Tape Fix

The TAPFIX Utility

The TAPFIX utility is provided for use with your cartridge tapes. Use TAPFIX when you have a problem with a cartridge tape; TAPFIX identifies the status of, and in some cases fixes problems with, both the 150 ft. and 600 ft. cartridge tapes.

You will want to run TAPFIX if you get an error 160 or 161, and don't understand why you got the error.

Normal Operation

In normal operation, an area of disc is set aside for read/write activities between the tape and disc; this area is called a buffer. When you load a tape, a buffer is created, and the tape and buffer establish a relationship; they are now said to correspond. When you press the UNLOAD button, any incomplete tasks between the tape and buffer are taken care of, and the tape buffer correspondence is terminated normally.

If a tape is physically removed from a drive without the UNLOAD process (e.g., after a power failure), then the tape has been removed prematurely. The buffer still holds information for the removed tape; the buffer is "pending". The tape is also pending, as it requires information from the buffer.

Reinserting the tape and allowing it to load fully reestablishes the relationship between the tape and buffer. You must, however insert the tape into the same drive it was removed from for the correspondence to resume.

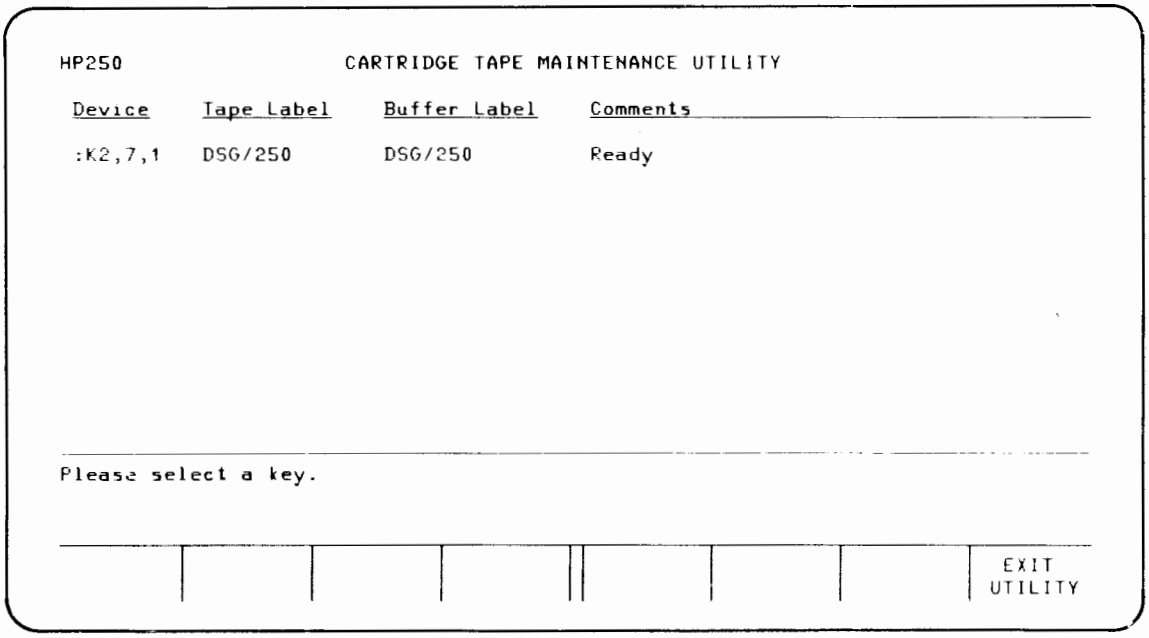
If you do not reinsert a prematurely removed tape back into the same drive, you will generate an error. TAPFIX will diagnose this and other errors.

Using TAPFIX

To use TAPFIX, enter the following:

```
RUN"TAPFIX"
```

If there are no problems with your tape or buffer, "Ready" will appear in the comments line.



Device refers to the unit address of a tape drive; each address is unique (e.g., :K2,1,1 :K2,2,1 :K2,3,1). The Buffer Label is the volume label, and the Tape Label shows the volume label the last time the tape was unloaded. When "Ready" is indicated, your buffer and tape correspond, even though the tape label may have been changed. Comments are the messages that you will take note of to determine the status of your tapes and buffers.

If a tape and buffer do not correspond, use TAPFIX to diagnose and deal with the problem. TAPFIX will tell you the status of your tapes. For example, your tape status could be:

- Tape ready.
- Tape uninitialized.
- Tape not ready.
- Tape removed from another drive.

Also, TAPFIX will tell you the status of each tape buffer located on disc. A buffer status could be:

- Buffer ready.
- Buffer waiting for tape labeled "Label".
- Disc not ready.
- Disc uninitialized.

NOTE

If you get the comment "Disc not ready." you probably have a serious hardware problem.

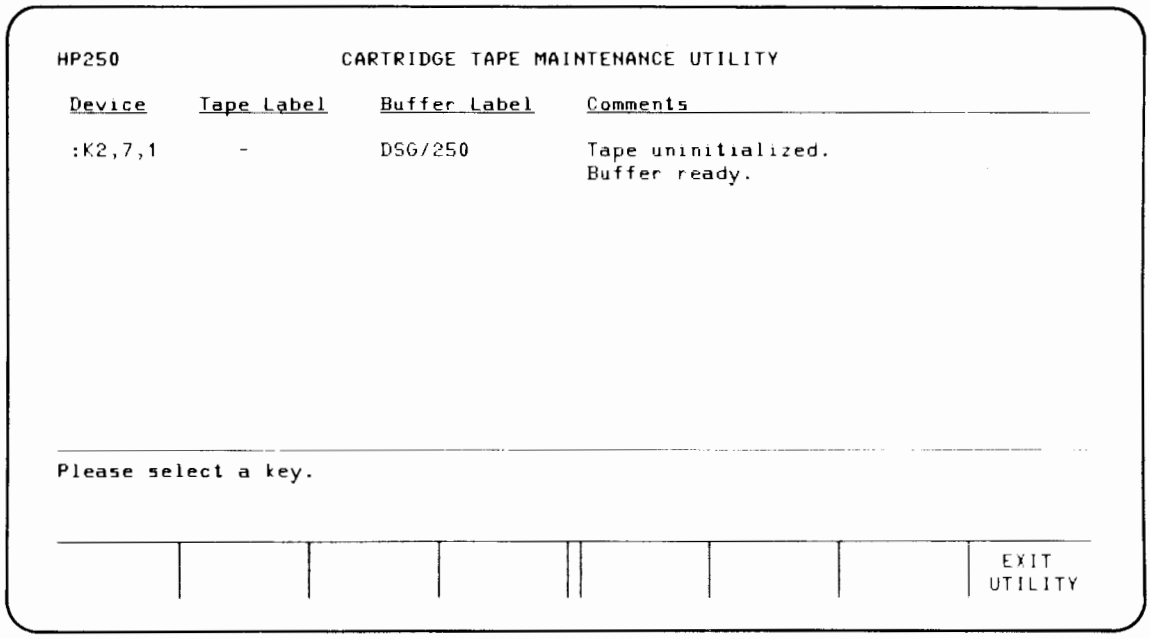
No Cartridge Tape Drives Present

This comment tells you that you either do not have a tape drive, or it is not being recognized.

If you have a tape drive in this case, check the cable connecting it to the HP 250. If the cabling is correct, call your support person and explain the situation.

