HP250
Utilities Manual

HP250

HP250 Utilities Manual

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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.

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NOTICE

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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:

```
                              INITIALIZATION UTILITY
    HP250


    INITIALIZE         - Tests the disc medium and prepares the medium
                         for use by the HP250.

    PURGE ALL          - Eliminates all files currently stored on
                         the specified medium.

    EXIT PROGRAM       - Terminates program.

    EXIT               - Returns to the previous menu.


    Please select a function.


    | INIT-  |        |        |      || PURGE |       |        | EXIT    |
    | IALIZE |        |        |      ||  ALL  |       |        | PROGRAM |
```

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 is one of the following:

Flexible Disc

```
                      INITIALIZATION UTILITY
   HP250                    INITIALIZE

   Selected device is FLEX DISC :F2,6,0.

   Media will be initialized with Interleave = 4 with standard format.

   CHANGE FORMAT   - Specifies the media format used
                     (see BASIC programming manual).

   INTERLEAVE      - Allows you to specify the
                     number of revolutions required to
                     read a track of information
                     (see BASIC programming manual).



   Please press CONTINUE to proceed.


   CONTINUE  |         |         | CHANGE  || INTER-  |         |         | EXIT
             |         |         | FORMAT  || LEAVE   |         |         |
```

Tape Cartridge

```
                              INITIALIZATION UTILITY
    HP250                          INITIALIZE

    Selected device is CTD      :K2,7,1.

    Media will be initialized with standard format.




    ─────────────────────────────────────────────────────────────

    Please press CONTINUE to proceed.

    ─────────────────────────────────────────────────────────────
    CONTINUE │      │      │      ││      │      │      │  EXIT
             │      │      │      ││      │      │      │
```

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 to check the status of the tape.

3) Drive is waiting for another tape. Run TAPFIX as described in Chapter 6 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.

7908 Disc

```
                          INITIALIZATION UTILITY
HP250                          INITIALIZE

Selected device is 7908 DISC :Q2,7,0.

Media will be initialized with Interleave = 1 with standard format.

   INTERLEAVE     - Allows you to specify the
                    number of revolutions required to
                    read a track of information
                    (see BASIC programming manual).

   DIRECTORY      - Changes directory capacity
                    (see BASIC programming manual).



_____

Please press CONTINUE to proceed.


_____
|          |      |      |      ||INTER-|DIRECTORY|      |  EXIT      |
| CONTINUE |      |      |      ||LEAVE | 4:1472  |      |            |
```

7906 Disc

```
                          INITIALIZATION UTILITY
HP250                          INITIALIZE

Selected device is 7906 CART :C2,5,0.

Media will be initialized with standard format.

   CHANGE FORMAT  - Specifies the media format used
                    (see BASIC programming manual).

   DIRECTORY      - Changes directory capacity
                    (see BASIC programming manual).



_____

Please press CONTINUE to proceed.


_____
|          |      |      | CHANGE ||DIRECTORY|      |      |  EXIT    |
| CONTINUE |      |      | FORMAT || 2:1200  |      |      |          |
```

To specify an alternate flexible disc 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.

For some applications, it may be advantageous to initialize a
flexible disc or 7908 disc using an alternate track interleave
format. The format used determines the number of disc revolu-
tions needed to read a complete track of information. The de-
fault interleave format is 4 for the flexible disc drive and 1
for the 7908 disc.

To specify an alternate interleave format, press the INTERLEAVE
softkey and enter the desired format number (from 1 thru 29) for
the disc.

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 on the next page.

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 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 system's operating procedures for more details.

Directory Sizes

Tracks for Directory	File Entries
7906	
1	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
7910	
1	384
2	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
7908	
1	352
2	720
3	1104
4	1472
5	1840
6	2224
7	2592
8	2960
9	3344
10	3712
11	4080
12	4464
13	4832
14	5200
15	5584

A tape cartridge has a fixed directory size. 96 1K blocks allow for 4080 file entries.

To begin initialization, press CONTINUE. Initializing a 1.2 Mbyte flexible disc takes about 10 minutes. (Initializing a 16 Mbyte tape takes about 20 minutes; each media varies.) The display indicates each test being performed. If a defective track (disc) is found, its number remains displayed. For tapes, only the total number of spared blocks is displayed.

```
                          INITIALIZATION UTILITY
      HP250                     INITIALIZE

      Selected device is FLEX DISC :F2,6,1.

      INITIALIZATION IN PROGRESS   (Interleave = 4 with standard format)

      Pattern test # 1




      _____

      System busy.
```

While tape initialization is done with one pattern test, disc initialization is performed with varying numbers of pattern tests. Each disc has its own limit in regard to the tolerated number of spared tracks. (For example, five pattern tests are done on a flexible disc, and eight on the 7908 disc.) If you do not exceed this limit, the number of tracks "spared", or substituted for defective tracks, is shown.

Media Initialization

The final display is:

```
                           INITIALIZATION UTILITY
HP250                           INITIALIZE

Selected device is FLEX DISC :F2,6,0.



Tracks spared:




INITIALIZATION COMPLETE.
─────────────────────────────────────────────────────────────────────
Press RESTART to select another device or EXIT PROGRAM to stop.


  ┌──────┬──────┬──────┬──────┬──────────┬──────────┬────────────┐
  │      │      │      │      │          │ RESTART  │   EXIT     │
  │      │      │      │      │          │          │  PROGRAM   │
```

NOTE
A 150 ft. tape cartridge is unusable if more
than 32 blocks are spared. A 600 ft. tape
cartridge is unusable beyond 128 spared blocks.

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 direc-
tories on a medium, in effect performing a "fast initializa-
tion". 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.

```
                          INITIALIZATION UTILITY
  HP250                        PURGE ALL

  Selected device is FLEX DISC :F2,6,0.









  ALL FILES PURGED.
  _____
  Press RESTART to select another device or EXIT PROGRAM to stop.


  |       |       |       |       ||      | RESTART |      | EXIT    |
  |       |       |       |       ||      |         |      | PROGRAM |
```

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. Soft-
ware which can be reconfigured to be loaded at power-on includes
DROMs (disc-resident read-only memory), 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.

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

                         RUN"CONFIG"

The menu appears:

```
                         HP250 SYSTEM CONFIGURATION
    HP250


      1  DROM list              8  Memory configuration
      2  DROM edit              9  Remote I/O configuration
      3  Peripheral list       10  Miscellaneous configuration
      4  Peripheral edit       11  Set printer
      5  Keyboard list
      6  Keyboard edit
      7  Auto start




                                          Printer is currently CRT.

    Select and type in the number of the function you wish to perform:
    -

    ┬────────┬────────┬────────┬────────╥────────┬────────┬────────┬──────────
             │        │        │        ║        │        │        │   EXIT
             │        │        │        ║        │        │        │   PROGRAM
```

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

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

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

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

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

Miscellaneous - Allows you to specify user execution priorities
and the default mass storage device.

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

Set Printer - Allows specifying an alternate device to output
configuration lists.

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 on the alternate device.

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.

