

HP 3000 Series II Computer System



Console Operator's Guide



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The List of Effective Pages gives the most recent date on which the technical material on any given page was altered. If a page is simply re-arranged due to a technical change on a previous page, it is not listed as a changed page. Within the manual, changes are marked with a vertical bar in the margin.

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PREFACE

This manual is one of the manuals that documents the MPE Operating System for the HP/3000 Series II Computer System. The Manual Plan on the following page shows the relationship of this manual (shaded block) to the others in this set.

This manual explains how to initialize and monitor operations of the MPE Operating System, and how to request various operations through the MPE Console.

Specifically, the manual is intended for the MPE Console Operator, who is concerned with system start up and shutdown, monitoring batch jobs, allocating peripheral devices for users, transmitting messages to users, and receiving, at the console, messages from the users and system. This manual does not include complete information about the system. Instead, it presents only information that is relevant to the Console Operator's functions.

This manual is mainly a reference book rather than a tutorial text for new operators. You should understand the basic operating principles of the HP/3000 Series II Computer System. You should obtain an overview of the inter-relationships between the main hardware and software features of the system by reading the *HP 3000 Series II Computer System General Information Manual (30000-90008)*.

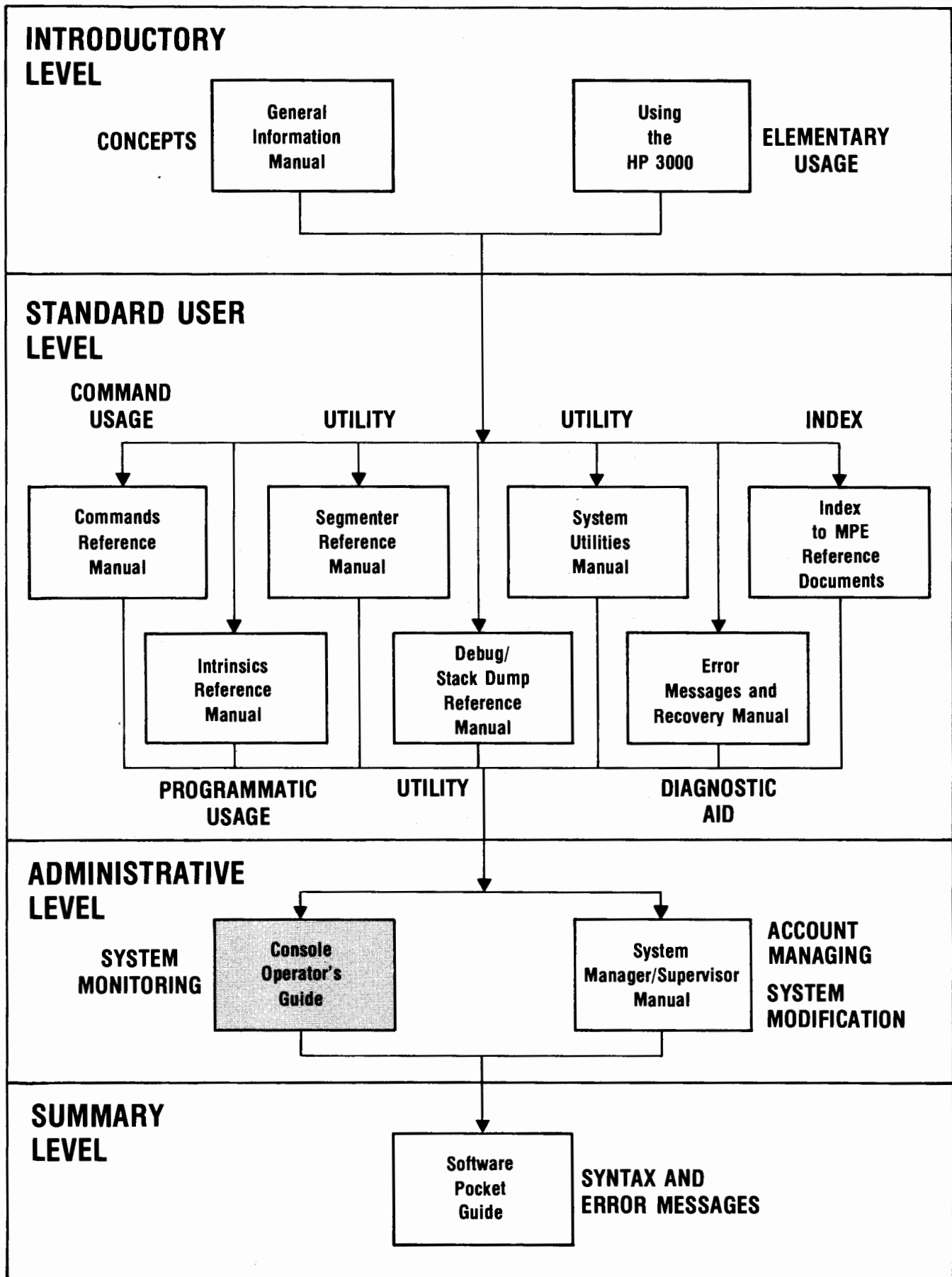
You may also want to read the following manuals for additional information depending upon the applications you plan:

HP 3000 Series II Computer System, System Manager/Supervisor Manual (30000-90014).

System Service Manual for HP 3000 Series II Computer System (30000-90018).

HP 3000 Series II Computer System Signal and Power Distribution Manual (3000-90021).

MANUAL PLAN



CONVENTIONS USED IN THIS MANUAL

NOTATION

DESCRIPTION

[]	An element inside brackets is <i>optional</i> . Several elements stacked inside a pair of brackets means the user may select any one or none of these elements. Example: $\left[\begin{array}{c} A \\ B \end{array} \right]$ user may select A or B or neither
{ }	When several elements are stacked within braces the user must select one of these elements. Example: $\left\{ \begin{array}{c} A \\ B \\ C \end{array} \right\}$ user must select A or B or C.
italics	Lowercase italics denote a parameter which must be replaced by a user-supplied variable. Example: CALL <i>name</i> <i>name</i> one to 15 alphanumeric characters.
underlining	Dialogue: Where it is necessary to distinguish user input from computer output, the input is underlined. Example: NEW NAME? <u>ALPHA1</u>
superscript C	Control characters are indicated by a superscript C Example: Y ^C
<i>return</i>	<i>return</i> in italics indicates a carriage return
<i>linefeed</i>	<i>linefeed</i> in italics indicates a linefeed
...	A horizontal ellipsis indicates that a previous bracketed element may be repeated, or that elements have been omitted.



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INTRODUCTION

SECTION

I

This section introduces you, the Console Operator, to the MPE Operating System. MPE offers many important features of special interest to you.

- INTERACTIVE PROCESSING

In *interactive processing*, programmers at remote or local terminals interact conversationally with the computer. Each user is prompted for his input. They simultaneously share the central processor, main memory, and discs. This type of interaction, called *session*, can be used for program development, information retrieval, computer assisted education, and many more applications when the user at a remote terminal must access the system directly. The programmers can communicate with you, as the Console Operator, and vice-versa by transmitting messages between the terminals and the console.

During a session, the programmer maintains a dialogue with the system to control input and monitor output; in a batch job, however, the command stream is pre-established by the user.

- BATCH PROCESSING

Batch processing allows submission of one or more computer-language programs as a single entity called a *job*, to the computer. Jobs contain pre-established commands to MPE; once jobs are running, no further input is needed from either the programmer or the operator. Jobs are input by you, as the Console Operator, or the programmer through on-site (local) devices, typically card readers.