Tape Uninitialized

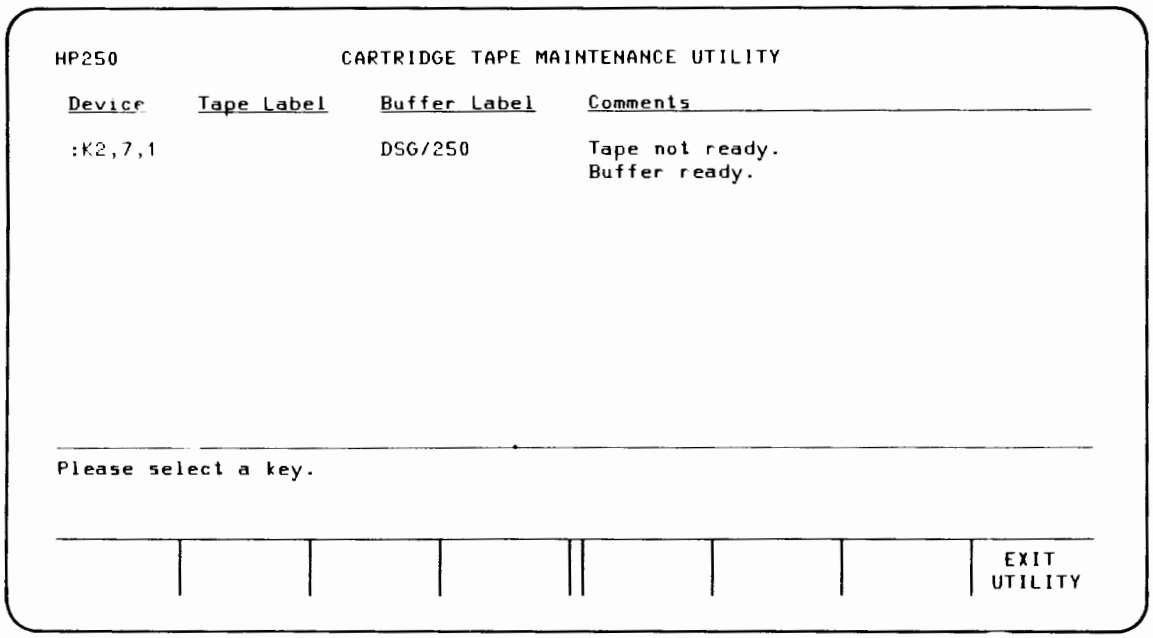
This comment tells you that the new tape in the drive has not been prepared for use yet.



Get out of TAPFIX, and run INIT, following the directions for tape initialization in Chapter 1.

Tape Not Ready/Buffer Ready

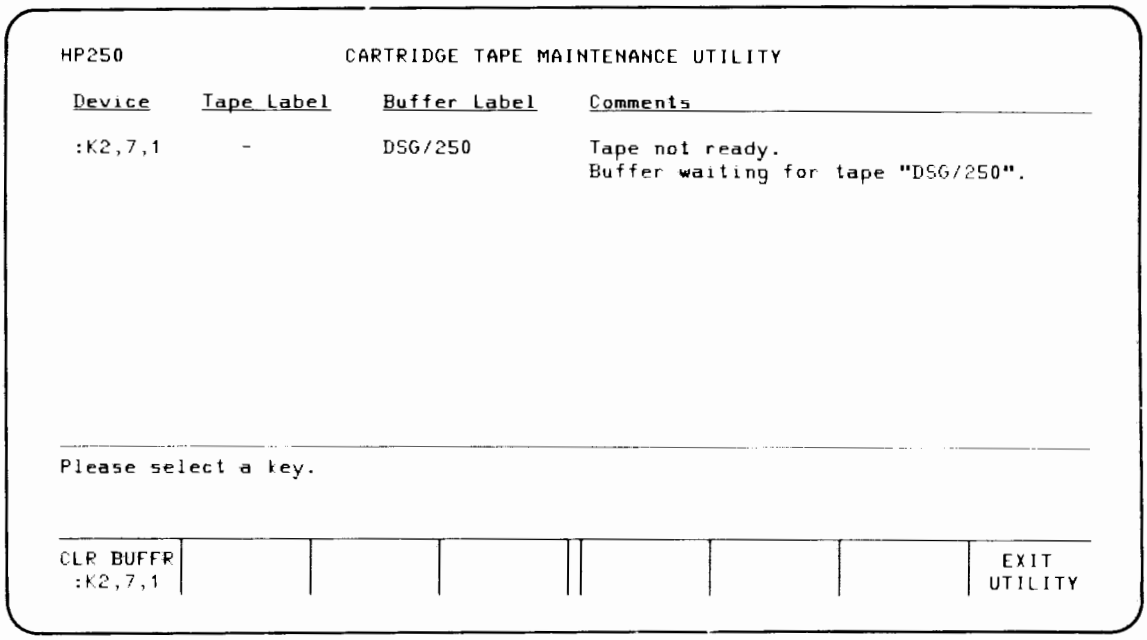
This comment could be caused by one of two situations. The drive could be empty or contain a tape not fully loaded yet.



If there is no tape in the drive, insert any of your tapes at this time; TAPFIX will recognize that the status has changed, and will change the screen message. When the tape is fully loaded, the comment column will indicate that the tape is ready.

Tape Not Ready/Buffer Waiting For Tape "LABEL"

This message indicates that a tape was removed prematurely from the drive; the tape/buffer correspondence was not ended normally. An error 161 (disc buffer pending) may have occurred in your normal operation.



Insert the tape that was last used, and allow it to load. Now, you will get a "Ready" message. If you don't wish to use this tape, unload it; tape/buffer correspondence will end normally.

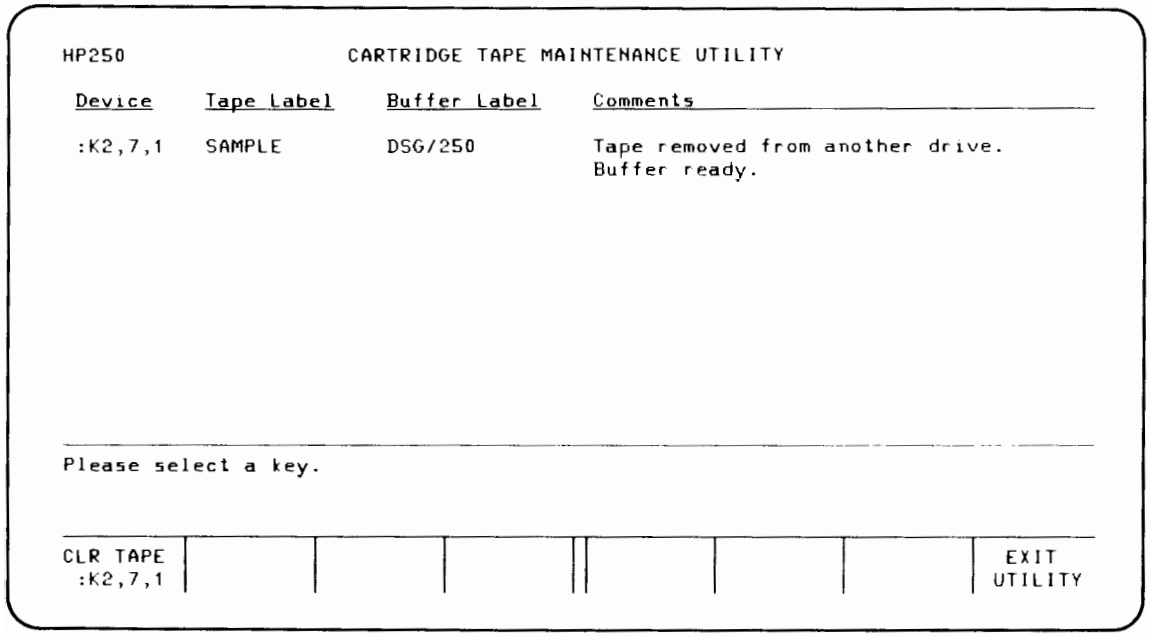
If you do not have the tape that was used last in the drive, you have a problem that TAPFIX can remedy. Press CLR BUFFER; the buffer is cleared and reset as if a tape were being properly unloaded.

NOTE

If you clear a buffer created by a tape that was not properly unloaded, you cannot use the tape contents. The information on the tape is no longer valid; you will have to clear the tape the next time you use it, and ALL INFORMATION WILL BE LOST.

Tape Removed From Another Drive

If a tape has been removed prematurely, and you try to use it in another drive, you will generate this comment. Determine where the tape came from, and reinsert it in that drive, loading and unloading it normally. If, for some reason you cannot do this, press CLR TAPE. Then, run "INIT" and use the purge all option.



NOTE

A tape removed from another drive will appear normal, but you must assume that all files are corrupt.