Listing and Editing DROM Status

To list the DROMs which are loaded at power-on, enter 1 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, first press the EXIT softkey. Then enter 2
during the initial CONFIG menu. Here's an example menu:

```
                          HP250 SYSTEM CONFIGURATION
     HP250                        DROM EDIT

              AUTO                    AUTO                    AUTO
     #  NAME  LOAD      #  NAME       LOAD      #  NAME       LOAD

     1  EUROPE          9  TIO        17  IMAGE2
     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     X
     6  FORMS    X     14  SPOOL      22  CTRACE
     7  EUR71          15  CS250      23  P2601
     8  RIO            16  MEDIA      24  SYSRR

                                    Largest available space:   3582
                                    Total unused DROM space:   4668

     Please select a function.


     ┌─────────┬───────┬───────┬─────────┬─────────┬───────┬───────┬───────┐
     │  EDIT   │       │       │ UPDATE  │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 UPDATE 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 initial 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 SYSTEM CONFIGURATION
   HP250                       PERIPHERAL EDIT

   PERIPHERAL CONFIGURATION:

   SELECT                                  DRIVER
    CODE         DEVICE       DRIVER       NUMBER    NAME      TYPE

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

   Please select a function.



   ─────────────────────────────────────────────────────────────────────
     EDIT    |         |         | UPDATE  ||OLD LIST|         |      EXIT
             |         |         |         ||        |         |
```

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 UPDATE
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 SYSTEM CONFIGURATION
    HP250                     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    UPDATE   OLD LIST                    EXIT
                AUXILIARY CHAR SET
```

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 UPDATE to change disc configuration. The new
keyboard is loaded during power-up.

NOTE

The auxiliary keyboard is accessed by pressing
CTRL SFK 9 .

The CHANGE CHAR SET key allows changing to the alternate char-
acter set available on European and Katakana systems. It has no
effect on U.S. systems.

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 workstation 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:

```
HP250                    HP250 AUTOSTART CONFIGURATION
   TSKID: 1    Port:  0      Memory: 32K                        Status: **none**


   TSKID: 2    Port:  1      Memory: 64K                        Status: **none**














   ───────────────────────────────────────────────────────────────────
   Please select a function.

   ┌──────────┬──────────┬──────────┬─────────┬─┬─────────┬──────┬───────────┐
   │  ALTER   │  CLEAR   │CLEAR ALL │         │ │ RESTART │      │ NEXT MENU │
   │  FIELD   │  FIELD   │ FIELDS   │         │ │         │      │           │
   └──────────┴──────────┴──────────┴─────────┴─┴─────────┴──────┴───────────┘
```

The configuration table shows the task id, I/O port number or
"TASK", memory size, and current autostart status for each
workstation or background task. The main workstation is assigned
task id 1. Any current autostart message appears in 80-character
inversevideo field below each USRID line.

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.

Press EXIT to return to the initial CONFIG menu.

Memory Configuration (MFIG)

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

To run this routine, either enter 8 during the initial CONFIG menu or run the MFIG utility. The initial menu shows the memory configuration currently specified. This table should match the actual memory configuration (YES blocks).

```
                         HP250 MEMORY CONFIGURATION
   HP250

                      BLOCK          Lower    Upper
       NOTE:          01              YES      YES     LEGEND:
       All block numbers 02           YES      YES
       are in octal.  03
                      04                               ▓▓▓▓  means no memory
       USRID  PORT  MEMORY   05                              section exists.
         1      0    32K     06                 YES
                      07                         YES   YES   means memory
                      10              YES        YES         section exists
                      11                                     for corresponding
                      12                                     half of block.
                      13
                      14
   COMMON BLOCK: 32K  15
                      16

   Please select a function.
   ──────────────────────────────────────────────────────────────────
    ALTER  │       │       │ ACTUAL  ││       │ RESTART │       │ NEXT MENU
    FIELD  │       │       │ CONFIG  ││       │         │       │
```

Press ACTUAL CONFIG to display the currently existing 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 field 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 each workstation.

You can also assign a DROM area to a portion of each task or task memory block, or to the common block. DROM space should first be allocated in the common block. Very few applications require the full 32K 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.

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:

```
   HP250              HP 250 MULTIPLE TASK AND REMOTE I/O CONFIGURATION
   Port  Class        ID   Type Format Nulls TSKID Memory Remarks
   DESK  Workstn           INTG                 1    32K
    1    Workstn           2649                  2    64K
    2    Workstn           2622                  3    32K
    3    Printer      13   264x  8N1
    4    Terminal     14   TTY   8N1       ---
    5    Terminal     15   264x  8N1                       PLOTTER
    6       none
    7       none
    8       none
    9       none
   10       none
   S-TASK *YES*                               4    32K
   S-TASK
   S-TASK
   S-TASK
   S-TASK

   Please select a function.

   ALTER                                      RESTART        NEXT MENU
   FIELD
```

The configuration table shows the device class (computer,
terminal, printer, or workstation), device type, data transfer
format, and size of user memory block assigned to each
workstation or background task. 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:

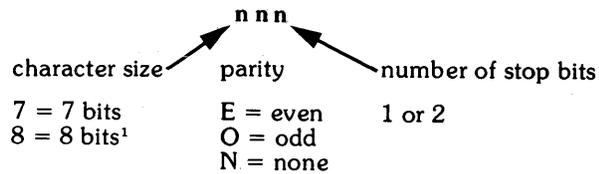ID - Device address for each port.

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

Port - I/O port number on ASI, or secondary task.

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.

2-13

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. (HP264x, HP263x, and HP 3000 ports do not
need nulls.)

TSKID - indicates the priority level assigned to the
workstation, or background task.

Memory - indicates the size block of user memory assigned to the
workstation.

Remarks - a 28-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.

*The most-significant bit (8th bit) is ignored.

For example, to alter the printer "TYPE" field in the previous table:

```
HP250                  HP 250 MULTIPLE TASK AND REMOTE I/O CONFIGURATION
Port   Class       ID   Type Format Nulls TSKID Memory  Remarks
DESK   Workstn          INTG                  1  32K
 1     Workstn          2649                   2  64K
 2     Workstn          2622                   3  32K
 3     Printer     13   TTY  8N1    ---
 4     Terminal    14   TTY  8N1    ---
 5     Terminal    15   264x 8N1                            PLOTTER
 6       none
 7       none
 8       none
 9       none          _
10       none
S-TASK *YES*                              4  32K
S-TASK
S-TASK
S-TASK
S-TASK

Please select a function.

 ALTER                                              RESTART       NEXT MENU
 FIELD
```

Now select a new assignment for port 2 by positioning the cursor in the second "CLASS" field, and pressing "ALTER FIELD", then "none". To alter the Remarks line for port 2, move the cursor to the field and press ALTER FIELD:

```
HP250                  HP 250 MULTIPLE TASK AND REMOTE I/O CONFIGURATION
Port   Class       ID   Type Format Nulls TSKID Memory  Remarks
DESK   Workstn          INTG                  1  32K
 1     Workstn          2649                   2  64K
 2       none
 3     Printer     13   TTY  8N1    ---
 4     Terminal    14   TTY  8N1    ---
 5     Terminal    15   264x 8N1                            PLOTTER
 6       none
 7       none
 8       none
 9       none
10       none
S-TASK *YES*                              3  32K
S-TASK
S-TASK
S-TASK
S-TASK


                                                              EXIT
```

Type the new remark and press $\boxed{\circ}$.

When a 2622D 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.