Job files may also be constructed remotely by programmers using terminals. The job files then are input to MPE via the spooling facility. This technique is called STREAMing. Several jobs can be submitted and processed concurrently. MPT selects each job for execution according to its input priority. When a job enters execution, commands are processed sequentially.

- MULTIPROGRAMMING

Through *multiprogramming*, MPE can execute many different jobs/sessions concurrently. The number of jobs/sessions that can be processed concurrently depends on such factors as the hardware and software configurations, Console Operator defined limits, and the applications involved. Each programmer, however, uses the computer as if it were his own private machine; he need not depend on, nor even be aware of others using the machine. (You, as the Console Operator, however, can always determine the number of jobs/sessions in progress and the identities of the users currently accessing the machine.)

- GENERAL-PURPOSE VERSATILITY

MPE allows users to run batch jobs and interactive sessions *concurrently*.

● SPOOLING

MPE is equipped with a *spooling* facility to assist in the operation of certain non-sharable devices. Non-sharable devices are devices such as card readers and line printers which can process only one set of data at a time. In contrast, a sharable device, such as a disc, can store multiple sets of data and can, therefore, be shared by many users. Spooling can be controlled on a device-by-device basis; when enabled, spooling permits multiple jobs/sessions to “gain access to” a device which would otherwise only be accessed by one job or session at a time. To accomplish this, MPE copies the data coming from or going to a “spooled” non-sharable device onto a disc. Data coming directly from or going directly to a non-sharable device is called a *devicefile*. When this data is copied on the disc, it is a *spooled devicefile*.

In addition to automatically copying data to or from spooled devices, the MPE spooling facility includes:

- commands for monitoring and controlling the spooling facility;
- a capability for recovering spooled devicefiles and jobs when restarting the system;
- and, the ability to generate multiple copies of spooled output.

● EASY TO USE

MPE is easy to initialize, operate, monitor, and shutdown. Users interact with the system through a terminal or a batch-input device. You, as the Console Operator, interact with the system through the MPE Console. MPE automatically schedules all jobs and sessions according to their priorities.

HP 3000 Series II Computer Systems operate under one operating system — MPE. This means that programs prepared on one HP 3000 can be run on any other (of comparable hardware configuration) without modification. It also means that programmers and operators moving from one installation to another need not undergo additional training or read additional documentation to prepare themselves for the new environment.

● SYSTEM MESSAGES AND MONITORING

To aid in correctly establishing and executing programs, MPE provides programmers and operators with displays that describe errors encountered in using the operating system, show the status of jobs/sessions, devices and devicefiles, or request certain actions, such as, allocating a specific magnetic tape to a user's request for a tape unit.

THE CONSOLE OPERATOR

The Console Operator is responsible for the day-to-day operational control of the system. A Console Operator is not an MPE user in the same sense that a System Manager, System Supervisor, or programmer is; the Console Operator does not log on to the system to perform his functions. Instead, the Console Operator monitors and controls operation of the system using the system console. The Console Operator may perform the following tasks:

- Start up the system and shut it down.
- Submit batch jobs to the system.

- Display job/session status.
- Abort jobs/sessions when necessary.
- Set peripheral devices on-line, off-line or remove them from the configuration.
- Control spooling facility.
- Transmit messages to the users.
- Control which devices may accept :JOB, :HELLO and :DATA commands (for entry of jobs, sessions, and data respectively).
- Mount tape volumes on devices which the Console Operator allocates in response to user requests.
- Back up user and system files.
- Monitor and control non-sharable device allocation (ownership).
- Set limits on the number of jobs or sessions which can run at one time.
- Set job/session and output fences; only jobs/sessions and spooled device files with priorities greater than the fences will be processed.

Refer to Section V for step-by-step instructions of these and other tasks (or functions) a Console Operator would perform.

THE CONSOLE COMMANDS

Console Operator commands are used for communicating with the MPE Operating System. You initiate communication with MPE by pressing simultaneously the CONTROL key and the A key of the console (A^C). MPE responds by prompting you for a command by printing an equal sign (=) on the MPE system console (terminal). You then enter a command through the console keyboard and press the CARRIAGE RETURN key. To send another command, you must press CONTROL A (A^C) to re-establish communication with MPE.

NOTE

Once the prompt character appears, you should enter the command without undue delay in order to prevent messages from being blocked. The prompt character indicates a pending read on the console. Until that read is completed all output messages to the console are blocked.

DELETING A LINE

To delete the current line of a command prior to pressing CARRIAGE RETURN, press CONTROL X (hold down the CONTROL key and press X). The terminal verifies the cancellation by printing three exclamation marks (!!!) followed by a carriage return and linefeed.

DELETING A CHARACTER

To delete the previous character, press CONTROL H (hold down the CONTROL key and press H). CONTROL H works in the following ways for all terminals (including the system console).

1. CRT Terminals

CRT terminals physically backspace the cursor. CONTROL H, therefore, causes the cursor to be backspaced one position, leaving the cursor positioned over the character to be replaced. The physical backspacing of the cursor does not erase the character from the screen, but the character has been deleted from MPE system's internal buffer.

2. Hardcopy Terminals

- a. For terminals which have physical backspace capability, CONTROL H causes a physical backspace to occur. In addition, a line feed is emitted unless the previous character was also a CONTROL H. The result is that the user resumes typing beneath the first character to be replaced.
- b. No backspacing takes place for terminals which do not have this capability. Instead, the terminal verifies the CONTROL H by typing a backslash (\).

NON-ECHOING CONSOLE OUTPUT

To place the MPE system console in half-duplex mode so that commands entered on the console keyboard are not echoed as console output, press the ESC key followed by the semicolon (;) on the console keyboard.

ECHOING CONSOLE OUTPUT

To change the MPE system console from half-duplex mode to full-duplex mode so that commands entered on the console keyboard are once again echoed as console output, press the ESC key followed by the colon (:) key on the console keyboard.

CONSOLE COMMAND SUMMARY

Console Operator commands are shown in Table 1-1. The PAGE NO. column refers to the page in this manual on which each command is discussed.

Table 1-1. Console Operator Commands

COMMAND NAME	DESCRIPTION	PAGE NO.
=ABORTIO	Aborts all pending I/O requests for a device.	3-4
=ABORTJOB	Aborts a job or session.	3-5
=ACCEPT	Permits the device to accept job/sessions and/or data.	3-7
=ALTFILE	Alters attributes of output spooling files.	3-8
=ALTJOB	Alters attributes of waiting jobs or sessions.	3-9
=BREAKJOB	Suspends an executing job.	3-11
=DELETE	Deletes any ready devicefile.	3-12
=DOWN	Removes a device from normal system use.	3-13
=GIVE	Assigns a =DOWNed device to the diagnostics.	3-14
=HEADOFF	Stops HEADER/TRAILER output to a device.	3-15
=HEADON	Resumes HEADER/TRAILER output to a device.	3-16
=JOBFENCE	Defines acceptable input priorities.	3-17
=LIMIT	Limits the number of concurrently running jobs/sessions.	3-18
=LOGOFF	Aborts all executing non-HIPRI jobs/sessions and prevents further log-ons.	3-19
=LOGON	Enables job/session processing following =LOGOFF.	3-20
=OUTFENCE	Defines acceptable priorities for output spooled files.	3-21
=RECALL	Displays all console =REPLY messages pending.	3-22
=REFUSE	Disallows jobs/sessions and/or data on a designated device.	3-23
=REPLY	Replies to pending requests.	3-24
=RESUMEJOB	Resumes a suspended job.	3-26
=SESSION	Permits the console to be used for a session.	3-27
=SHOWDEV	Displays information for a particular device, a class of devices, or all devices.	3-28
=SHOWIN	Displays status information about input device-files.	3-30
=SHOWJOB	Displays the status of current jobs/sessions.	3-33
=SHOWOUT	Displays status information about output device-files.	3-36
=SHOWQ	Displays scheduling information and processes currently defined in the system.	3-39
=SHOWTIME	Prints the current date and time.	3-41
=SHUTDOWN	Initiates shut down of MPE.	3-42