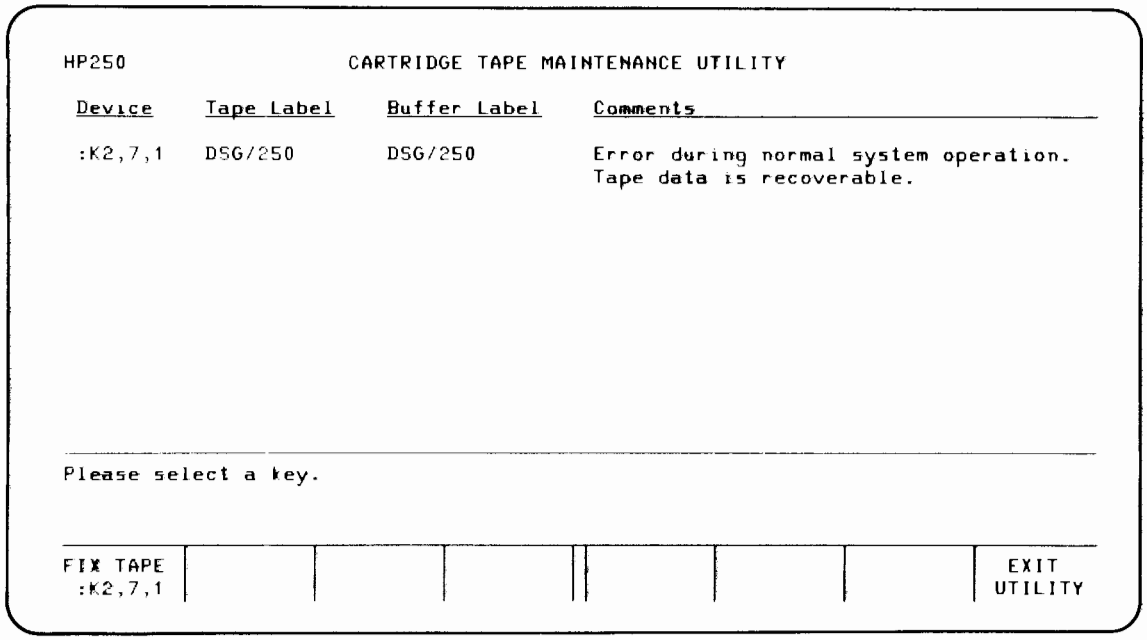
NOTE

If you have only one drive or are certain that a tape has never been used in another drive, and the comment "Tape Removed From Another Drive" occurs, you may have a system error. Clear both the tape and buffer; you cannot recover the data on this tape.

Diagnosing Errors

Error During Normal System Operation. Tape Data is Recoverable.

In this situation, your buffer and tape correspond, but a power failure or system error during an operation occurred, causing an error 160 or 161.



You can remedy this situation by pressing the FIX TAPE that corresponds to the drive with a problem. FIX TAPE is a normal operation that will not affect the contents of a tape.

NOTE

The comment "Apparent system malfunction. TAPE DATA IS CORRUPT." indicates that information on this tape is corrupt, even though it may appear normal to you. Reset the tape by pressing the CLR TAPE softkey. Then, run INIT as discussed in Chapter 1, and use the PURGE ALL option to purge all files from the tape.

CHAPTER 7

HP 250 Editor

Introduction

The HP 250 EDITOR program is used to create and maintain data files containing lines of text. The primary purpose of the EDITOR is to build and modify data base definitions (schemas). EDITOR may also be used to edit files containing only string data, such as files produced by the SAVE statement.

The EDITOR program does not make changes to existing data files directly. Instead, a copy of the file is maintained in memory and in two scratch files. This copy of the file is known as the work file. All additions, modifications, and deletions are made only to the work file. The work file may be copied to a new or existing data file at any time.

EDITOR organizes the work file into pages (blocks). A page can contain from 5 through 200 lines, depending on the available user memory size. Pages are automatically loaded into memory and copied to the scratch files as needed. Lines within the page in memory may be accessed quickly, while all other lines must be located on the scratch files and loaded into memory. Thus, editing time may be significantly reduced by making changes to lines in ascending line-number order.

To run the EDITOR program, execute the command:

RUN "EDITOR [volume spec]"

The volume spec parameter must appear when the EDITOR program is not on the default mass storage device. Following the RUN command, the EDITOR displays:

```
HP250.          TEXT EDITOR

/
```

The slash (/) following the heading indicates the EDITOR is ready to execute commands. Commands may be entered in upper or lower case. Several commands may be entered on one line by separating commands with semicolons (;). The total command line cannot exceed 160 characters (two display lines). EDITOR commands are described later in this chapter.

During normal operations, two scratch files EDxA and EDxB, are used to store portions of the work file. A third file, EDxH, is created if a HOLD command is executed.* These files are created on the default mass storage device, which must remain on-line while the program is running. Each file requires a minimum of 80 sectors, and may require more disc space when editing large data files.

*In each file name, the letter x will be replaced by a letter from A through K.

All data in the work file is stored and retrieved as lines. Each line is assigned a unique line number from .001 through 9999.999.

Lines are normally 80 characters or less, but may be as long as 160 characters ** (two display lines). When the line number is displayed along with the line, the number is displayed in half bright to distinguish it from the line.

EDITOR commands operate on a single line or on groups of lines. Individual lines are specified by a single line number. In addition, the first and last lines of the work file can be specified by using the words FIRST or LAST instead of a line number. A group (range) of lines is specified by two line numbers separated by a slash (/). All lines in a work file are specified by the word ALL. Some examples of line and range specifiers are:

1	Specifies line one.
FIRST	Specifies the first line in the work file.
1/10.5	Specifies all lines from 1 thru 10.5.
FIRST/LAST	Specifies all lines in the work file.
ALL	Specifies all lines in the work file.

Error Messages

Two different kinds of error messages are reported by EDITOR. Normal errors are reported when the given command cannot be performed (e.g., SYNTAX ERROR). Warning messages are displayed when special conditions are encountered (e.g., LINE TRUNCATED), but do not interfere with the execution of the command. Error messages are generated using a special error message file, EDERRS. If the disc containing the EDERRS file is not on-line, error messages will have the form:

--- ERROR --- error number

A list of error numbers and their meaning is in Appendix A.

**The Schema Processor reads and prints only the first 80 characters of a line, and processes only the first 72 characters of a line, regardless of the actual line length.

Special Control Keys

is used to execute all EDITOR commands.

[CLEAR] clears the line just typed and positions the cursor at the left margin.

[HALT] terminates an edit operation. [HALT] can be used to terminate the ADD, CHANGE, DELETE, FIND, HOLD, LIST and MODIFY commands.

[✲] used to examine the value of certain EDITOR parameters. The total number of lines in the work file are displayed by typing LINES [✲] . Type Length [✲] to display the maximum number of characters per line. Type LP [✲] to display the number of lines per page output on an offline listing.

EDITOR Commands

The following commands are used with EDITOR to edit the work file.

ADD	Add lines to the work file.
CHANGE	Changes character strings in the work file.
DELETE	Deletes lines from the work file.
END	Terminates the EDITOR program.
FIND	Finds specified character strings or current line position.
GATHER	Renumbers a work file.
HOLD	Saves lines from the work file into the hold file.
KEEP	Saves the work file as a data file.
LIST	Lists lines from the work file to the display or printer.

MODIFY	Modifies lines in the work file.
SET	Sets EDITOR parameters
TEXT	Copies a data file into the work file.
WHILE	Repeats a group of EDITOR commands.

The ADD Command

{A / ADD} [Q][line number][,HOLD]

The ADD command adds lines of text into the work file. Lines may be entered from the keyboard or from the HOLD file. Entering two slashes (//) or pressing HALT terminates the ADD command.

If no options are specified, the line number of the line to be added is displayed (in half bright), and the cursor is positioned after the number in preparation for input from the keyboard. Lines are added directly after any existing lines in the work file. Subsequent lines are numbered in increments of 1. If the Q (quiet) parameter is specified, no line numbers are displayed.

If a line number is specified, lines are added starting at the specified line. Subsequent lines are added in increments of 1, .1, .01, or .001, depending on the line number specified and the next higher line in the work file. The specified line number must be numeric, and not reference an existing line number. The line number parameter allows lines to be added anywhere in the work file.

Specifying HOLD allows lines of text to be added from the hold file into the work file. Lines from the hold file are numbered as if they were entered from the keyboard.

Two examples of this command are:

```
ADD 5.1
```

Adds lines 5.1 into the work file. Subsequent lines are numbered in increments of .1, .01, or .001, depending on the number of the next line in the work file.

```
ADD,HOLD
```

Adds lines of text from the hold file. Lines are inserted at the end of the work file. All lines in the hold file are added unless either HALT is pressed or an error occurs.

The CHANGE Command

{CHANGE / C} [Q] string1 TO string2 [IN range list]

The CHANGE command replaces character strings within specified lines. Both string1 and string2 may be any ASCII string, and must be delimited by any non-alphanumeric character* not appearing in the string.

If no options are specified, all occurrences of string1 are replaced with string2 in the current line. The line is then displayed if any replacements were made. If Q (quiet) is specified, the line is not displayed.