```
 HP250              HP 250 MULTIPLE TASK AND REMOTE I/O CONFIGURATION
 Port  Class       ID  Type Format Nulls TSKID Memory Remarks
 DESK  Workstn         INTG               1     32K
  1    Workstn         2649               2     64K
  2     none                                           NOTHING HERE NOW
  3    Printer     13  TTY  8N1      ---
  4    Terminal    14  TTY  8N1      ---
  5    Terminal    15  264x 8N1                        PLOTTER
  6     none
  7     none
  8     none
  9     none
 10     none
 S-TASK *YES*                              3     32K
 S-TASK
 S-TASK
 S-TASK
 S-TASK
────────────────────────────────────────────────────────────────────
 Please select a function.

┌──────────┬────────┬────────┬─────────┬──┬─────────┬────────┬───────────┐
│ RECORD   │        │        │ PRINT   │  │PREVIOUS │        │ EXIT RFIG │
│ CONFIG   │        │        │ CONFIG  │  │MENU     │        │           │
└──────────┴────────┴────────┴─────────┴──┴─────────┴────────┴───────────┘
```

RECORD CONFIG – Records the configuration (including changes just
                 made) on the disc. Reload the operating system
                 to use the new configuration.

PRINT CONFIG – Prints a copy of the current table.

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

EXIT RFIG –   Returns you to the initial CONFIG menu.

Miscellaneous Configuration (XFIG)

The miscellaneous configuration allows changing of task
priorities and selection of the default mass memory device.

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.

```
   HP250                    HP250 MISCELLANEOUS CONFIGURATION


              # OF TIME      DEFAULT MASS MEMORY DEVICE:    LOAD DEVICE
      USERID   SLICES


        1         1
        2         1




   Please select a function.
   _____

   _____
   |  TIME    |        | DFLT MASS |       |   |        |        |           |
   |  SLICE   |        |  MEMORY   |       |   |RESTART |        | NEXT MENU |
```

The time slice table shows the number of time slices allocated
for each task. A time slice is simply a period of time that is
given to each task in turn to execute. Although all tasks appear
to run concurrently, each is actually sharing the CPU (Central
Processing Unit) with the other tasks.

For normal operation, each task should have 1 time slice - this
results in all tasks being equal and having the same performance.
Should you desire to increase the performance of some tasks (at
the expense of the others) the number of time slices can be
changed using the time slice key. A time slice value from 1 to
99 can be entered.

In effect, the time slice value functions somewhat as a priority,
the higher the value the better performance in relation to the
other tasks.

NOTE

OVERALL system performance cannot be im-
proved by increasing the time slices for
tasks. If all tasks have the same number
of time slices, then all will perform
equally, regardless of the time slice
value.

One should carefully consider the application being run before
changing task time slices. Two important things should be
remembered:

1. When a task has I/O (disc/printer/display input or output) in
   progress, that task relinquishes all CPU time and other tasks
   will execute. Thus, an I/O bound application cannot be
   improved very much by the time slice technique.

2. Total system performance is fixed. Thus, increasing the per-
   formance of a task by increasing the time slices for that
   task necessarily decreases the performance of all others.

The default mass memory device (also called the default MSI) is
the mass memory device that is used as the default whenever the
system is powered on or CTRL HALT is pressed. This device can
be selected using the key DEFLT MASS MEMORY to select the load
device (the device that the system was powered on from). Enter
LD, otherwise enter the device specifier of the device that will
be default the next time the system is powered on.

Press the restart key to re-read the configuration from the disc.

Press the next menu key to advance to the next menu.

Press RECORD CONFIG to record the new configuration.

Press PRINT CONFIG to print the configuration.

Press PREVIOUS MENU to return to the initial XFIG menu.

Press EXIT XFIG to return to the initial CONFIG menu.

Set Default Printer

To print DROM, peripheral, and keyboard lists, enter 10 during
the initial CONFIG menu:

```
                          HP250 SYSTEM CONFIGURATION
   HP250                          SET PRINTER




   _____
   Printer select code (use 8 for CRT)?
   -
   _____
          |         |         |        ||         |         |    EXIT
          |         |         |        ||         |         |
```

Now enter the device address and press ⓞ . 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.

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. Backup
files may also be restored from the tape to a disc using this
program. Your system must have a 7908 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.

Backup and Software Duplication

To run FVBACK, execute the following:

RUN ''FVBACK''

The initial menu is:


```
   HP250                        FULL VOLUME BACKUP UTILITY



           BACKUP   - Backup an entire volume to a cartridge tape.


           RESTORE  - Restore an entire volume from a cartridge tape.




                            VERIFY IS OFF

   _____

   Please select a function.


   _____

   BACKUP    |       | RESTORE  |      |  |     | CHANGE  |    | EXIT
             |       |          |      |  |     | VERIFY  |    | PROGRAM
```


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.

```
┌──────────────────────────────────────────────────────────────────────┐
│                                                                        │
│   HP250                    FULL VOLUME BACKUP UTILITY                   │
│                                BACKUP VOLUME                            │
│                                                                        │
│                                                                        │
│              LABEL          DEVICE              COMMENT                 │
│                                                                        │
│              UTILITY    FLEX DISC :F2,6,0                               │
│                         FLEX DISC :F2,6,1    unavailable               │
│                         7908 DISC :Q2,7,0                               │
│                                                                        │
│                                                                        │
│                                                                        │
│                                                                        │
│   ──────────────────────────────────────────────────────────          │
│   Please select source volume.                                         │
│                                                                        │
│   ┌──────────┬────────┬─────────┬──────┬─┬─────┬──────┬─────┬────────┐ │
│   │ UTILITY  │        │         │      │ │     │      │     │  EXIT  │ │
│   │ :F2,6,0  │:F2,6,1 │ :Q2,7,0 │      │ │     │      │     │        │ │
└──────────────────────────────────────────────────────────────────────┘
```

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:

```
┌──────────────────────────────────────────────────────────────────────┐
│                                                                        │
│   HP250                    FULL VOLUME BACKUP UTILITY                   │
│                                BACKUP VOLUME                            │
│                                                                        │
│              LABEL          DEVICE              COMMENT                 │
│                                                                        │
│                         CTD     :K2,7,1                                 │
│                                                                        │
│                                                                        │
│                                                                        │
│                                                                        │
│                                                                        │
│   ──────────────────────────────────────────────────────────          │
│   Please select destination volume to contain backup file.            │
│                                                                        │
│   ┌──────────┬────────┬─────────┬──────┬─┬─────┬──────┬─────┬────────┐ │
│   │          │        │         │      │ │     │      │     │  EXIT  │ │
│   │ :K2,7,1  │        │         │      │ │     │      │     │        │ │
└──────────────────────────────────────────────────────────────────────┘
```

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:

```
HP250                     FULL VOLUME BACKUP UTILITY
                               BACKUP VOLUME


      DATE (optional)      09/18/81        SOURCE        :Q2,7,0

      TIME (optional)      14:18           DESTINATION   :K2,7,1

      BACKUP FILE NAME     FVBFIL


      Comment (optional)   ████████████████████████████████



    Please complete this form and press CONTINUE.


  CONTINUE  │       │       │       ││       │       │     EXIT
                                                          PROGRAM
```

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.