Table 1-1. Console Operator Commands (Continued)

COMMAND NAME	DESCRIPTION	PAGE NO.
=SPOOL	Initiates spooling of an input/output device.	3-43
=STREAMS	Enables or disables the user's ability to submit job/session and/or data streams.	3-50
=TAKE	De-assigns a =GIVEn device from diagnostics.	3-51
=TELL	Sends a message to jobs/sessions.	3-52
=UP	Allows a =DOWNed device to function again.	3-54
=WARN	Sends a urgent message to jobs/sessions.	3-55
=WELCOME	Defines the welcome message.	3-57

HP 3000 SYSTEM CONTROL PANEL

SECTION

II

The HP 3000 System Control Panel provides controls and indicators used by you to initialize, stop, restart, and otherwise control the HP 3000 Series II Computer System. All switches located on the front of the control panel are three-position, spring-return rocker switches. These switches have a center-off position. They are pressed on the top or bottom half to produce the desired function. When released, they return to the center position.

Figure 2-1 contains a detailed drawing of the control panel and Table 2-1 lists and explains the function of the switches and indicators with reference letters to relate the two.

Three toggle switches are mounted on the back of the upper right portion of the HP 3000 System Control Panel:

- CPU RESET — Resets the circuits of the CPU.
- PANEL DSBL-ENBL — Disables and enables the control panel for use.
- PF/ARS DSBL-ENBL — Disables or enables the auto restart system program in the event of a power failure.

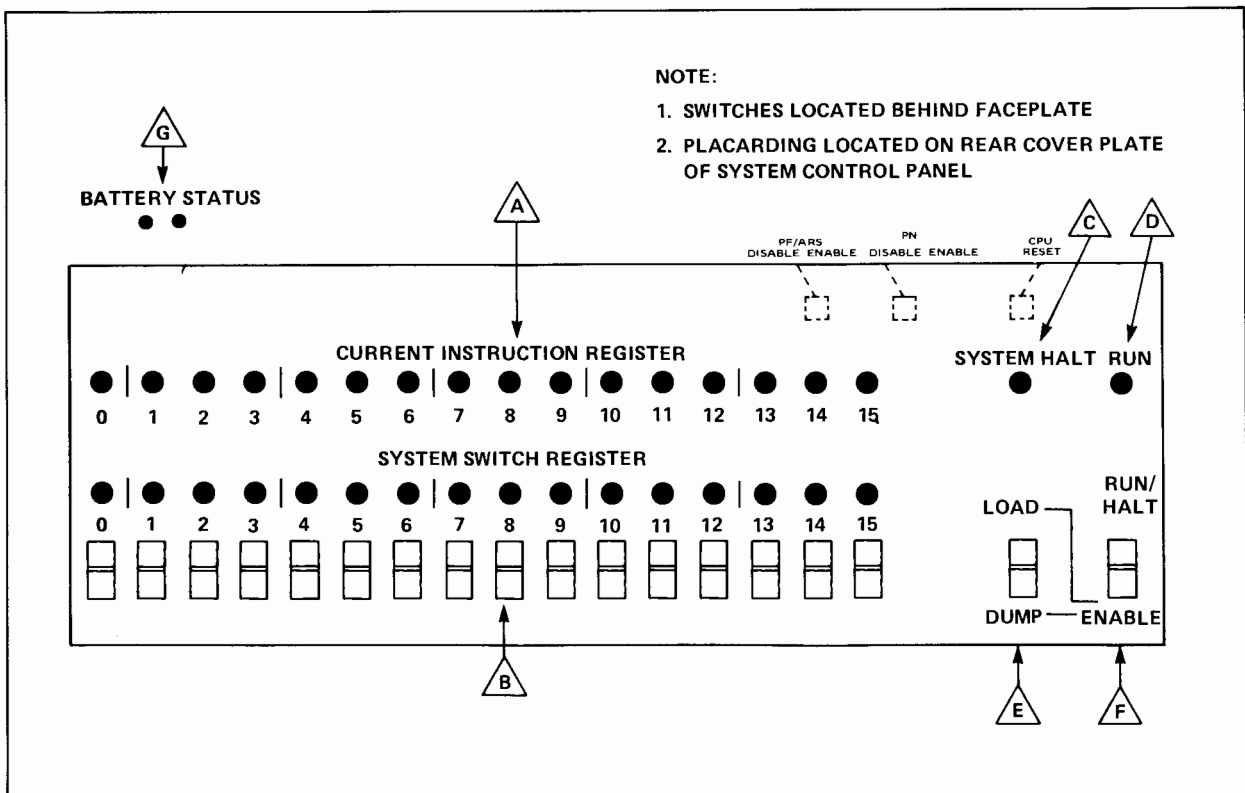
















Figure 2-1. HP 3000 System Control Panel

Table 2-1. System Control Panel Switch/Indicator Functions

SWITCH/INDICATOR	FUNCTION				
 CURRENT INSTRUCTION REGISTER	Displays the content of the current instruction register.				
 SYSTEM SWITCH REGISTER	Establishes the bit pattern of a 16-bit word. Press the upper half of the switch to set a bit to 1, the lower half to set a bit to 0. The light turns on when the bit is set to 1.				
 SYSTEM HALT	Lights when the computer halts because of an irrecoverable system error encountered by the hardware. (A message also is printed on the console.)				
 RUN	Indicates the system is executing normally (a program is running) or is paused (awaiting an interrupt).				
 LOAD/DUMP	<p>Used to load programs into computer memory from a device specified by the code set into the SYSTEM SWITCH REGISTER . DUMP copies the contents of main memory and the CPU registers to a device specified in the SYSTEM SWITCH REGISTER  as follows:</p> <table data-bbox="906 982 1268 1056"> <tr> <td>BIT 0-7</td> <td>I/O control byte</td> </tr> <tr> <td>BIT 8-15</td> <td>I/O device number</td> </tr> </table> <p>It uses a <i>preset</i> register to prevent operator error.</p> <p>The LOAD/DUMP switch  is effective only when the ENABLE switch  is also pressed and the computer is halted.</p>	BIT 0-7	I/O control byte	BIT 8-15	I/O device number
BIT 0-7	I/O control byte				
BIT 8-15	I/O device number				
 RUN/HALT	Pressing RUN/HALT changes the operational state of the computer. If the computer is running, pressing the RUN/HALT switch halts the computer. If the computer is halted, pressing the RUN/HALT switch starts the computer running.				
 ENABLE	Used to enable the LOAD/DUMP switch  . When the ENABLE switch  is pressed, the LOAD/DUMP switch can be activated.				
 BATTERY STATUS	<p>Shows the status of memory. If the lights are lit, the batteries are charged and memory is up; if they are blinking slowly the batteries are charging up and memory is operational; if they are blinking fast the batteries are discharging; and if the lights are not lit the batteries are not charged and memory is down.</p> <p><i>Note: Only one of the two lights may be operational, depending on the number of memory power supplies installed in the system.</i></p>				

CONSOLE OPERATOR COMMANDS

SECTION

III

Operator Commands, provided by MPE, are described in this section. The commands are presented alphabetically by command name for easy reference. For each command, the following format is shown:

- **SYNTAX** Shows the format of the command.
- **PARAMETERS** Describes the variables in the command.
- **NOTES** Describes in detail the command and related special considerations.
- **EXAMPLES** Shows the command in use.
- **TEXT DISCUSSION** Shows where the command is described in the text portion of this manual.