If a range is specified, all lines within the specified range that contain string* are changed. Changed lines are displayed if Q is not specified. The change operation is terminated by pressing HALT .

Some examples of this command are:


```
C "ABC" TO "CBA" IN 1/5,8,9/13
```

Changes all occurrences of ABC to CBA in lines 1 thru 5, line 8, and lines 9 thru 13. All changed lines are displayed.

```
CHANGE Q "ABC" TO "DEF" IN 1
```

Changes all occurrences of the string ABC to DEF in line 1. Line 1 is not displayed.

```
CHANGE "ABC" TO "ABC" IN ALL
```

Displays all lines containing the string ABC.

* The string delimiter must be a single character, and cannot be a space, semicolon (;), alphabetic character (A thru Z, a thru z) or a number (0 thru 9).

The DELETE Command

{DELETE / D} [Q][range list]

The DELETE command deletes lines from the work file. Deleted lines are not recoverable.

If no parameters are specified, the current line is displayed and deleted. If Q (quiet) is specified, the line is not displayed.

If a range is specified, all lines within the specified range are deleted. Deleted lines are displayed if Q is not specified. The delete operation may be terminated by pressing HALT .

Some examples of this command are:

```
DELETE 5
```

Displays and deletes line 5 from the work file.

```
DELETE 5/LAST
```

Displays and deletes all lines from line 5 to the last line in the work file.

```
DQ 5/7,9/13,15
```

Deletes lines 5 thru 7, lines 9 thru 13, and line 15. No lines are displayed.

The END or EXIT Command

```
{  E  }
{EXIT }
{ END }
```

The END or EXIT command terminates the EDITOR program and returns control to the operating system. All scratch files used to store the work file are purged. If any modifications have been made to the work file without executing a KEEP command, the EDITOR requests confirmation before purging the work file.

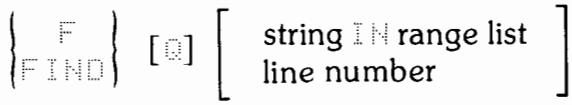
For example, entering EXIT terminates the edit session. If any modifications have been made to the work file, the program displays:

```
If it is okay to clear type "YES".
Clear?
```

If a Y or YES is entered, the program clears the work file, purges the scratch files, and displays:

```
END OF EDITOR PROGRAM.
```

The FIND Command



The first form of the FIND command is used to locate a specified character string in the work file and to position the current line pointer to that line. If no options are specified, the work file is scanned for the first occurrence of the specified character string, starting with the current line. Lines preceding the current line are not searched. The character string may be any ASCII character string, delimited by any non-alphanumeric character* not appearing in the string.

If a range list is specified, the line or lines specified are scanned for the first occurrence of the character string. If the character string is found, that line is displayed and the line pointer is set to that line. If the character string is not found, a message is displayed, and the line pointer is set to the line following the last line scanned. If Q is specified, the line containing the character string is not displayed.

When only a line number is specified (in the second form of FIND), the line pointer is set to the specified line, and the line is then listed. If Q is specified, the pointer is set without displaying the line. If a line number is not specified, the current line is listed without advancing the line pointer.

Some examples of this command are:

```
FIND"ABC" IN5/15
```

Lists the first line in the given range (lines 5 thru 15) that contains the string ABC and sets the line pointer to that line.

```
FIND FIRST
```

Resets the line pointer to the first line in the work file, and displays that line.

```
F"XYZ" IN ALL
```

Displays the first line in the work file that contains the string XYZ. The current line pointer is set to the line displayed.

* The string delimiter must be a single character, but cannot be a space, semicolon (;), alphabetic character (A thru Z, a thru z), or a number (0 thru 9).

The GATHER Command

```
{ G      }
{GATHER  }   ALL [TO line number [BY increment value] ]
```

The GATHER command renumbers the entire work file. If the line number and increment value are not specified, lines are numbered in increments of 1 starting with the value 1.

If a line number is specified, the first line is renumbered with the value specified. If an increment value is specified, it is used as the incremental value for the renumbering process instead of the default value of 1.

An example of this command is:

```
GATHER ALL TO 100 BY 10
```

Renumbers the work file in increments of 10. The first line number in the work file is assigned line number 100.

The HOLD Command

{H / HOLD} [Q] [range] [,APPEND]

The HOLD command copies lines from the work file to the hold file. Lines saved in the hold file may be added into the work file using the ADD command. Groups of lines may be moved within the work file using the HOLD, DELETE and ADD commands.

If no parameters are specified, the hold file is cleared, and the current line is copied into the hold file. If the Q (quiet) option is not specified, the copied line is also displayed.

If a range is specified, all lines within the specified range are copied into the hold file. Copied lines are displayed unless Q is specified. The hold operation is terminated by pressing HALT.

If APPEND is not specified, the hold file is cleared before copying lines. If the hold file contains any lines, EDITOR requests confirmation before clearing the hold file. If APPEND is specified, the specified lines are appended to the end of the hold file.

Some examples of this command are:

```
HOLD 5/10, APPEND
```

Copies lines 5 thru 10 to the end of the hold file. Existing lines in the hold file are unaffected.

```
HOLD 5/10; DELETE 5/10; ADD, HOLD
```

Moves lines 5 thru 10 to the end of the work file. Before clearing the hold file, the program displays CLEAR HOLD? A response other than Y or YES terminates the command without affecting the contents of the hold or work files.

The KEEP Command

```
{K   }  file spec  [;UNN        ]
{KEEP}             [;UNNUMBERED ]
```

The KEEP command saves the contents of the work file in a file specified by the file spec. The file specifier must be enclosed in quotes. If the file already exists, the old file is purged before the file is kept. The EDITOR requires confirmation from the user before the old file is purged. If the old file is protected (files can be protected using the BASIC command PROTECT), the correct protect code must be entered before EDITOR can purge the old file.

When UNN or UNNUMBERED is specified, lines are saved without line numbers. If this option is not specified, blanks are appended to the end of each line to fill the maximum number of characters per line, followed by an 8-character line number. The Schema Processor accepts either numbered or unnumbered files.

Two examples of this command are:

```
KEEP"SADTXT";UNN
```

Creates a data file SADTXT on the default mass memory device, and copies the work without line numbers into that file.

```
KEEP"ED;SAM"
```

Creates a data file ED on volume SAM, and copies the work file to file ED in numbered format. If the data file ED already exists on volume SAM, the program displays:

```
ED;SAM already exists. Type "YES" to purge and then keep.
PURGE?
```

If a Y or YES is entered, the data file is purged and the work file is copied to the file ED on volume SAM.

The LIST Command

{ L / LIST } [Q][range][,OFFLINE]

The LIST command lists lines from the work file. Lines may be output to either the CRT or a printer.

If no parameters are specified, the current line is displayed on the CRT. If Q is not specified, the line number is not displayed with the line.

If a range is specified, all lines within the specified range are listed. Line numbers are not listed when Q is specified. The list operation may be terminated by pressing HALT .

If OFFLINE is specified, lines are printed on the default printer. The SET command may be used to select the offline printer, and to set the number of lines per page to be printed.

Some examples of this command are:

```
LIST ALL
```

Lists the entire work file on the display. The listing can be terminated at any time with HALT .

```
LISTQ 25/LAST
```

Lists all lines from line 25 to the display. No line numbers are displayed.

```
L ALL,OFFLINE
```

Lists the entire work file to the default printer.

The MODIFY Command

{ M / MODIFY } [range list]

The MODIFY command modifies lines in the work file. The specified lines are displayed, one at a time, and the cursor is positioned to the right of the displayed line. The displayed line can then be modified and re-entered. The entire line may be replaced by pressing CLEAR and entering the new line.

The current line being modified may be re-displayed by pressing CLEAR, typing two slashes (//), and pressing ⇧. Pressing HALT before re-entering the line to be modified terminates the command and leaves the displayed line unchanged.

Some examples of this command are:

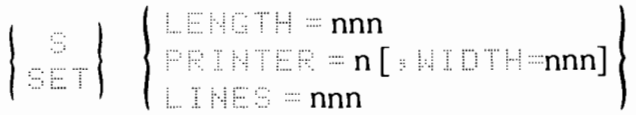
```
MODIFY 5/6
```

Displays lines 5 thru 6 for editing. Lines may be entered without modification, or may be modified before being entered.

```
M FIRST
```

Displays the first line of the work file for modification.