```
 HP250                      FULL VOLUME BACKUP UTILITY
                                BACKUP VOLUME


      DATE (optional)      09/18/81        SOURCE        :02,7,0

      TIME (optional)      14:18           DESTINATION   :K2,7,1

      BACKUP FILE NAME     FVBFIL


      Comment (optional)   ██████████████████████████


  Backup in progress, 82 percent complete.


                                                          ABORT
                                                          BACKUP
```

The disc is copied to the tape in 1 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.

Backup and Software Duplication

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.

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

```
HP250.3.9.D                    FULL VOLUME BACKUP UTILITY
                                    BACKUP VOLUME


      DATE (optional)      09/18/81        SOURCE        :Q2,7,0

      TIME (optional)      14:18           DESTINATION   :K2,7,1

      BACKUP FILE NAME     FVBFIL


      Comment (optional)   ████████████████████████████



 Backup complete.  Please select a function.


 RESTART                                                    EXIT
                                                            PROGRAM
```

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.

```
   HP250                        FULL VOLUME BACKUP UTILITY
                                   RESTORE VOLUME


    1 FVBFIL













   _____

   Please enter the name of the backup file to be restored.


   _____
         |        |        |        ||        |        |        | EXIT
         |        |        |        ||        |        |        |
```

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.

```
┌─────────────────────────────────────────────────────────────────┐
│                                                                   │
│   HP250                      FULL VOLUME BACKUP UTILITY           │
│                                 RESTORE VOLUME                    │
│                                                                   │
│                  LABEL          DEVICE            COMMENT         │
│                                                                   │
│                                 CTD      :K2,7,1                  │
│                                                                   │
│                                                                   │
│                                                                   │
│                                                                   │
│                                                                   │
│                                                                   │
│   ──────────────────────────────────────────────────────────    │
│   Please select source volume containing backup file.            │
│                                                                   │
│   ──────────────────────────────────────────────────────────    │
│                                                                   │
│   :K2,7,1 │       │       │       ││       │       │   EXIT      │
│                                                                   │
└─────────────────────────────────────────────────────────────────┘
```

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.

The following screen is displayed:

```
┌─────────────────────────────────────────────────────────────────┐
│                                                                   │
│   HP250                      FULL VOLUME BACKUP UTILITY           │
│                                 RESTORE VOLUME                    │
│                                                                   │
│                  LABEL          DEVICE            COMMENT         │
│                                                                   │
│                              FLEX DISC :F2,6,0                    │
│                              FLEX DISC :F2,6,1   unavailable      │
│                              7908 DISC :Q2,7,0                    │
│                                                                   │
│                                                                   │
│                                                                   │
│                                                                   │
│   ──────────────────────────────────────────────────────────    │
│   Please select destination volume to be restored.               │
│                                                                   │
│   ──────────────────────────────────────────────────────────    │
│                                                                   │
│   :F2,6,0 │ :F2,6,1 │ :Q2,7,0 │       ││       │       │  EXIT   │
│                                                                   │
└─────────────────────────────────────────────────────────────────┘
```

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. Verification is not required.

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

When the restore is complete, the following screen appears:

```
  HP250                        FULL VOLUME BACKUP UTILITY
                                  RESTORE VOLUME


      DATE (optional)       ████████14          SOURCE        :K2,7,1

      TIME (optional)       14:24               DESTINATION   :Q2,7,0

      BACKUP FILE NAME      FVBFIL


      Comment (optional)    ████████████████████████████



  _____

  Recovery complete.  Please select a function.


  _____
  | RESTART |        |        |        ||        |        |        | EXIT    |
  |         |        |        |        ||        |        |        | PROGRAM |
```

Backup and Software Duplication

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 included here to help you with the system planning.

Worst Case Disc Size And Time

Disc Type		Without Verify	With Verify
FLEXIBLE DISC	1.2 Mbyte	6 minutes	7 minutes
7910 DISC	12 Mbyte	13 minutes	20 minutes
7906 CARTRIDGE	10 Mbyte	10 minutes	15 minutes
7906 FIXED	10 Mbyte	10 minutes	15 minutes
7908 DISC *	16 Mbyte	9 minutes	18 minutes

* Time applies to disc backed up to its own CTD.

To restart the program press the key labeled RESTART.

To exit the program press the key labeled EXIT PROGRAM.

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 a cartridge to a 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 opening 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:

```
 HP250                      DISC DUPLICATE UTILITY


              LABEL          DEVICE           COMMENT

              UTILITY    FLEX DISC :F2,6,0
                         FLEX DISC :F2,6,1    unavailable
                         CTU       :K2,7,1
                         7908 DISC :Q2,7,0




    _____
    Please select source device.


    _____
    | FLEX DISC|FLEX DISC|CTU     |7908 DISC|  |     |      |    |EXIT    |
    |  :F2,6,0 | :F2,6,1 | :K2,7,1| :Q2,7,0 |  |     |      |    |PROGRAM |
```

Backup and Software Duplication

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.

```
┌─────────────────────────────────────────────────────────────────────┐
│                                                                       │
│    HP250                      DISC DUPLICATE UTILITY                   │
│                                                                       │
│                                                                       │
│               LABEL           DEVICE           COMMENT                │
│                                                                       │
│               UTILITY    FLEX DISC :F2,6,0    SOURCE                   │
│                          FLEX DISC :F2,6,1                             │
│                          CTU       :K2,7,1                             │
│                          7908 DISC :Q2,7,0                             │
│                                                                       │
│                                                                       │
│                                                                       │
│                                                                       │
│   ──────────────────────────────────────────────────────────────     │
│   Please select destination device.                                   │
│                                                                       │
│                                                                       │
│  ┌─────────┬─────────┬─────────┬─────────┬┬───────┬───────┬────────┐  │
│  │FLEX DISC│FLEX DISC│CTU      │7908 DISC││       │       │  EXIT  │  │
│  │ :F2,6,0 │ :F2,6,1 │ :K2,7,1 │ :Q2,7,0 ││       │       │        │  │
│  └─────────┴─────────┴─────────┴─────────┴┴───────┴───────┴────────┘  │
│                                                                       │
└─────────────────────────────────────────────────────────────────────┘
```

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 the
duplication process.

```
HP250                      DISC DUPLICATE UTILITY


          LABEL          DEVICE            COMMENT

          UTILITY    FLEX DISC :F2,6,0   SOURCE
                     FLEX DISC :F2,6,1   DESTINATION
                     CTU       :K2,7,1
                     7908 DISC :Q2,7,0




   User area duplication 3% completed.            CHECKREAD ON

   Duplication in progress.



          |       |       |      ||       |       |       |  EXIT
```

After DUPLICATION COMPLETE is displayed, select the destination
disc label by either pressing the indicated softkey or typing a
new label and pressing [↑] .

```
HP250                      DISC DUPLICATE UTILITY


          LABEL          DEVICE            COMMENT

          UTILITY    FLEX DISC :F2,6,0   SOURCE
                     FLEX DISC :F2,6,1   DESTINATION
                     CTU       :K2,4,1
                     7908 DISC :Q2,4,0




   DUPLICATION COMPLETE.

   Please select destination label option.