There are three types of commands discussed in this section:

- Job and session commands for controlling batch and interactive processing.
- Device and devicefile commands for controlling and monitoring a device.
- Message commands for sending, replying and receiving messages.

These command descriptions can be re-arranged according to their function as shown in Table 3-1.

A summary of the rules for entering commands, plus notes on the syntax conventions used in this manual appear in Table 3-2.

Table 3-1. Types of Operator Commands

Job/Session Commands	=ABORTJOB =ACCEPT =ALTJOB =BREAKJOB =JOBFENCE =LIMIT =LOGOFF =LOGON =REFUSE =RESUMEJOB =SESSION =SHOWJOB =SHOWQ
Device/Devicefile Commands	=ABORTIO =ALTFILE =DELETE =DOWN =GIVE =HEADOFF =HEADON =OUTFENCE =SHOWDEV =SHOWIN =SHOWOUT =SPOOL =STREAMS =TAKE =UP
Message Commands	=RECALL =REPLY =SHOWTIME =TELL =WARN =WELCOME

Table 3-2. Reference Notes for Command Definitions

ELEMENTS OF COMMAND FORMAT	
Leading equal sign:	is the prompt character output by MPE.
Command name:	is shown in CAPITAL LETTERS, contains no blanks, is delimited by a non-alphabetic character (usually a blank).
Parameters:	are shown in CAPITAL LETTERS IN REGULAR TYPE when they are literal information that you always enter exactly as shown; are shown in <i>lower-case italics</i> when they are variable parameters to be replaced by information that you must supply.
Positional parameters:	have significance implied by positional order after command name; use adjacent commas (or semicolons where required) to indicate omitted parameter(s) as follows: =COMMANDNAME p1, ,p3 (from middle of list) =COMMANDNAME ,p2,p3 (from beginning of list) =COMMANDNAME p1 (from end of list)
Keyword parameters:	are separated by semicolons and can appear in any order.
Mixed parameters:	positional parameters are to be given first; first keyword indicates end of positional list.
Optional parameters:	[A] "A" may be included [A] [B] "A" or "B" may be included {A} {B} "A" or "B" must be included [A] [B] "A" and/or "B" may be included in any order
SYSTEM DIALOGUE	
User input is underlined:	NEW NAME? <u>ALPHA1</u>

=ABORTIO

Aborts all pending I/O requests for a device.

SYNTAX

```
=ABORTIO ldn
```

PARAMETERS

ldn The logical device number of the device for which I/O is being aborted (Required parameter.)

NOTES

This command causes all pending I/O operations on the specified *ldn* to be aborted. If no queued I/O requests are present at the time the command is issued, the message "LDEV#*ldn* QUEUE EMPTY" will be printed on the system console.

JOB/DATA accepting devices always have outstanding read requests pending due to the auto-recognition feature of MPE. The =ABORTIO command is used to clear these pending input requests. Clearing all outstanding I/O requests is sometimes required to allow proper execution of other console commands. In certain cases =ABORTJOB, =TAKE, =DOWN, and =REFUSE will not correctly function unless an =ABORTIO command is first issued to clear pending I/O operations on the appropriate device.

EXAMPLES

To abort all pending output requests for logical device 20, enter:

```
=ABORTIO 20  
10/19:57/LDEV#20 QUEUE EMPTY
```

To completely clear spooled device 5 it is necessary to abort all pending I/O operations as shown below:

```
=SPOOL 5, STOP  
ST/8:39/SP#5/STOPPED  
10/8:39/LDEV#5 NOT READY  
=REFUSE 5  
=ABORTIO 5  
=ABORTIO 5  
10/8:40/LDEV#5 QUEUE EMPTY
```

TEXT DISCUSSION

Page 4-2.

=ABORTJOB

Aborts a job or session.

SYNTAX

```
=ABORTJOB { #Jnnn  
            #Snnn  
            [userjname,] username.acctname }
```

PARAMETERS

<i>#Jnnn</i>	A job number. (Required parameter.)
<i>#Snnn</i>	A session number. (Required parameter.)
<i>userjname</i>	A job or session name. (Optional parameter.)
<i>username</i>	A user name. (Required parameter.)
<i>acctname</i>	An account name. (Required parameter.)

NOTES

This command terminates the designated job or session and displays the message * SESSION (or JOB) ABORTED BY SYSTEM MANAGEMENT * on the job/session list device. Although the job/session is abnormally terminated, standard cleanup is performed (log records are issued and CPU connect times are updated).

=ABORTJOB can be applied to *waiting* as well as executing jobs/sessions. If the input devicefile for a ready batch job is spooled, then it will be deleted; whereas if the output devicefile is spooled, it is made ready for spooling. This is the case whenever a batch job terminates.

The successful execution of an =ABORTJOB command results in a log-off message associated with the job (if the job was in execution) or session affected as shown below:

```
=ABORTJOB #J9  
ST/23:56/#J9/LOGOFF
```

If the log-off message does not appear, it means the affected process was *WAITing* or is not in an abortable state. One reason for this can be outstanding device allocation messages that have not been replied to. You must satisfy the allocation message to allow the =ABORTJOB to continue by responding with a REPLY <pin>, 0 (where *pin* is the process identification number). This is a negative response to an allocation message and causes a file open error in the accessing program, as shown in one of the examples below.

EXAMPLES

To terminate session number 139, enter:

```
=ABORTJOB #S139
```


= ABORTJOB

To terminate the session whose *session name* JOB1, *username* is BARB and *account name* is LEWIS, enter:

```
=ABORTJOB JOB1, BARB.LEWIS
```

To terminate job number 9, enter:

```
=ABORTJOB #J9  
ST/20:18/#J9 /LOGOFF
```

(The execution was successful.)

To terminate session 6, which has a pending device allocation message, you must reply to the message as shown below:

```
?I0/17:00/#S6/23/LDEV# FOR "SCRTAPE" ON TAPE (NUM)  
=ABORTJOB #S6  
=REPLY 23,0  
ST/17:08/#S6/LOGOFF
```

TEXT DISCUSSION

Page 4-1.

=ACCEPT

Permits the device to accept jobs/sessions and/or data.

SYNTAX

```
=ACCEPT [ JOBS, ] ldn  
        [ DATA, ]
```

PARAMETERS

ldn The logical device number of the device for which :JOB (or :HELLO) and :DATA commands are being enabled. (Required parameter.)

JOBS Specifies that :JOB and :HELLO commands will be recognized by the designated device. The device must be interactive to support sessions. (Optional parameter.)

DATA Specifies that :DATA commands will be recognized by the designated device. (Optional parameter.)

NOTES

If both the JOBS and DATA parameters are omitted, both :JOB (or :HELLO) and :DATA commands are allowed.

The =ACCEPT command is rejected if JOBS is explicitly requested and the device has not been configured with a default output device (refer to *Output Devicefiles* in Section IV).

EXAMPLES

To permit logical device 35 to accept jobs and data, enter:

```
=ACCEPT 35  
=SHOWDEV 35  
LDEV AVAIL OWNERSHIP  
35 A AVAIL
```

To permit logical device 10 to accept jobs and data, and to allow the device to be spooled, enter:

```
=ACCEPT 10  
=SPOOL 10, STARTIN  
ST/17:00/SP#10/SPOOLED IN  
10/17:00/LDEV#10 NOT READY  
=SHOWDEV 10  
LDEV AVAIL OWNERSHIP  
  
10 A SPOOLED SPOOLER IN
```

TEXT DISCUSSION

Page 4-1, 4-6.