The SET Command



The SET command is used to change EDITOR default parameters. The LENGTH parameter is used to set the maximum number of characters per line. The default length is 80 characters, but can be set from 20 thru 160 characters per line*. Odd values are incremented, causing the length to always be even. The TEXT command automatically sets the length parameter when the UNNUMBERED option is not specified. The value of the length parameter is displayed by typing CLEAR Length ↵ .

The PRINTER parameter is used to set the default printer for offline listings. The width is set to 132 characters per line, or is specified with the optional WIDTH parameter.

The LINES parameter is used to set the number of lines printed per page on offline listings. The default value is 66, and may be set to any integer value from 20 thru 999. The value of this parameter is determined by typing CLEAR Lp ↵ .

Some examples of this command are:

```
SET LENGTH=160
```

Sets the maximum number of characters per line to 160. Lines longer than 160 characters are truncated and a warning message is displayed.

```
SET PRINTER=0
```

Sets the default printer (used for offline listings) to the standard printer. The width is set to 132 characters per line.

```
S LINES=88
```

Sets the number of lines printed per page to 88 for offline listings.

* If the work file is not empty, the length may only be increased from its current value.

The TEXT Command

```
{ T    }
{ TEXT } file spec [,UNN        ]
                   [,UNNUMBERED ]
```

The TEXT command copies the specified data file into the work file. The old work file is lost. If the specified file is protected, the correct protect code must be entered before the file is copied into the work file.

If UNN or UNNUMBERED is specified, the lines are numbered as they are read. Lines longer than the length specified by the set command are truncated, and a warning message is displayed. If UNNUMBERED is not specified, the length parameter is automatically set, and lines are numbered using the line numbers appended to the end of each line.

Some examples of this command are:


```
T"SADTXT",UNNUMBERED
```

Copies the data file SADTXT from the default mass-memory device into the work file. Lines are automatically numbered as they are copied.

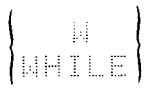
```
TEXT"ED,SAM"
```

Copies the numbered file ED from the volume SAM into the work file.

```
T"TFILE:F2,6,0"
```

Copies the numbered file TFILE from device F2,6,0 into the work file.

The WHILE Command



The WHILE command repeats two command sequences. A command sequence can be up to two display lines containing EDITOR commands (separated by semicolons). When executed, WHILE prompts for two command sequences (each is entered with ⇧). After the second command sequence is entered, the command sequences are displayed and executed, one after the other, until either HALT is pressed immediately after the command sequence is displayed, or until an error occurs. When HALT is pressed during execution of an EDITOR command in the WHILE loop, it terminates the command and proceeds to the next command but does not terminate the WHILE loop. A WHILE command cannot be nested in another WHILE command.

An example of this command is:

```
FINDFIRST;WHILE
FINDQ"ABC"
MODIFY
```

This command sequence locates all lines containing the string ABC, and displays these lines for modification.

CHAPTER 8

LK 3000

The LK 3000 Utility is a run-only BASIC-language program which allows you to:

- Use the HP 250 as a remote terminal in an HP 3000 computer system.
- Transfer ASCII data to or from the HP 3000.
- Transfer BASIC programs to or from the HP 3000.

LK 3000 is distributed on the UTILITIES disc or tape. The utility requires that the TIO DROM be configured into the operating system. The HP 250 must contain an Asynchronous Serial Interface board (either HP 45120A or system option 120). The port connected to the HP 3000 is configured as a "COMPUTER" (see Remote Configuration chart below*). It's assumed that the HP 3000 is operating under MPE III or later and is connected either directly via cables, or indirectly via a modem. The example operations in this chapter assume a direct interface to the HP 3000.

REMOTE CONFIGURATION INFORMATION

HP 3000	Port Configuration	
Series III	Computer	701
Series 44	Computer	8N1
Series 40	Computer	8N1
Series 33	Computer	8N1
Series 30	Computer	8N1

* Remote Configuration (RFIG) is described in Chapter 2.

Log-On Procedure

To load LK 3000 and log on, load the HP 250 operating system and execute:

```
RUN"LK3000"
```

The utility first requests the port number at which the HP 3000 is connected:

```
RUN "LK3000"

HP 250/3000 INTERACTIVE LINK,
Enter port number (1..10): 5
```

The interface ports located at the back of the HP 250 are numbered 1 through 10 (left to right on a Model 35 and top to bottom on all other models.) Type in the port number and press ⇧ :

```
RUN "LK3000"

HP 250/3000 INTERACTIVE LINK, for use with MPE III.
Enter port number (1..10): 5
```

The HP 3000 system prompt (:) indicates that you are connected and can log-on by entering your assigned name and account. For example:

```
:HELLO RANDY.PARTS
```

To ensure using the correct protocol, append; Term=10 to the log-on sequence when files are to be transferred. For example:

```
:HELLO RANDY.PARTS;TERM=10
```

The standard log-on message and system prompt indicate the computer is waiting for your next command:

```
:HELLO RANDY.PARTS
HP3000 / MPE III B.00.01.  MON, NOV 27, 1978, 10:30 AM
:_
```

You can now execute MPE III commands and call any available subsystems, as described in the HP 3000 Users Manual, part number 03000-90121.

Log-Off Procedure

To end your session with the HP 3000, simply enter BYE in response to the system prompt:

```
:BYE

CPU=6. CONNECT=17. MON, NOV 22, 1978, 11:45 AM

END OF HP 250/3000 INTERACTIVE LINK
```

This closes your account and disconnects you from the HP 3000. Press HALT to terminate the LK 3000 utility.

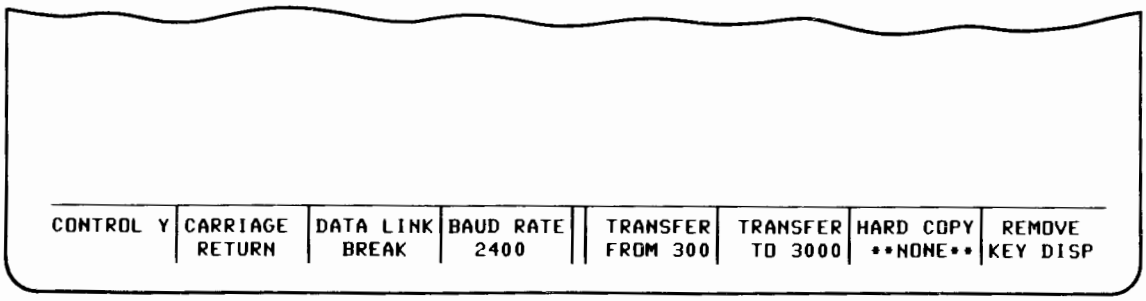
NOTE

Exiting the LK 3000 utility before logging off (e.g., by pressing HALT or powering off) leaves your HP 3000 account open. To return to the point where you left off, execute RUN "LK3000" and enter the port number.

Terminal Operation

The LK 3000 utility allows interaction with the HP 3000 using the full HP 250 keyboard and display control keys. Press ⇧ to transmit each command to the HP 3000.

After you have logged onto the HP 3000, the utility defines these softkeys to aid in terminal operation.



CONTROL Y - Sends a CONTROL Y character, which halts operation in the current subsystem and returns the subsystem prompt.

CARRIAGE RETURN - Enters a CR character, which returns the display cursor to the start of the current line.

DATA LINK BREAK - Sends a BREAK signal, a prolonged NULL, to interrupt computer operation and returns to the system prompt.

BAUD RATE - The data transmission rate is displayed below the softkey label. (NOTE: this rate should match the BAUD switch setting on the data comm board. The value shown in the softkey label is for information only and does not necessarily indicate the actual data transmission rate.)

TRANSFER FROM 3000 - Initiates a procedure which transfers information from a source file in your HP 3000 account to a file created on the HP 250.

TRANSFER TO 3000 - Initiates a procedure which transfers the contents of an existing type DATA file to a source file created in your HP 3000 account.

HARD COPY - Selects the output device to be used for terminal output operations. The address of the currently-set device is shown below the softkey label. To select another available device, press the softkey until the device address is displayed. The default printer is usually configured at device address 0.

REMOVE KEY DISP - Removes the softkey definitions and labels, providing more display work area. Press SFK8 again to re-define the other softkeys.

The keyboard SFKs are also defined to perform these functions when the softkeys are defined.

Two additional SFKs are available which do not have a definition shown on the CRT.

SFK 17 - Allows you to type in an HP 250 command to be executed. Such commands as CAT, PURGE, MSI are useful. After the command has executed, the LK 3000 utility resumes processing.