  OLD LABEL| SOURCE |NEW LABEL|       ||       |       |       |
           | LABEL  |
```

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. The temporary file is automatically purged after being copied to the destination disc.

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 without checkread is the simplest mode of operating, and the least time consuming. When you choose this mode, data is simply copied; no checking is done.

    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 is readable. 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 your 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-IMAGE 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 and must be disc resident.

To run BACKUP, execute the following:

RUN "BACKUP"

The initial menu appears:

```
                              VOLUME BACKUP UTILITY
   HP250                          INTRODUCTION

   The HP250 Volume Backup Utility will allow you to back up files on one volume
   to a file of type BACKUP on another volume.  If necessary, a set of files
   with the same name on several volumes will be used to perform the backup.
   Individual files or an entire volume may be backed up.

   Important notes: Database files can not be backed up with this utility.
                    The volume containing the Backup Utility may not be removed
                    during the operation of the utility.

              MM/DD/YY              HH:MM
      ·Date   ████████    Time      █████    Initials  █████

   Comments   ████████████████████████████████████████████████████████████

   Please complete this form.

   ┌─────────┬─────────┬─────────┬─────────┬──┬─────────┬─────────┬─────────┬─────────┐
   │ PROCESS │         │         │         │  │         │         │         │  END    │
   │ DATA    │         │         │         │  │         │         │         │ UTILITY │
```

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  |
```

Selection of either WEEKLY BACKUP, DAILY BACKUP, or SELECTED
FILES will cause the next screen to appear. 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.

```
                           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.

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

  The source volume is the volume that contains the information to be backed up.
  You may select any one of the available volumes listed below.

             LABEL        DEVICE              COMMENT
             UTILITY    FLEX DISC  :F2,6,0
                          CTD      :K2,7,1
                        7908 DISC  :Q2,7,0








  _____
  Please select the volume to be backed up.


  _____
  UTILITY |        |         |       |    ||        |        |       | EXIT
  :F2,6,0 | :K2,7,1| :Q2,7,0 |       |    ||        |        |       |
```

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.

```
                              VOLUME BACKUP UTILITY
     HP250                     SOURCE FILE SELECT                    09/30/81


       You may now do a CATalog of the source volume.  You may enter a line
       of the CATalog displayed or you may type and enter the name of a file
       to be backed up.  You may enter up to 50 files.











     ──────────────────────────────────────────────────────────────────────
       Please select a function or enter names of files to be backed up.


     ┌────────┬─────────┬──────┬──────┬─────┬──────┬────────┬─────────┐
     │ SOURCE │CONTINUE │      │      │     │      │ CHANGE │  END    │
     │ CATALOG│ BACKUP  │      │      │     │      │ SOURCE │ UTILITY │
     └────────┴─────────┴──────┴──────┴─────┴──────┴────────┴─────────┘
```

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.

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

  The destination volume is the volume that will receive the backup.  It cannot
  have the same address as the source volume and should be removable.

                    LABEL        DEVICE              COMMENT
                    UTILITY    FLEX DISC :F2,6,0
                               CTD       :K2,7,1
                               7908 DISC :Q2,7,0    SOURCE




  _____
  Please select the volume to receive the backup.


  _____
  | UTILITY |          |   NOT    |          |  |          |          |        |  EXIT  |
  | :F2,6,0 | :K2,7,1  |AVAILABLE |          |  |          |          |        |        |
```

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.

```
                              VOLUME BACKUP UTILITY
   HP250                 DESTINATION VOLUME CONFIRMATION              09/30/81

   The destination volume is the volume that will receive the backup.  It cannot
   have the same address as the source volume and should be removable.  Currently
   the source volume is  on :Q2,7,0 and the desired destination volume is
    on :K2,7,1.

   SOURCE:██████  ON :Q2,7,0   DESTINATION:██████  ON :K2,7,1 SEQUENCE #1
                     7908 DISC                         CTD
   The destination disc contains files.  You may erase the disc prior to
   continuing.  The largest available space is 59452 physical records.




   ─────────────────────────────────────────────────────────────────────────

   Please select a function.


   ───────────────────────────────────────────────────────────────────────────
   │  DEST.  │ ERASE  │        │ CONTINUE │ │      │      │ CHANGE │  END    │
   │ CATALOG │ DEST.  │        │ BACKUP   │ │      │      │ DEST.  │ UTILITY │
```

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.

```
                            VOLUME BACKUP UTILITY
     HP250                  BACKUP FILE SELECTION                    09/30/81

     A file will be created on the destination volume that will contain the
     backed up files from the source volume.  You may specify a name for this
     file or you may let the backup utility use the standard default file name.




           Backup file name  BCKFIL      Backup file protect code  HP250
     _____

     Please complete this form.


     _____
      PROCESS  |        |        |        ||        |        |        | EXIT
       DATA    |        |        |        ||        |        |        |
```

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:

```
                              VOLUME RECOVERY UTILITY
      HP250                        INTRODUCTION

      The HP250 Volume Recovery Utility will allow you to recover individual files
      or entire volumes which have been backed up with the HP250 Backup Utility.

      Important notes: Database files can not be recovered with this utility.




               MM/DD/YY          HH:MM
      Todays Date ▓▓▓▓▓▓    Time ▓▓▓▓▓   Initials ▓▓▓▓

          Comments ▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓▓
      ─────────────────────────────────────────────────────────
      Please complete this form.


      ┌────────┬──────┬──────┬──┬──────┬──────┬────────┐
      │ PROCESS│      │      │  │      │      │  END   │
      │ DATA   │      │      │  │      │      │ UTILITY│
      └────────┴──────┴──────┴──┴──────┴──────┴────────┘
```

This screen requests bookkeeping information from you. The "com-
ments" 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.

```
                              VOLUME RECOVERY UTILITY
   HP250                       RECOVERY MODE SELECT                    09/30/81

   The HP250 Volume Recovery Utility provides two modes for restoring volumes.
   Select either one.  Remember: None will restore databases.


   VOLUME RECOVER   Recover all files found in the backup file.

   SELECTED FILES   Recover individual files from the backup file.  You will be
                    asked for the names of up to 50 files in the backup file that
                    you want restored.

   CATALOG ONLY     Display the name and the type of all files in the backup file.



   _____

   Please select a function.


   _____
   | VOLUME   |SELECTED | CATALOG |        |   |        |        |     | END     |
   | RECOVERY |  FILES  |  ONLY   |        |   |        |        |     | UTILITY |
```

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 des-
tination volume, the Confirmation screen appears.

```
                           VOLUME RECOVERY UTILITY
HP250                   DESTINATION VOLUME CONFIRMATION                09/30/81

The destination volume is the volume that will be restored by the recovery.
It may not be the same volume as the source volume.

Important notes: Database files can not be recovered with this utility.

Recovery mode VOLUME RECOVERY  Destination volume _____ on :Q2,7,0
Printer is     8                                          7908 DISC


The destination disk contains files.  If there is a file with the same name
in the backup file, the backup copy will not be restored.

_____

Please select a function.


_____

| CHANGE  | CHANGE | CHANGE | DEST.   || CONTINUE |       |       | END     |
| PRINTER | MODE   | DEST.  | CATALOG || RECOVERY |       |       | UTILITY |
```

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.