=ALTFILE

Alters attributes of output spooling files.

SYNTAX

```
=ALTFILE #Onnn      [;OUTPRI=outputpriority ]
                   [;COPIES=numcopies   ]
                   [;OUTDEV= { ldn      } ]
                       devclass
```

PARAMETERS

#Onnn	The output devicefile identification. (Required parameter.)
OUTPRI	Specifies the output priority of the designated devicefile (0=lowest; 14=highest) (Optional parameter.)
COPIES	Specifies the number of copies to be produced from the designated devicefile. (Optional parameter.)
OUTDEV	Specifies the logical device number or device class name of the devicefile's destination device. (Optional parameter.)

NOTES

Output spooled devicefiles with a priority less than or equal to the current output fence will not be selected (they will be deferred) for spooling.

EXAMPLES

To display and then change the priority of deferred device #070 from 0 to 2, enter:

```
=SHOWOUT SP
```

DEV/CL	DFID	JOBNUM	FNAME	STATE	FRM	SPACE	RANK	PRI	#C
LP	#093	#S46	L	OPENED		128		13	1
6	#070	#J5	\$STDLIST	READY		3076	D 0		1

```
2 FILES (DISPLAYED):
```

```
0 ACTIVE
1 READY; INCL 1 SPOOFLES, 1 DEFERRED
1 OPENED; INCL 1 SPOOFLES
0 LOCKED; INCL 0 SPOOFLES
2 SPOOFLES: 3204 SECTORS
```

```
OUTFENCE= 2
```

```
=ALTFILE #070;OUTPRI=2
```

TEXT DISCUSSION

=ALTJOB

Alters attributes of waiting jobs.

SYNTAX

```
=ALTJOB { #Jnnn }  
        { #Snnn }  
        [ ;INPRI=inputpriority ]  
        [ ;OUTDEV= { ldn  
                   { devclass } ]
```



PARAMETERS

#Jnnn	A job number. (Required parameter.)
#Snnn	A session number. (Although syntactically correct, this parameter is rarely used; sessions do not <i>wait</i> .) (Required parameter.)
INPRI	Specifies the new input priority (0=lowest; 14=highest) (Optional parameter.)
OUTDEV	Specifies the logical device number or device class name of the device file's destination device. (Optional parameter.)

NOTES

Users may only specify 1 through 13 for *inputpriority*. The JOB must be in the *introduced* or *WAITing* state.

Jobs with input priority less than or equal to the current *jobfence*, which consists of a numerical value from 0 to 14, will be deferred.

The =ALTJOB command in conjunction with the =JOBFENCE command allows you to control the flow of all non-HIPRI jobs on the system.

EXAMPLES

Three jobs are submitted by a user. All jobs have an INPRI value of 8. To change the INPRI values of the user jobs to insure that JOB1 runs first, JOB2 runs last, and JOB3 runs second with LP allocated to the OUTDEV for JOB3, enter the following commands:

=ALTJOB

=JOBFENCE 14

ST/15:11/DEFERRED JOB INTRODUCED ON LDEV#10

ST/15:11/DEFERRED JOB INTRODUCED ON LDEV#10

ST/15:13/DEFERRED JOB ONTRODUCED ON LDEV#10

=SHOWJOB

JOBNUM	STATE	IPRI	JIN	JLIST	INTRODUCED	JOB NAME
#S23	EXEC		20	20	THU 2:15P	FIELD.SUPPORT
#J4	WAIT	D 8	10S	12	THU 3:11P	JOB2, FIELD.SUPPORT
#J5	WAIT	D 8	10S	12	THU 3:11P	JOB3, FIELD.SUPPORT
#J6	WAIT	D 8	10S	12	THU 3:13P	JOB1, FIELD.SUPPORT

4 JOBS:

0 INTRO

3 WAIT; INCL 3 DEFERRED

1 EXEC; INCL 1 SESSIONS

0 SUSP

JOBFENCE= 14; JLIMIT= 5; SLIMIT= 16

=ALTJOB #J6;INPRI=12

ST/15:15/DEFERRED JOB INTRODUCED ON LDEV#10

=ALTJOB #J5;INPRI=11;OUTDEV=LP

ST/15:16/DEFERRED JOB INTRODUCED ON LDEV#10

=ALTJOB #J4;INPRI=9

ST/15:17/DEFERRED JOB INTRODUCED ON LDEV#10

=SHOWJOB

JOBNUM	STATE	IPRI	JIN	JLIST	INTRODUCED	JOB NAME
#S23	EXEC		20	20	THU 2:15P	FIELD.SUPPORT
#J6	WAIT	D12	10S	12	THU 3:13P	JOB1, FIELD.SUPPORT
#J5	WAIT	D11	10S	LP	THU 3:11P	JOB3, FIELD.SUPPORT
#J4	WAIT	D 9	10S	12	THU 3:11P	JOB2, FIELD.SUPPORT

4 JOBS:

0 INTRO

3 WAIT; INCL 3 DEFERRED

1 EXEC; INCL 1 SESSIONS

0 SUSP

JOBFENCE= 14; JLIMIT= 5; SLIMIT= 16

=LIMIT 1,16

=JOBFENCE 0

TEXT DISCUSSION

Page 4-1.

=BREAKJOB

Suspends an executing job.

SYNTAX

```
=BREAKJOB #Jnnn
```

PARAMETERS

#Jnnn A job number. (Required parameter.)

NOTES

An “*INVALID*” message will be returned for any of the following reasons:

- A request to break an introduced, suspended, waiting or completed job.
- A syntax error in the command.
- A request to break any session or a non-existent job.

Any executing job may be suspended, including spooled and streamed jobs. A job that is holding a critical system resource, such as a SIR Table (System Internal Resource), will be allowed to continue running until it releases the resource at which time it will be suspended.

All commands that normally function on, or pertain to executing jobs, such as =ABORTJOB, will be operative on suspended jobs.

If a request is made to suspend a job that owns a non-sharable device, such as a tape drive, a console message will be issued to inform you that the job owns the device. Up to ten non-sharable devices can be listed. You may then decide if the job should be allowed to run until it releases the devices, or if it should be aborted.

A SHOWJOB listing will show SUSP for jobs that are in the suspended state. SUSP may also be used as a qualifier in the =SHOWJOB command. Thus =SHOWJOB SUSP will display all suspended jobs present in the system.

EXAMPLES

To suspend job number 68, enter:

```
=BREAKJOB #J68
```

TEXT DISCUSSION

Page 4-1.

=DELETE

Deletes any ready devicefile.

SYNTAX

```
=DELETE { #Innn }
         { #Onnn }
```

PARAMETERS

#Innn The input devicefile-identification. (Required parameter.)

#Onnn The output device file identification. (Required parameter.)

NOTES

Ready devicefiles are normally created by the input/output spoolers. For example, *READY* input devicefile could be a *:DATA* file that has been spooled but not yet acquired or opened by a program, or an output devicefile destined for a spooled line printer. When the writing program has closed the file but the spooled device is not available, the output device file assumes the *ready* state.

The *=DELETE* command is used to eliminate unwanted, ready devicefiles as described above. The *=SHOWIN* and *=SHOWOUT* command will display the status of devicefiles. If you attempt to delete a file that is not in the ready state the *INVALID* message appears.

Data-accepting, non-spooled devices such as terminals can achieve the *READY* state if someone enters a *:DATA* command. If a program does not acquire the device it will remain in the *READY* state indefinitely. Use the *=DELETE* command to free the device.