SKF 20 - Toggles the debug mode internal to the LK 3000 utility. The current contents of the display are not affected by pressing this key. In debug mode, all commands sent to the HP 3000 and all data received from the HP 3000 are displayed with an indication of the current program state (input or output).

Transferring Files

The two special procedures within the LK 3000 utility, TRANSFER TO 3000 and TRANSFER FROM 3000, provide an easy means to transmit information to or from an HP 3000 account. Whether transmitting data or programs, the information must be in ASCII-coded format. This means only HP 250 type DATA files and HP 3000 source files (created using EDITOR/3000) can be used at the originating end. Each special procedure automatically creates the appropriate file type at the destination.

Each program stored in a type PROG file can easily be duplicated into a type DATA file before using the LK 3000 utility to transfer the program to the HP 3000. For example:

```
LOAD "SALES"      (load type PROG file)
SAVE "sales"      (save in type DATA file)
```

After BASIC program lines have been transferred from the HP 3000 to a type DATA file, they can be stored into a type PROG file:

```
GET "orders"      (get program into memory)
STORE "ORDERS"    (store in type PROG file)
PURGE "orders"    (erase type DATA file)
```

HP 3000 to HP 250 Data Transfer

To transfer the contents of an existing HP 3000 source file to the HP 250:

1. If you haven't done so already, log on as explained earlier.

2. When the system prompt appears, press the TRANSFER FROM 3000 softkey:

```
:
HP 3000 TO 250 FILE TRANSFER UTILITY
HP 3000 source file name: _
```

3. Enter the name of the source file containing data or BASIC program lines to be transferred to the HP 250. For example:

```
HP 300C source file name: SFORM
HP 300C file SFORM contains 55 records of 102 bytes each.
HP 250 destination file name: _
```

Once the source file has been located, its size is displayed.

4. Enter the name of a destination file, a type DATA file to be created on the HP 250 default drive:

```
HP 250 destination file name: SFORM1
START FILE TRANSFER
```

The utility creates the destination file and then transfers each record from the source file. If the data file already exists, LK 3000 asks if the file is to be purged then resaved. The final display is:

```
FILE TRANSFER COMPLETE

END OF PROGRAM
: _
```

If the utility cannot create the destination file, or if an error is encountered during data transfer, the utility exits the procedure and displays a message. Refer to the Data Transfer Errors paragraph for more information.

HP 250 to HP 3000 Data Transfer

To transfer the contents of an existing type DATA file to the HP 3000:

1. Log on as explained earlier.

2. When the system prompt (:) appears, press the TRANSFER TO 3000 softkey:

```
:
HP 250 TO HP 3000 FILE TRANSFER UTILITY
HP 250 source file name:
```

3. Enter the name of a type DATA file containing data to be transferred to the HP 3000. For example:

```
HP 250 source file name: DATA
HP 250 source file DATA contains 22 records of 256 bytes each.
Enter estimated record count to override catalog value: 139
Enter actual maximum record size to override catalog value: 160
HP 3000 destination file name: DATA
```

The HP 3000 cannot receive any record beginning with the characters ":EOD".

Once the source file has been located, its size is displayed. If the file was SAVEd, its record size is always 256 bytes and its record count is just sufficient to contain the program.

On the HP 250, strings may cross record boundaries within HP 250 files. This is not true on the HP 3000. Therefore, LK 3000 gives you an opportunity to supply the record size and record count of the HP 3000 destination file. The record size must be the size of the longest string in the HP 250 data file. The record count must be the number of strings in the file. If exact values are not known, always supply over-estimates for these values. Underestimates will result in lost data. If the size and count of the HP 250 file is the correct size and count for the HP 3000 file, press ⇧ without entering new values.

4. Enter the name of the destination file, either an existing or new source file to be created under your HP 3000 account:

```
HP 3000 destination file name: PAYROL
START FILE TRANSFER
```

The utility creates the new source file and transfers each record from the HP 250 DATA file. The final display is:

```
FILE TRANSFER COMPLETE
END OF PROGRAM
:_
```

Terminating File Transfers

If you decide not to transfer a file, whenever a file name is asked for, press [0] without giving a file name. This terminates the file transfer.

If the transfer is already in progress, press [HALT] to terminate the transfer. Press the CARRIAGE RETURN softkey repeatedly until the FCOPY prompt ">" appears. Then type EXIT to terminate the FCOPY utility.

Data Transfer Errors

If the subprogram encounters an error while creating a file or transferring data, it automatically exits the procedure and displays a message. For example:

```
:
HP 3000 TO 250 FILE TRANSFER UTILITY
HP 3000 source file name: SFORM
HP 3000 file SFORM contains 55 records of 102 bytes each.
HP 250 destination file name: SYSTEM
ERROR IN CREATING FILE
END OF FILE TRANSFER
:_
```

If you abort the transfer operation (via power off), you must first RUN "LK3000", enter the port number and abort operation in the HP 3000's FILE COPIER subsystem. For example:

```
:
HP 3000 TO 250 FILE TRANSFER UTILITY
HP 3000 source file name: SFORM
HP 3000 file SFORM contains 55 records of 102 bytes each.
HP 250 destination file name: SFORM1
RECORD 39 TRANSFERRED                 HALT pressed during file transfer.

END HP 250/3000 INTERACTIVE LINK

RUN 'LK3000'

HP250/3000 INTERACTIVE LINK, for use with MPE III.   } re-establish link
Enter port number (1..5): 5                          }

EXPECTED 'YES' OR 'NO'.  (CIWARN 990)
ABORT? YES <-- respond to prompt to abort FILE COPIER sub system

PROGRAM ABORTED PER USER REQUEST.  (CIERR 989)
HP32212A.3.07 FILE COPIER (C) HEWLETT-PACKARD CO. 1978
:_          return to operating system
```

If other HP 3000 MPE III subsystem errors occur while running LK 3000, use the CONTROL Y, CARRIAGE RETURN, and/or DATA LINK BREAK softkeys to recover from the error. In some cases, re-running LK 3000 and logging-on again may be required.

Using Modems

The LK 3000 data communications link has been tested using Western Electric (Bell) 103J-series modems. These modems are full-duplex, RS-232-C compatible (CCITT V.24 in Europe) and operate at a maximum of 300 BAUD. Several other available modems are compatible with this unit. There are also Bell 103 compatible units which operate full-duplex at 1200 BAUD and each, theoretically, can be connected to the HP 250. The selection, installation, and proper operation of a modem is the customer's responsibility.

The next table lists recommendations on selecting the proper Bell 103 compatible modem.

Guidelines for Selecting a Modem

Bell 103J Option	Comments
1. Rotary Dial 2. Touch Tone Dial	Area Optional.
3. With Card Dialer 4. Without Card Dialer	Customer Decision.
5. Loss of CXR on Disconnect 6. No Loss of CXR Disconnect	Recommended Option.
7. Send Space Disconnect 8. Send No Space Disconnect	Recommended Option.
9. Receive Space Disconnect 10. No Receive Space Disconnect	Recommended Option.
11. Data Answer Permanent 12. Data Answer Select	Either option is OK. Depends on user application.

Operating Considerations

Be sure to consider these points when using LK 3000.

- Program (PROG) files cannot be transferred from the HP 250 without first making them DATA files.
- IMAGE/250 files cannot be transferred. If you wish to transfer a data base or data set, first write an HP 250 program to read the data set. Then, create a DATA file and write the appropriate information into the file using PACK and UNPACK statements.
- The HP 250 and HP 3000 do not have the same floating point capabilities. When transferring information to the HP 3000, checks should be made to ensure that the numbers do not overflow on the HP 3000.