```
┌─────────────────────────────────────────────────────────────────────────┐
│                          VOLUME RECOVERY UTILITY                          │
│   HP250                    RECOVER FILE SELECT               09/30/81      │
│                                                                           │
│   The HP250 Recovery Utility will allow you to enter up to 10 names of files │
│   to be recovered.  You may enter them now.                               │
│                                                                           │
│   Please select a function or enter names of files to be backed up.       │
│   ─                                                                       │
│                                                                           │
│                                                                           │
│                                                                           │
│                                                                           │
│                                                                           │
│                                                                           │
│                                                                           │
│   ─────────┬──────┬──────┬──────┬┬──────┬──────┬──────┬─────────          │
│   CONTINUE │      │      │      ││      │      │      │  EXIT             │
│   RECOVERY │      │      │      ││      │      │      │                   │
└─────────────────────────────────────────────────────────────────────────┘
```

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.

```
                              VOLUME RECOVERY UTILITY
HP250                         BACKUP FILE SELECTION                   09/30/81

You may specify the name of the backup file name and protect code or you
may let the recovery utility use the standard default file name and protect
code.




   Backup file name    BCKFIL          Protect code   HP250
   ────────────────────────────────────────────────────────────────────────
   Please complete this form.


   ───────────────────────────────────────────────────────────────────────
   PROCESS   │       │       │       ││       │       │       │    EXIT
   DATA      │       │       │       ││       │       │       │
```

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.

Database 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 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:

```
                            DATA BASE UNLOAD UTILITY
        HP250                     PARAMETER INPUT

     Data Base Name    ████           Root File Volume Name   ████

     Maintenance Password   ██████

     Unload from Data BASE             Data Set Name   ███████

     CHAINED Mode Unload

     Backup File Name   ███

     List of Backup Volume Names   ███ , ███ , ███ , ███ , ███ ,
                                                             ,
                                                             ,
                                                             ,

     ─────────────────────────────────────────────────────────
     Please complete this form.


     ┌────────┬────────┬──┬────────┬──┬────────┬────────┬────────┐
     │ CHANGE │ CHANGE │  │ CLEAR  │  │        │ ACCEPT │ EXIT   │
     │ SOURCE │ MODE   │  │ FORM   │  │        │ INPUT  │ PROGRAM│
     └────────┴────────┴──┴────────┴──┴────────┴────────┴────────┘
```

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

Data Base Name   Name of the data base to be unloaded.

Root File Volume Name   Blank response defaults to default disc.

Maintenance Password   Defined by initial DBCREATE.

Data Set Name   Used when unloading an individual data set.

Backup File Name   To be created by DBUNLD.

List of Backup Volume Names   Volumes to contain backup file.

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.

```
                            DATA BASE UNLOAD UTILITY
   HP250                        PARAMETER INPUT

   Data Base Name   REF1            Root File Volume Name   UTILITY

   Maintenance Password   ▮▮▮▮▮▮▮▮▮

   Unload from Data BASE           Data Set Name   ▮▮▮▮▮▮▮▮▮

   SERIAL  Mode Unload

   Backup File Name   MLDBUN

   List of Backup Volume Names   :K▮▮▮ ,▮▮▮ ,▮▮▮ ,▮▮▮ ,▮▮▮ ,


   Please complete this form.

   ┌────────┬────────┬────┬───────┬───┬────┬────────┬─────────┐
   │ CHANGE │ CHANGE │    │ CLEAR │   │    │ ACCEPT │ EXIT    │
   │ SOURCE │ MODE   │    │ FORM  │   │    │ INPUT  │ PROGRAM │
   └────────┴────────┴────┴───────┴───┴────┴────────┴─────────┘
```

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.

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:

```
                         DATA BASE UNLOAD UTILITY
   HP250                    UNLOAD PROCESSING


   Data  Number   | Data  Number   | Data  Number   | Data  Number   | Data  Number
   Set   Unloaded | Set   Unloaded | Set   Unloaded | Set   Unloaded | Set   Unloaded
  _____|_____|_____|_____|_____







  _____

   Please insert volume :K.



  _____|_____|_____|_____||_____|_____|_____|_____
                                                                      EXIT
```

* 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.

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:

```
                          DATA BASE LOAD UTILITY
   HP250                     PARAMETER INPUT

   Data Base Name    ██████        Root File Volume Name  ████████

   Maintenance Password  ███████████████

   Erase Data Base? (YES/NO)  NO

   Load into Data BASE           Data Set Name  █████████████

                                 Backup File Set Number  ██

   Backup File Name  ██████       First Backup Volume Name  ███████

   Re-order Items? (YES/NO)  NO
   _____
   Please complete this form.


   _____
   | CHANGE  | CHANGE  |       | CLEAR  ||      |       | ACCEPT  | EXIT    |
   | ERASE   | DEST    |       | FORM   ||      |       | INPUT   | PROGRAM |
```

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

This information may now be entered in any order:

Data Base Name

Root File Volume Name

Maintenance Password

Backup File Name

First Backup Volume
Name

Data Set Number

Backup File Set Number

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 copying (or purging) a complete set of files that
are part of a single program set. For example, the QUERY program
consists of 39 files. Using ROUTIL, all of the QUERY files are
handled automatically by specifying system run-only utility
programs. By using the EDITOR program (see Chapter 7) to create
a data file, you can add your own programs to the ROUTIL list.

To run ROUTIL, be sure that your utilities are loaded, then
execute the following:

                        RUN"ROUTIL"

The initial menu is displayed:

```
                      RUN-ONLY PROGRAM MAINTENANCE UTILITY
   HP250                            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  │      │  EXIT   │
   │        │         │       │          ││       │ & DROMS  │      │ 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:

```
┌─────────────────────────────────────────────────────────────────────┐
│                        RUN-ONLY PROGRAM MAINTENANCE UTILITY          │
│         HP250                         PROGRAM COPY                    │
│                          ┌───────────────────────────────┐           │
│                          │  Source       :Q2,7,0          │           │
│                          │  Destination  :K2,7,1          │           │
│                          └───────────────────────────────┘           │
│                                                                       │
│              ┌──────────────────────────────────────────┐            │
│              │   1 BACKUP       8 DUPL      15 RECOVR    │            │
│              │   2 BPRGS        9 EDITOR    16 SCHEMA    │            │
│              │   3 CFORM       10 INIT      17 TEST      │            │
│              │   4 CONFIG      11 LK3000    18 WORK      │            │
│              │   5 DBLOAD      12 MFORM     19 XREF      │            │
│              │   6 DBMODS      13 PFORM                  │            │
│              │   7 DBUNLD      14 ROUTIL                 │            │
│              └──────────────────────────────────────────┘            │
│                                                                       │
│  ─────────────────────────────────────────────────────────────────  │
│  Enter list of program numbers separated by commas or select a function. │
│  _                                                                    │
│  ─────────────────────────────────────────────────────────────────  │
│  COPY ALL  │        OTHER  │        │ │        │        │  │  EXIT    │
│            │        PROGRAM│        │ │        │        │  │          │
└─────────────────────────────────────────────────────────────────────┘
```