EXAMPLES

A *:DATA* deck was read by a spooled card reader. The wrong cards were used. To display and delete this *ready* device file, enter:

```
=SHOWIN READY
```

```
DEV/CL  DFID  JOBNUM  FNAME  STATE FRM SPACE RANK PRI #C
20      #151  FIELD.SUPPORT  READY  32
```

```
=DELETE #151
```

TEXT DISCUSSION

Page 3-5, 4-3.

=DOWN

Removes a device from normal system use.

SYNTAX

```
=DOWN ldn
```

PARAMETERS

ldn The logical device number of the device being taken off-line. (Required parameter.)

NOTES

If the device is in use, the =DOWN request will be satisfied when the last access is complete.

When a device is powered-down and the =DOWN command is not used, access to that device can result in indefinite waiting, erroneous transfers, or other incorrect operation. Often these failures will occur with *no indication to you or the user*. For this reason, it is very important that every device which is not fully operational (especially powered-down) be =DOWNed. A device that will be inoperable for more than a few hours can be temporarily removed from the I/O configuration at system start up time. (Refer to Section V.)

EXAMPLES

To take logical device number 20 off-line, enter:

```
=DOWN 20
```

To take logical device number 10 off-line (an input-spooled job-accepting magnetic tape), enter:

```
=DOWN 10  
ST/14:24/LDEV#10 IN USE, DOWN PENDING  
=SPOOL 10, STOP  
ST/14:24/LDEV#10 OFFLINE  
I0/14:24/LDEV#10 NOT READY
```

TEXT DISCUSSION

Page 3-54, 4-2.

=GIVE

Assigns a =DOWNed device to diagnostics.

SYNTAX

`=GIVE ldn`

PARAMETERS

ldn The logical device number (Required parameter.)

NOTES

none

EXAMPLES

To assign a =DOWNed device with logical device number 35 to diagnostics enter:

```
=DOWN 35  
=GIVE 35  
=UP 35  
ST/14:53/LDEV#35 IN USE BY DIAGNOSTICS
```

To assign a spooled job-accepting card reader to diagnostics enter:

```
=SPOOL 5, STOP  
ST/8:41/SP#5/STOPPED  
IO/8:41/LDEV#5 NOT READY  
=REFUSE 5  
=ABORTIO 5  
IO/8:42/LDEV#5 QUEUE EMPTY  
=DOWN 5  
=GIVE 5  
=UP 5  
ST/8:42/LDEV#5 IN USE BY DIAGNOSTICS
```

TEXT DISCUSSION

Page 4-3.

=HEADOFF

Stops HEADER/TRAILER output to a device.

SYNTAX

```
=HEADOFF ldn
```

PARAMETERS

ldn The logical device number. (Required parameter.)

NOTES

If the device is in use and a HEADER has already printed, the request will be satisfied after the associated TRAILER is printed.

EXAMPLES

To stop HEADER/TRAILER output to logical device number 6, enter:

```
=HEADOFF 6
```

TEXT DISCUSSION

Page 4-3.

=HEADON

Resumes HEADER/TRAILER output to device.

SYNTAX

```
=HEADON ldn
```

PARAMETERS

ldn The logical device number. (Required parameter.)

NOTES

If the device is in use, the request will be satisfied after the current output is completed. HEADON is enabled on all cold loads.

EXAMPLES

To resume HEADER/TRAILER output to logical device number 6, enter:

```
=HEADON 6
```

TEXT DISCUSSION

Page 4-3.

=JOBFENCE

Defines acceptable input priorities.

SYNTAX

```
=JOBFENCE priorityfence
```

PARAMETERS

priorityfence A number between 0 and 14, inclusive (large is more limiting)
(Required parameter.)

NOTES

Jobs/sessions with *inputpriority* less than or equal to the priority fence *will not* be considered for dispatching until their input priority is raised (see =ALTJOB command) or the jobfence is lowered. The exception is the use of HIPRI by System Managers and System Supervisors in JOB or HELLO commands. HIPRI overrides any JOBFENCE setting.

EXAMPLES

To set the *jobfence* to 14 (to defer all non-HIPRI jobs and sessions), then return the *jobfence* to 0 (to allow the waiting jobs to log on), enter:

```
=JOBFENCE 14
```

```
ST/16:18/#S26/LOGON FOR: MANAGER.SYS ON LDEV#20  
ST/16:18/DEFERRED JOB INTRODUCED ON LDEV#10  
ST/16:18/DEFERRED JOB INTRODUCED ON LDEV#10  
=SHOWJOB
```

JOBNUM	STATE	IPRI	JIN	JLIST	INTRODUCED	JOB NAME
#S26	EXEC		20	20	THU 4:17P	MANAGER.SYS
#J7	WAIT	D 8	10S	12	THU 4:18P	JOB1, FIELD.SUPPORT
#J8	WAIT	D 8	10S	12	THU 4:18P	JOB2, FIELD.SUPPORT

```
3 JOBS:
```

```
0 INTRO  
2 WAIT; INCL 2 DEFERRED  
1 EXEC; INCL 1 SESSIONS  
0 SUSP
```

```
JOBFENCE= 14; JLIMIT= 5; SLIMIT= 16
```

```
=JOBFENCE 0
```

```
ST/16:21/#J7/LOGON FOR: JOB1, FIELD.SUPPORT ON LDEV#10  
ST/16:21/#J8/LOGON FOR: JOB2, FIELD.SUPPORT ON LDEV#10
```

TEXT DISCUSSION

Page 3-9, 4-1.

=LIMIT

Limits the number of concurrently running jobs/sessions.

SYNTAX

```
=LIMIT [numberjobs] [,numbersessions]
```

PARAMETERS

numberjobs The number of jobs. (Optional parameter.)

numbersessions The number of sessions. (Optional parameter.)

NOTES

No new jobs or sessions (except HIPRI ones, specified by System Managers and System Supervisors only) will be dispatched that would cause either of these limits to be exceeded. Note that jobs/sessions can still be introduced when the limit is achieved, although only HIPRI jobs/sessions can enter the executing state. Note also that the specified limits may be exceeded at the time the command is issued. Jobs/sessions executing at the time the command is issued will continue to execute; however, no new jobs/sessions will be allowed to enter the executing state.

Omission of either parameter (*numberjobs* or *numbersessions*) leaves the corresponding current limit unchanged. These limits are established initially at system creation. The latest limits are retained for WARMSTART but the values established at system creation take effect for all other cold loads.

EXAMPLES

To limit the number of jobs to 2 and the number of sessions to 15, enter:

```
=LIMIT 2,15  
=SHOWJOB  
NO SUCH JOB(S)  
JOBFENCE= 0; JLIMIT= 2; SLIMIT=15
```

TEXT DISCUSSION

Page 4-1.

=LOGOFF

Aborts all executing jobs/sessions and prevents further log ons of non-HIPRI jobs/sessions.

SYNTAX

=LOGOFF

PARAMETERS

none

NOTES

This command sets the job and session execution time limits to 0 and aborts all jobs/sessions. This leaves the system in a job/session-inactive state, with only spoolers still operating (these can be controlled with the =SPOOL command).

Note, however, that since devices are still job/session accepting, job/session introduction is not disabled. Furthermore, System Managers and System Supervisors can still introduce and run HIPRI jobs/sessions.

EXAMPLES

To abort all non-HIPRI jobs/sessions, enter:

```
=LOGOFF  
ST/16:53/ALL JOBS LOGGED-OFF
```

TEXT DISCUSSION

Page 4-1.

=LOGON

Enables job/session processing following =LOGOFF.