Floating Point Ranges

Limit	HP 250	HP 3000
Maximum	9.9E99	5.7896E76
Minimum	1E−99	1.727E−77

CHAPTER 9
Repack

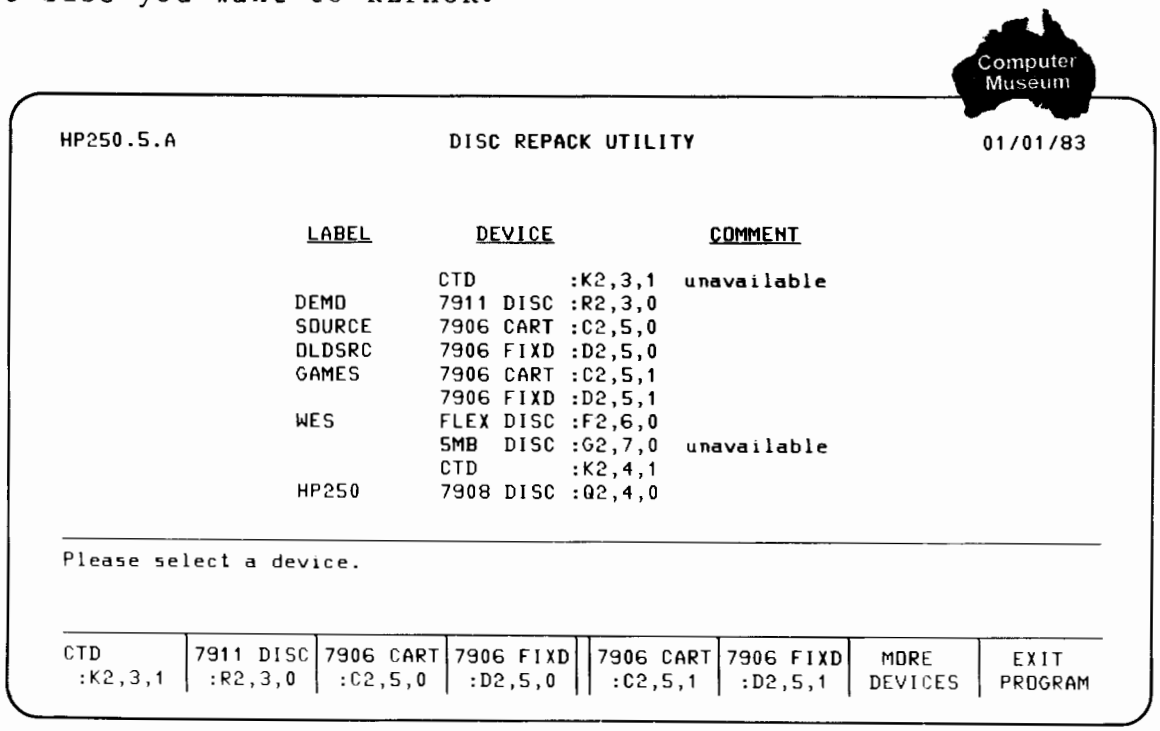
The Disc REPACK Utility

REPACK rearranges files on disc into one contiguous area so that fragmented free space can be used. Use REPACK when the system reports that there is insufficient disc space to store a file. Use of REPACK does not improve file access time.

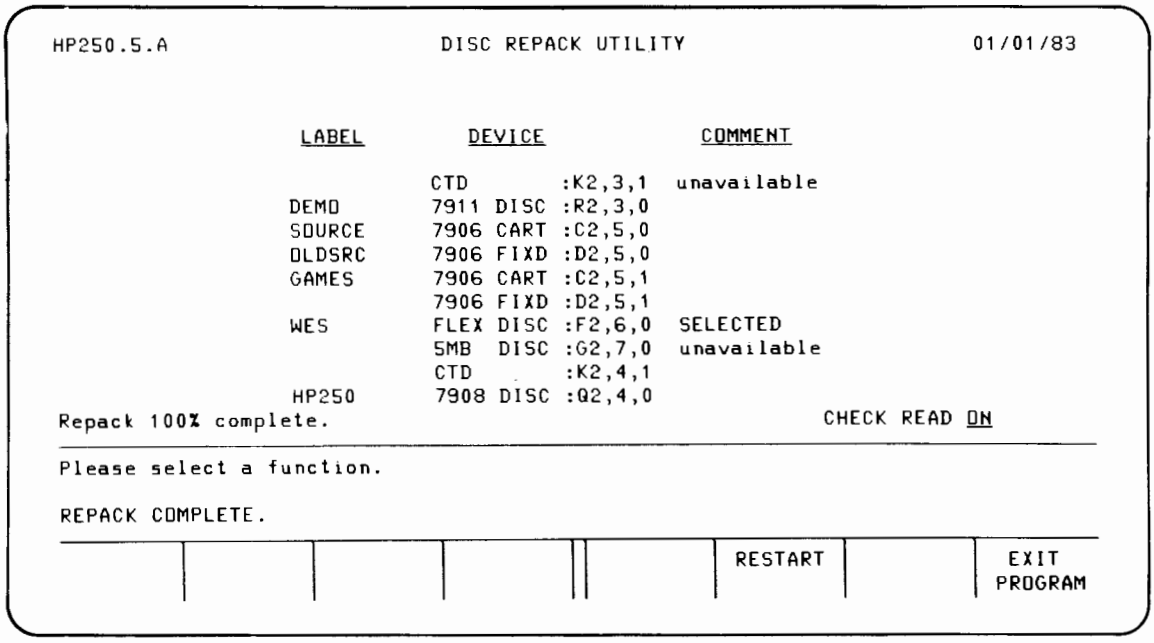
WARNING

Perform a full backup before using REPACK. If a serious disc error occurs during REPACK (e.g. ERROR 81,88,89, or 90), REPACK will stop and a file could be lost. If such an error ever occurs, call your HP Customer Engineer. The disc could be defective.

To run REPACK, enter RUN "REPACK". A list of mass memory devices appears on the screen. If the device is "unavailable", either the disc is not inserted in the drive or is not initialized". Press the softkey corresponding to the disc you want to REPACK.



The CHECKHEAD feature ensures data integrity during repacking. Although REPACK takes longer when CHECKREAD is ON, this feature is recommended, especially when repacking flexible discs. Press CHANGE CHECKREAD to turn the CHECKREAD feature ON or OFF, then press CONTINUE to start the repacking. When the utility is finished, press RESTART to repack another disc, or press EXIT if finished with the utility.



APPENDIX A

BACKUP Error Messages

Illegal time.

Illegal initials.

Error encountered disc not erased.

Checkread error encountered.

Write error on the backup file encountered.

I/O error on updating the directory.

The spare directory on the volume recovered was required.

Destination volume cannot be the same as the source.

Selected device was not available.

Backup file already exists on _____.

File is protected or wrong protect code specified.

Illegal file name specified.

Specified destination volume not found.

Destination volume failure, not present or door open.

Backup failure in FNCK-B FILE #_____.

The backup log may not be directed to a null device.

Invalid printer select code.

Number too large.

Invalid number.

Printer channel _____ is down, off-line, or not available.

Invalid printer select code.

Unable to find the source volume.

Unable to obtain exclusive access to the source volume.

Unable to create the destination file.

Read error on the directory of the volume being backed up.

In selected files mode, you must enter at least one file.

The largest hole has _____ physical records; at least four are required.

You must re-label the destination volume to _____ before continuing.

Illegal volume label.

Destination volume is write-protected.

Date must be between 01/01/72 and 12/31/99.

Date must be MM/DD/YY.

Invalid date.

The label specified does not match the one on the disc you selected. You should re-label the disc or change the destination.

Any files on _____ on _____ will be erased.

The volume _____ on _____ will be relabeled.

Unable to lock door on device program run from.

The revision of BKSUB1 or BKSUB2 does not match the revision of the program.

Error _____ encountered on attempt to load subprogram.

Error _____ in line _____.

Error _____ encountered on attempt to relabel volume.

Error on attempt to get form _____.

The backup file may not be the same as any of the BACKUP utility files.

RECOVR Error Messages

Illegal time.

Illegal initials.

Illegal date.

Illegal file name.

Invalid printer select code.

Number too large.

Invalid number.

Printer channel xx is down, off-line or not acceptable.

Disc error on backup file header.

Unable to find the backup file.

File specified is not a backup file.

Backup file was made by version of the backup utility that was more recent than this version of the recovery utility.

Incorrect protect code specified for the backup file.

Backup file was renamed from: <filename>.

Disc error in file header.

Unable to find next file in the backup file.

Checkread error on <filename>.

Records <start> through <end> lost.

Program load error on <file>.

Write failure on <file>. File not recovered.

File already exists. No change.

Insufficient space on volume to recover <file>.

Directory failed on destination. <File> not recovered.

Spare directory accessed on destination.

Read failure on backup file. Unable to determine name of next backup volume.

Records lost. <File> can only be partially recovered.

Directory error on destination volume. <File> not recovered.

Illegal volume seg #.

Unable to obtain exclusive access to the source volume.

Recovery report may not be directed to the null device.

Unable to obtain exclusive access to destination volume.

File ignored. Already exists on <volume>.

In selected files mode, you must enter at least one file.

Memory overflow with subroutines <subroutine name> through <subroutine name>.

Subroutine file error (error #) with subroutines <sub name> through <sub name>.

Program error number ..... #.

Error occurred in line ..... #.