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:

```
                         RUN-ONLY PROGRAM MAINTENANCE UTILITY
        HP250                      PROGRAM COPY

                       ┌─────────────────────────────────┐
                       │ Source       :Q2,7,0             │
                       │ Destination  :K2,7,1             │
                       └─────────────────────────────────┘

              ┌────────────────────────────────────────────────┐
              │   1 BACKUP       8 DUPL        15 RECOVR        │
              │   2 BPRGS        9 EDITOR      16 SCHEMA        │
              │   3 CFORM       10 INIT        17 TEST          │
              │ ▐ 4 CONFIG▌     11 LK3000      18 WORK          │
              │   5 DBLOAD      12 MFORM       19 XREF          │
              │   6 DBMODS      13 PFORM                        │
              │   7 DBUNLD      14 ROUTIL                       │
              └────────────────────────────────────────────────┘


  ─────────────────────────────────────────────────────────────────────

  Copying file AFIG of program CONFIG from :Q2,7,0 to :K2,7,1.


  ┌──────┬──────┬──────┬──────┬──────┬──────┬──────┬──────┬──────────┐
  │      │      │      │      │      │      │      │      │ TERMINATE│
  │      │      │      │      │      │      │      │      │ COPY ALL │
  └──────┴──────┴──────┴──────┴──────┴──────┴──────┴──────┴──────────┘
```

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:

```
                         RUN-ONLY PROGRAM MAINTENANCE UTILITY
   HP250                          PROGRAM PURGE
                  ┌──────────────────────────────────────────┐
                  │ Files will be purged on   :K2,7,1         │
                  └──────────────────────────────────────────┘



                       ┌──────────────┐
                       │ 1 BACKUP     │
                       │ 2 BPRGS      │
                       │ 3 CFORM      │
                       │ 4 CONFIG     │
                       │ 5 DBLOAD     │
                       └──────────────┘



  ─────────────────────────────────────────────────────────────────
   Enter list of program numbers separated by commas or select a function.


  ─────────────┬─────────┬───────┬───┬───────┬───────┬───────┬─────────
   PURGE ALL   │         │ OTHER │   │       │       │       │  EXIT
               │         │PROGRAM│   │       │       │       │
```

Now you have the option of purging all files for all of the
programs in the list, (press PURGE ALL and ⬆) or purging only
programs that you specify by number, 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:

```
                        RUN-ONLY PROGRAM MAINTENANCE UTILITY
        HP250                  CONVERT PROGRAM TO RUN ONLY

                +-----------------------------------------------+
                | Programs will be made RUN-ONLY on   :K2,7,1   |
                +-----------------------------------------------+




        _____

        Enter name of program file to be made RUN-ONLY.
        -
        _____
             |       |       |      ||       |       |       |   EXIT
             |       |       |      ||       |       |       |
```

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:

```
                        RUN-ONLY PROGRAM MAINTENANCE UTILITY
      HP250                   COPY/PURGE SYSTEM AND DROMS



            COPY              - Copies SYSTEM and selected DROMS.

            PURGE             - Purges SYSTEM and selected DROMS.

            EXIT              - Returns to main menu.



   _____

   Please select a function.


   _____
   | COPY   |       | PURGE |      |   ||      |      |      |    EXIT   |
```

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

For example:

```
┌─────────────────────────────────────────────────────────────────────┐
│                  RUN-ONLY PROGRAM MAINTENANCE UTILITY                 │
│   HP250                      PROGRAM COPY                             │
│              ┌─────────────────────────────────────┐                 │
│              │ ·Source         :Q2,7,0             │                 │
│              │  Destination    :K2,7,1             │                 │
│              └─────────────────────────────────────┘                 │
│                                                                       │
│         ┌─────────────────────────────────────────────────┐         │
│         │   1 BACKUP      8 DUPL        15 RECOVR          │         │
│         │   2 BPRGS       9 EDITOR      16 SCHEMA          │         │
│         │   3 CFORM      10 INIT        17 TEST            │         │
│         │   4 CONFIG     11 LK3000      18 WORK            │         │
│         │   5 DBLOAD     12 MFORM       19 XREF            │         │
│         │   6 DBMODS     13 PFORM                          │         │
│         │   7 DBUNLD     14 ROUTIL                         │         │
│         └─────────────────────────────────────────────────┘         │
│                                                                       │
│   ──────────────────────────────────────────────────────────────    │
│   Enter list of program numbers separated by commas or select a function. │
│   _·                                                                  │
│   ──────────────────────────────────────────────────────────────    │
│  COPY ALL  │     │ OTHER    │     │  ││     │       │       │ EXIT    │
│            │     │ PROGRAM  │     │  ││     │       │       │         │
└─────────────────────────────────────────────────────────────────────┘
```

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 revi-
sion. 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:

```
         HP250                    RUN-ONLY PROGRAM MAINTENANCE UTILITY
                                         PROGRAM COPY

                              Source           UTILITY:F2,6,0
                              Destination   SYSTEM:F2,6,1


                      1 BACKUP        9 FVBACK       17 TAPFIX
                      2 BPRGS        10 INIT         18 WORK
                      3 CFORM        11 LK3000       19 XREF
                      4 DBLOAD       12 MFORM        20 Games
                      5 DBMODS       13 PFORM        21 Ledger
                      6 DBUNLD       14 ROUTIL       22 Misc
                      7 DUPL         15 RECOVR
                      8 EDITOR       16 SCHEMA


       Enter list of program numbers separated by commas or select a function.


       COPY ALL  |       OTHER   |   ||        |         |         |       EXIT
                 |       PROGRAM |   ||        |         |         |
```

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 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.

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.

```
  HP250                    CARTRIDGE TAPE MAINTENANCE UTILITY

   Device     Tape Label    Buffer Label    Comments_____

   :K2,7,1   DSG/250        DSG/250         Ready




   _____
   Please select a key.


   _____
         |        |        |        ||        |        |   EXIT
         |        |        |        ||        |        |   UTILITY
```

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.

```
┌─────────────────────────────────────────────────────────────────┐
│                                                                   │
│   HP250                  CARTRIDGE TAPE MAINTENANCE UTILITY        │
│                                                                   │
│   Device    Tape Label    Buffer Label    Comments                │
│                                                                   │
│   :K2,7,1       -         DSG/250         Tape uninitialized.      │
│                                           Buffer ready.            │
│                                                                   │
│                                                                   │
│                                                                   │
│                                                                   │
│                                                                   │
│                                                                   │
│                                                                   │
│   Please select a key.                                            │
│                                                                   │
│                                                                   │
│   ┌──────┬──────┬──────┬──┬──────┬──────┬──────┬─────────┐        │
│   │      │      │      │  │      │      │      │ EXIT    │        │
│   │      │      │      │  │      │      │      │ UTILITY │        │
│                                                                   │
└─────────────────────────────────────────────────────────────────┘
```

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.

```
┌─────────────────────────────────────────────────────────────┐
│                                                               │
│    HP250              CARTRIDGE TAPE MAINTENANCE UTILITY       │
│                                                               │
│     Device    Tape Label    Buffer Label    Comments          │
│                                                               │
│    :K2,7,1        -          DSG/250         Tape not ready.   │
│                                              Buffer ready.     │
│                                                               │
│                                                               │
│                                                               │
│                                                               │
│                                                               │
│                                                               │
│                                                               │
│    ─────────────────────────────────────────────────────────  │
│    Please select a key.                                       │
│                                                               │
│                                                               │
│    ──────┬──────┬──────┬──────┬┬──────┬──────┬──────┬───────   │
│          │      │      │      ││      │      │      │ EXIT      │
│          │      │      │      ││      │      │      │ UTILITY   │
│                                                               │
└─────────────────────────────────────────────────────────────┘
```