SYNTAX

=LOGON

PARAMETERS

none

NOTES

none

EXAMPLES

To re-establish the job/session limits in effect prior to a =LOGOFF command and allow non-HIPRI jobs/sessions to log-on again, enter:

```
=LOGON  
=SHOWJOB  
NO SUCH JOB(S)  
JOBFENCE= Ø; JLIMIT= 2; SLIMIT= 15
```

TEXT DISCUSSION

Page 4-1.

=OUTFENCE

Defines acceptable priorities for output spooled files.

SYNTAX

```
=OUTFENCE outputpriority
```



PARAMETERS

outputpriority A number between 1 and 14, inclusive (large is more limiting).
(Required parameter.)

NOTES

In order to enable deferred output spooled devicefiles to be processed by a spooler, their *outputpriority* must be raised above the output fence, or the output fence must be lowered.

EXAMPLES

To set the *outfence* to 14, enter:

```
=OUTFENCE 14
```

```
=SHOWOUT
```

DEV/CL	DFID	JOBNUM	FNAME	STATE	FRM	SPACE	RANK	PRI	#C
LP	#04	#S1	L	READY		56	D13		1
LP	#02	#J1	\$STDLIST	READY		24	D13		1
LP	#05	#J2	\$STDLIST	OPENED		1024	D13		1
LP	#06	#J3	\$STDLIST	READY		12	D13		1
LP	#07	#J4	\$STDLIST	READY		24	D13		1
LP	#08	#J5	\$STDLIST	READY		200	D13		1
22	#01	#S1	\$STDLIST	OPENED					
24	#03	#S2	\$STDLIST	OPENED					

8 FILES:

```
0 ACTIVE
5 READY; INCL 5 SPOOFLES, 5 DEFERRED
3 OPENED; INCL 1 SPOOFLES
0 LOCKED; INCL 0 SPOOFLES
6 SPOOFLES: 1340 SECTORS
```

```
OUTFENCE= 14
```

(This will defer all output spooled files.)

TEXT DISCUSSION

Page 4-3, 4-11-14.

=RECALL

Displays all console =REPLY messages pending.

SYNTAX

=RECALL

PARAMETERS

none

NOTES

The bell will not sound for each request as it does when the request originally was printed.

EXAMPLES

To display all pending console messages which require a =REPLY response from you, enter:

```
=RECALL  
REPLY(S) PENDING:  
?10/11:11/#S8/26/LDEV# FOR "ED" ON TAPE (NUM)
```

If there are REPLYs pending, the text of the request(s) will appear at the console, as shown above.
If there are *no* REPLYs pending the following message will appear at the console:

```
=RECALL  
NO REPLIES PENDING
```

TEXT DISCUSSION

Page 6-1.

= REFUSE

Disallows jobs/sessions and/or data on a designated device.

SYNTAX

```
=REFUSE [ JOBS,  
          DATA, ] { ldn }
```

PARAMETERS

JOBS	Disallows the :JOB (or :HELLO) command from the designated device. (Optional parameter.)
DATA	Disallows the :DATA command from the designated device. (Optional parameter.)
<i>ldn</i>	The logical device number of the device for which :JOB (or :HELLO) and :DATA commands are refused. (Required parameter.)

NOTES

The parameter JOBS, in this command, refers to both jobs and sessions. If the first parameter is omitted both :JOB (or :HELLO) and :DATA commands are refused.

EXAMPLES

To refuse data recognition from logical device number 35, enter:

```
=REFUSE DATA, 35  
=SHOWDEV 35  
LDEV AVAIL OWNERSHIP  
  
35 J AVAIL
```

To refuse jobs and data recognition from logical device number 35, enter:

```
=REFUSE 35  
=SHOWDEV 35  
LDEV AVAIL OWNERSHIP  
  
35 AVAIL
```

TEXT DISCUSSION

Page 4-1.

=REPLY

Replies to pending requests.

SYNTAX

=REPLY *PIN*,*reply*

PARAMETERS

PIN

The process identification number of the message sender. It is part of the message to which the sender is REPLYing, such as,

(Required parameter.)

reply

The reply type specified in the message, defined by:

(NUM)— reply must be a logical device number

(Y/N) — reply must be YES (or Y), or NO (or N)

(Sxx) — reply must be a string not to exceed xx characters in length

(YN#)— reply must be YES (or Y), NO (or N), or a logical device number

(Required parameter.)

NOTES

If the REPLY is not of the type specified in the message, or the incorrect PIN is specified, the system will display:

INVALID

It is then necessary to try again.

If you try to allocate a device which is already allocated to someone else the message (*INVALID*) is reprinted

EXAMPLES

To reply to a message from the MPE SYSTEM, enter:

```
?I0/16:15/#S25/43/LDEV# FOR "CR" ON CARD (NUM)
=REPLY 43,5
```

To reply to a FORMS message from the MPE system, enter:

```
I0/15:46/22/FORMS: PLEASE MOUNT MAILING LABEL FORMS  
?I0/15:46/22/SP#12/ LDEV# FOR #S93;OUTFILE ON LP (NUM)
```

=REPLY 22,12

```
I0/15:47/LDEV#12 NOT READY
```

```
?I0/15:47/22/LDEV#12 FORMS ALIGNED OK?(Y/N)
```

=REPLY 22,N0

```
?I0/15:47/22/LDEV#12 FORMS ALIGNED OK?(Y/N)
```

=REPLY 22,N0

```
?I0/15:47/22/LDEV#12 FORMS ALIGNED OK?(Y/N)
```

=REPLY 22,Y

After the printing operation is complete the system will ask that standard forms be mounted.

To reply to the standard forms, enter:

```
I0/15:54/22/STANDARD FORMS  
?I0/15:54/22/SP#12/ LDEV# FOR #S95;L ON LP (NUM)
```

=REPLY 22,12

TEXT DISCUSSION

Page 6-1.

=RESUMEJOB

Resumes a suspended job.

SYNTAX

```
=RESUMEJOB #Jnnn
```

PARAMETERS

#Jnnn A job number. (Required parameter.)

NOTES

An “ *INVALID* ” message will be returned for any of the following reasons:

- A request to resume an introduced, executing, waiting or completed job.
- A syntax error in the command.
- A request to resume any session or a non-existent job.

When a suspended job is resumed, it will continue execution from the point at which it was suspended. No message is issued when a suspended job is resumed.

EXAMPLES

To resume suspended job number 68, enter:

```
=RESUMEJOB #J68
```

TEXT DISCUSSION

Page 4-1.

=SESSION

Permits the console to be used for a session.

SYNTAX

```
=SESSION
```

PARAMETERS

none

NOTES

After the =SESSION command, a ":" will be prompted by MPE in anticipation of a legitimate :HELLO sequence. A session then will be conducted in the normal fashion. The issuing terminal does not lose its console power, and the CONTROL A (A^C) sequence will still result in a "=" prompt character which is the console command request. Messages to the console will still appear, with non-critical ones interspersed between the session lines.

If you try to initiate a session when the console is already in session mode, the system will display the following message:

```
*CONSOLE IN USE*
```

EXAMPLES

To initiate a session, enter:

```
=SESSION
```

```
:HELLO BOBU, FIELD.SUPPORT, PUB  
SESSION NUMBER = #S29  
THU, OCT 9, 1975, 5:01 PM  
HP32002A.00.80  
ST/17:01/#S29/LOGON FOR: BOBU, FIELD.SUPPORT ON LDEV#3  
WELCOME TO THE HEWLETT-PACKARD 3000  
:
```

TEXT DISCUSSION

Page 4-1.

=SHOWIN

Displays status information about input devicefiles.