Error occurred in file ..... <file name>.

Date must be between 01/01/72 and 12/31/99.

Date format must be MM/DD/YY.

File lost due to incorrect backup volume sequence.

Read error at records <start> through <end>. <File> lost.

Backup file corrupt starting at <File>. File not recovered.

File name already entered.

Illegal volume. Vol. set. # must be assending.

Program load error. Incorrect revision on <file>.

Couldn't get form _____.

DBLOAD/DBUNLD Error Messages

Error Number	Error Message
1	INCORRECT PASSWORD The specified maintenance password does not match the data base maintenance password.
2	IMPROPER SET COUNT * The number of data sets in the data base is out of range.
3	IMPROPER ITEM COUNT * The number of items in the current data set is out of range.
4	SEARCH ITEM SUBCOUNT >1 * The sub-item count of the search item of the current data set is greater than one.
5	UNKNOWN SEARCH ENTRY TYPE * The search item type is not INTEGER, SHORT, REAL or STRING.
6	IMPROPER SEGMENT ENTRY COUNT A program or system failure has caused the creation of a data set backup segment to fail.
7	PROGRAM COMPLETION REQUIRES ROOT FILE **
8	NO ROOM ON CURRENT BACKUP VOLUME There is no free space on the specified backup volume to create the backup file.
9	DATA SET NAME NOT FOUND The specified data set name is not in the data base.
10	DATA BASE STATUS status A data base operation has failed, producing the status information shown.
11	DATA BASE NOT AVAILABLE The data base cannot be opened for exclusive access.

* Indicates that data or structural information within the data base has been lost, preventing the operation from completing.

** This message is for information or warning to the user. Program execution will continue.

12 BACKUP FILE VOLUMES OUT OF ORDER
The backup segment on the backup volume does not correspond with a previous segment.

13 DUPLICATE BACKUP FILE NAME *
A file with the backup file name on the backup volume must be purged before the backup file may be created.

14 PURGE NOT CONFIRMED; OLD FILE KEPT
The response to the 'purge file' request was 'N' or 'NO'. The original file is unchanged.

15 FATAL ERROR error ENCOUNTERED IN PROGRAM program name--status
The named program encountered a program error while processing. The error number corresponds to the error encountered. The status number is for HP use only.

16 ROOT FILE NOT FOUND
The data base root file does not exist on the specified volume.

17 ATTEMPT TO UNLOAD OR LOAD AUTOMATIC MASTER
The single data set option was used to request an unload or load of an automatic master data set.

18 ITEM POSITION VALUE EXCEEDS ITEM COUNT
An entry in the backup set-item-position list exceeds the number of items in the backup data set.

19 IMPROPER VOLUME COUNT **
The number of data bases volumes is out of range.

20 ITEM TYPES DO NOT MATCH
The item types of the backup data set (possibly re-structured with the 're-order' option) do not match the item types of the destination data set.

21 ATTEMPT TO LOAD CORRUPT DATA BASE
The data base has been marked corrupt by IMAGE; the data base must be erased before it is loaded.

22 REQUESTED DATA SET NUMBER NOT FOUND
The source data set number is not in backup file.

* This message is for information. Program execution will continue.

** Indicates data or structural information within data base has been lost, preventing operation from completion.

23 ZERO LENGTH BACKUP FILE
Directory information on the backup volume is inconsistent.

24 IMPROPER DATA SET NUMBER *
The data set number of the specified data set name is 0.

25 FORM IS NOT COMPLETE
All of the necessary values have not been entered: the cursor is positioned in the required field.

26 FILE NAME NOT FOUND
The backup file name is not on the backup volume.

27 IMPROPER PATH NUMBER *
The path number is out of range.

28 IMPROPER INPUT VALUE
An input value is invalid or out of range; the cursor is positioned at the improper value.

29 INCORRECT FILE TYPE
For DBUNLD, the indicated file cannot be purged. For DBLOAD, the specified file is not a backup (BKUP) file.

30 BACKUP FILE NOT CREATED BY DBUNLD UTILITY
The internal format of the backup file is incorrect. The backup file may have been created by another backup utility.

31 ERASE REQUIRES ALL VOLUMES BE MOUNTED **
The data base is marked corrupt and all data base volumes must be mounted for the data base to be erased.

32 FEWER ENTRIES UNLOADED THAN EXPECTED
The number of data entries retrieved from the data set is less than the correct number of entries in the data set.

33 FEWER ENTRIES LOADED THAN EXPECTED
The number of entries in the backup data set segment is less than the anticipated number of data set entries.

* This message is for information only. Program execution will continue.

** Indicates data or structural information within data base has been lost, preventing operation from completion.

34 DATA BASE IS MARKED CORRUPT **
A data base marked corrupt by IMAGE has been opened to allow the recovery of data from the data base.

35 PROGRAM FILE VERSION DISAGREEMENT
The revision code of the program (segment) loaded does not agree with the previous program segment revision code.

36 BACKUP SET NUMBER NOT IN DATA BASE
A data set number in the backup file does not exist in the data base.

37 READ FAILURE IN DATA SET RECORD POSITION number
A mass memory read failure has occurred for the data set record position shown. The unload process will continue with the next data set record position.

38 SEARCH ITEM ERROR *
Data base search item information is inconsistent.

39 DATA SET ENTRY OMITTED FOR SEARCH VALUE value **
For a master set: The manual-master entry for the search value shown is duplicate and cannot be added to the data set.
For a detail set: The related manual-master entry for the search value shown is missing and the detail entry with this search item value cannot be added to the data set. The load process will continue with the next entry.

40 VOLUME NAME TO LONG: TRUNCATED VALUE name **
The specified volume name is longer than eight characters. The first eight characters of the name will be used.

41 FILE PROTECT CODE DOES NOT MATCH
The specified protect code does not match the backup file protect code.

42 MISSING DATA SET number
The data set number has not been created. If this message is displayed during a data base erase, no number will be displayed.

* This message is for information. Program execution will continue.
** Indicates data or structural information within data base has been lost, preventing operation from completion.

43 DATA ITEM LENGTH OR PRECISION LOST **
During data base restructuring, either non-blank characters were lost from the end of a string, or significant digits or exponent range was lost in a numeric conversion.

44 ITEM CONVERSION ERROR *
Data base or backup file item-length information is incorrect.

45 CORRUPT DATA BASE REQUIRES SERIAL MODE
Chained mode unload is not allowed on the data base. Serial mode operation must be used to access the data entries.

46 DATA SET REQUIRES ITEM RESTRUCTURING **
Item conversions must be performed on the backup file data entries to load the entries into the data set. Numeric value conversions or string length conversions are required.

* This message is for information. Program execution will continue.
** Indicates data or structural information within data base has been lost, preventing operation from completion.

EDITOR Error Messages

Error Code	Error Message
1	CLEAR NOT CONFIRMED, HOLD FILE UNCHANGED
2	CLEAR NOT CONFIRMED, WORK FILE UNCHANGED
3	FILE NOT FOUND
4	FILE NOT NUMBERED, WORK FILE IS EMPTY
5	FILE NOT NUMBERED, WORK FILE UNCHANGED
6	HOLD FILE FULL
7	ILLEGAL COMMAND
8	ILLEGAL FILE NAME
9	ILLEGAL LINE NUMBER
10	ILLEGAL SET PARAMETER
11	ILLEGAL SET PARAMETER VALUE
12	ILLEGAL VOLUME OR MASS MEMORY SPECIFIER
13	IMPROPER FILE TYPE
14	LINE ALREADDY PRESENT
15	LINE NOT FOUND
16	LINE NUMBER OUT OF RANGE
17	NESTED WHILE COMMAND IS ILLEGAL
18	NO TEXT IN HOLD FILE
19	NO TEXT IN WORK FILE
20	NULL RANGE OR FIRST>SECOND
21	PURGE NOT CONFIRMED, TEXT NOT KEPT
22	SCRATCH FILE ERROR (FATAL)
23	STRING NOT FOUND WITHIN RANGE
24	SYSNTAX ERROR
25	WORK FILE FULL...KEEP (NUMBERED) AND THEN TEXT
26	UNABLE TO OPEN OR READ FILE
27	UNDELIMITED FILE SPECIFIER
28	UNDELIMITED STRING
29	UNEXPECTED SYSTEM ERROR (FATAL)
30	VOLUME NOT FOUND
31	WARNING, COMMANDS FOLLOWING WHILE ARE LOST
32	WARNING, LINE TRUNCATED

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