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.

```
HP250                    CARTRIDGE TAPE MAINTENANCE UTILITY

   Device      Tape Label    Buffer Label    Comments

   :K2,7,1                    DSG/250         Tape not ready.
                                             Buffer waiting for tape "DSG/250".




   Please select a key.


   CLR BUFFR                                                        EXIT
     :K2,7,1                                                        UTILITY
```

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.

```
   HP250                  CARTRIDGE TAPE MAINTENANCE UTILITY

   Device      Tape Label    Buffer Label    Comments

   :K2,7,1     SAMPLE        DSG/250         Tape removed from another drive.
                                             Buffer ready.




   Please select a key.


  ┌──────────┬──────────┬─────────┬────────┬──┬──────────┬─────────┬───────────┬──────────┐
  │ CLR TAPE │          │         │        │  │          │         │           │ EXIT     │
  │  :K2,7,1 │          │         │        │  │          │         │           │ UTILITY  │
```

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.

```
   HP250                    CARTRIDGE TAPE MAINTENANCE UTILITY

    Device      Tape Label    Buffer Label    Comments

    :K2,7,1    DSG/250        DSG/250         Error during normal system operation.
                                              Tape data is recoverable.





   Please select a key.


   FIX TAPE  |         |         |        ||        |         |         | EXIT
    :K2,7,1  |         |         |        ||        |         |         | UTILITY
```

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.

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:

```
HP250.4.0           TEXT EDITOR
            revision software.
```
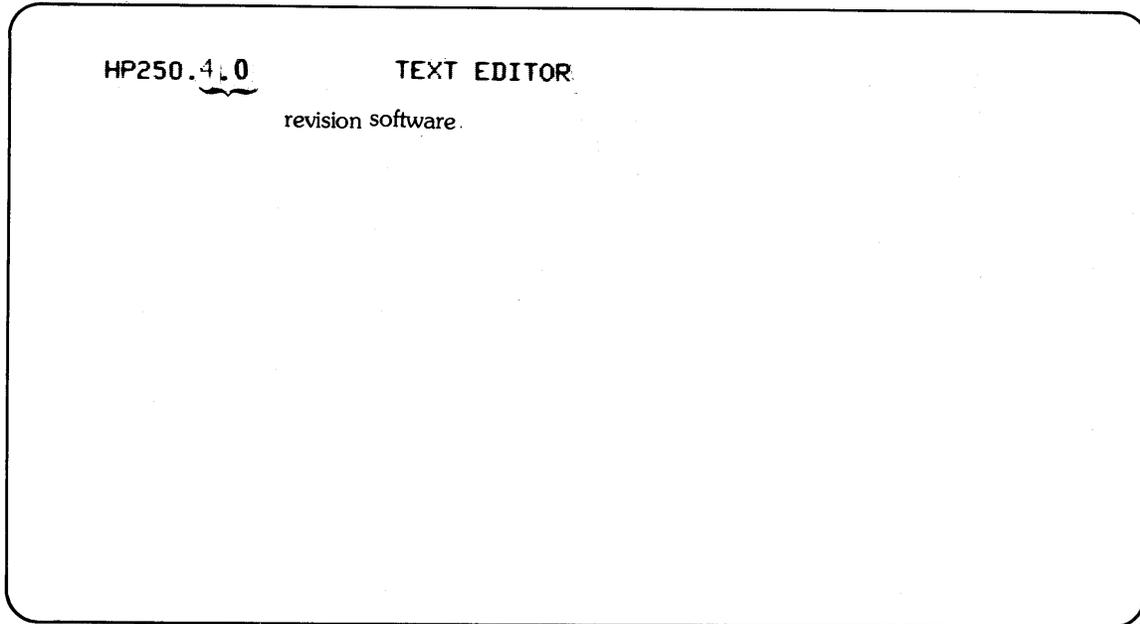
The slash (/) following the heading indicates the EDITOR is ready to execute commands. Commands may be entered in upper or lower case. Several commands may be entered on one line by separating commands with semicolons (;). The total command line cannot exceed 160 characters (two display lines). EDITOR 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 number from 1 through 6.

** 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.

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.

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

$$\left\{\begin{matrix} \text{A} \\ \text{ADD} \end{matrix}\right\} \text{[Q][line number][, HOLD]}$$

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

$\left\{ \begin{array}{c} \text{CHANGE} \\ \text{C} \end{array} \right\}$ [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

$$\begin{Bmatrix} \text{DELETE} \\ \text{D} \end{Bmatrix} \text{[Q][range list]}$$

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 enered, the program clears the work file, purges the scratch files, and displays:

END OF EDITOR PROGRAM.

The FIND Command

$$\left\{ \begin{array}{c} \text{F} \\ \text{FIND} \end{array} \right\} \quad [\text{Q}] \quad \left[\begin{array}{c} \text{string IN range list} \\ \text{line number} \end{array} \right]$$

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" IN 5/15

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

$\left\{ \begin{array}{c} G \\ GATHER \end{array} \right\}$ 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

$\left\{ \begin{matrix} H \\ HOLD \end{matrix} \right\}$ [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

$$\left\{ \begin{array}{l} K \\ KEEP \end{array} \right\} \text{ file spec} \left[\begin{array}{l} ,UNN \\ ,UNNUMBERED \end{array} \right]$$

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

$$\left\{ \begin{array}{c} \mathsf{L} \\ \mathsf{LIST} \end{array} \right\} \quad [\mathbb{Q}][\text{range}][\text{,OFFLINE}]$$

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

$$\left\{\begin{array}{c} \texttt{M} \\ \texttt{MODIFY} \end{array}\right\} \text{[range list]}$$

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

$$\begin{Bmatrix} S \\ SET \end{Bmatrix} \begin{Bmatrix} LENGTH = nnn \\ PRINTER = n [,WIDTH=nnn] \\ LINES = nnn \end{Bmatrix}$$

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

$$\begin{Bmatrix} T \\ TEXT \end{Bmatrix} \quad \text{file spec} \quad \begin{bmatrix} ,UNN \\ ,UNNUMBERED \end{bmatrix}$$

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

```
┌         ┐
│    W    │
│  WHILE  │
└         ┘
```

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:

```
FIND FIRST; WHILE
FINDQ"ABC"
MODIFY
```

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

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 SYSTEM media. 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 "COMPUTR" (see Remote
Configuration chart below*). It's assumed that the HP 3000 is
operating under MPE III 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, for use with MPE III.
Enter port number (1..10): 5
```

The interface ports located at the back of the HP 250 are
numbered 1 thru 10 (left to right). 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	CARRIAGE RETURN	DATA LINK BREAK	BAUD RATE 2400		TRANSFER FROM 300	TRANSFER TO 3000	HARD COPY **NONE**	REMOVE KEY DISP

CONTROL Y - Sends a 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 - Selects the data transmission rate, either 110, 150, 300, 1200, 2400, 4800, or 9600 BAUD. The selected rate is displayed below the softkey label. (NOTE: This rate should match the BAUD switch setting on the data comm board.)

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 3000 source file name: SFORM
HP 3000 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. See page 8-8 for details.

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
```

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   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.

- Binary (BIN) and 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

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 in-
           consistent.

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