SYNTAX

```
=SHOWIN [ SP  
#Innn  
STATUS  
item [ ;item [ ;item ] ] ]
```

PARAMETERS

- SP** A request for all input spooled devicefiles.
- #Innn** The identifier of a particular input devicefile for which information is to be displayed. (Optional parameter.)
- STATUS** A request to summarize information for all current input devicefiles. (Optional parameter.)
- item** A request for all input devicefiles that satisfy the following qualifications:

[DEV=*ldn*]

JOB= { @J
@S
#Jnnn
#Snnn }

ACTIVE
READY
OPENED
LOCKED

ldn — input devicefiles residing on device identified by logical device number

@J — a request for jobs only

@S — a request for sessions only

#Jnnn — a job number

#Snnn — a session number

ACTIVE
READY
OPENED
LOCKED } all input devicefiles that are in this processing state

NOTES

This command displays devicefile information, which includes:

- Assigned logical device number.
- Devicefile identification (devicefileid) in the form #Innn.
- Job/session number (#Jnnn/#Snnn), if not *ready* or *active* data; otherwise, the job/session name appears on a line following the standard device information.
- State



ACTIVE = input being read from spooled device to disc.

READY = input spooling completed, and the file is now ready for use by a program.

OPENED = the file is being accessed by a program.

LOCKED = equivalent to the READY state, but prevents the file from being put in the OPENED state.

- Forms Message Indicator.
- Disc space currently used, in sectors, for spooled input device files only.
- RANK — an indication of the order the files are entered on the system.
- File priority (*inputpriority*).
- Number of copies needed (#C). (Not applicable for input files.)

If no parameter is used in this command, all input devicefiles are displayed. =SHOWIN displays information reflecting the status of devicefiles at the time the command is entered.

EXAMPLES

To list information about all input spooled devicefiles, enter:

```
=SHOWIN SP
DEV/CL  DFID    JOBNUM  FNAME    STATE  FRM  SPACE  RANK  PRI  #C
6        #18     #J2     $STDIN   OPENED                12
```


=SHOWIN

To list information about all input devicefiles, enter:

```
= SHOWIN
DEV/CL  DFID  JOBNUM  FNAME  STATE FRM SPACE RANK PRI #C
7       #I4   #J1     PROBESON OPENED
22      #I1   #S1     $STDIN  OPENED
24      #I5   #S2     $STDIN  OPENED
6       #I3   #J1     $STDIN  OPENED          12

4 FILES:
  0 ACTIVE
  0 READY; INCL 0 SPOOFLES, 0 DEFERRED
  4 OPENED; INCL 1 SPOOFLES
  0 LOCKED; INCL 0 SPOOFLES
  1 SPOOFLES: 12 SECTORS
```

TEXT DISCUSSION

Page 4-5.

=SHOWJOB

Displays the status of current jobs/sessions.

SYNTAX

```
=SHOWJOB [ #Jnnn  
           #Snnn  
           STATUS  
           id [ ;state ]  
           state [ ;id ] ]
```

PARAMETERS

- #Jnnn* A job number. (Optional parameter.)
- #Snnn* A session number. (Optional parameter.)
- STATUS A request summarizing information regarding job/session activity. (Optional parameter.)
- id* A list of jobs or sessions whose status information is to be displayed. The list includes all jobs and sessions satisfying the following qualifications:

```
[ JOB= { @J  
        @S  
        [ ;userjsname, ] username.acctname  
        @,username.acctname  
        [ @, ] @.acctname } ]
```

where

- @J — specifies all jobs
@S — specifies all sessions
userjsname, username.acctname — specifies jobs/sessions accessing MPE with the indicated *id*.
@, *username.acctname* — specifies all jobs/sessions (independent of *userjsname* and *username*) belonging to *acctname*.

- state A list of possible job states. (Optional parameter.)

```
[ INTRO  
  WAIT [ ,N ]  
  EXEC [ ,D ] ]
```

where

- INTRO — specifies jobs being spooled in
WAIT — specifies waiting jobs only
,N — qualifier to select only non-deferred waiting jobs

=SHOWJOB

,D — qualifier to select only deferred waiting jobs
EXEC — specifies jobs/sessions only

(optional parameter.)

NOTES

The following information is displayed for each job/session:

- The job/session number
- The job/session state:

INTRO — introduced (being spooled in).

WAIT — the job/session has not been initiated due to lack of necessary resources (such as a list device), because its input priority is less than or equal to the current job fence (deferred); or because the currently defined job limit has been attained. If the job is not deferred, the job rank in the scheduling queue is displayed.

EXEC — The job/session has been initiated and is processing. This state does not imply that a program is currently running for the job/session.

D — For job/sessions in the INTRO or WAIT states, this indicates that the job is deferred and will not be dispatched until freed by the operator.

QUIET — Indicates the job/session is not accepting (=TELL) messages.

- The job/session input device, “S” indicates it is (or is being) spooled in; “R” indicates that it is a *restartable* job.
- The job/session list device or class.
- The day of the week and time that the job/session was first introduced to MPE.
- The fully-qualified job/session name.

If no parameter is supplied to =SHOWJOB, then all jobs/sessions in the system will be displayed.

Following the display of information for several jobs/sessions, the information normally produced by the STATUS parameter is also displayed automatically.

This command displays information reflecting job/session status at the time the command is entered; that is, the actual situation may have changed by the time the listing completes.

EXAMPLES

To display the status of all jobs in the WAIT, deferred state, enter:

```
=SHOWJOB WAIT,D
```

JOBNUM	STATE	IPRI	JIN	JLIST	INTRODUCED	JOB NAME
#J9	WAIT	D 8	10S	12	THU 5:06P	JOB1, FIELD. SUPPORT
#J10	WAIT	D 8	10S	12	THU 5:07P	JOB2, FIELD. SUPPORT

=SHOWJOB

```
2 JOBS (DISPLAYED):
  2 DEFERRED
JOBFENCE= 14; JLIMIT= 2; SLIMIT= 15
```

To display the status of all jobs and sessions, enter:

=SHOWJOB

JOBNUM	STATE	IPRI	JIN	JLIST	INTRODUCED	JOB NAME
#574	EXEC		51	51	TUE 11:40A	BOOTHBY.DATAMGT
#577	EXEC		53	53	TUE 11:57A	MGR.GNOMON
#534	EXEC		27	27	TUE 9:55A	DL,SPL.ALANG
#576	EXEC		31	31	TUE 11:55A	KEN,JLB.SI3000
#J234	EXEC		6S	FASTLP	TUE 12:06P	HACCOU.LANG
#J235	EXEC		6S	FASTLP	TUE 12:07P	RPG3000,LESLIE.LANG
#531	EXEC		42	42	TUE 9:41A	MAC.TECHPUBS
#J230	WAIT	D 0	6S	FASTLP	TUE 11:48A	SYSEX1,MGR.MFGTEST

8 JOBS:

```
0 INTRO
1 WAIT; INCL 1 DEFERRED
7 EXEC; INCL 5 SESSIONS
0 SUSP
```

JOBFENCE= 2; JLIMIT= 2; SLIMIT= 16

To display the status of all jobs and sessions running under the SUPPORT account with the user name FIELD, enter:

=SHOWJOB JOB=0, FIELD.SUPPORT

JOBNUM	STATE	IPRI	JIN	JLIST	INTRODUCED	JOB NAME
#532	EXEC		3	3	THU 5:05P	FIELD.SUPPORT
#59	WAIT	D 8	10S	12	THU 5:06P	JOB1, FIELD.SUPPORT
#J10	WAIT	D 8	10S	12	THU 5:07P	JOB2, FIELD.SUPPORT

3 JOBS (DISPLAYED):

```
0 INTRO
2 WAIT; INCL 2 DEFERRED
1 EXEC; INCL 1 SESSIONS
0 SUSP
```

JOBFENCE= 14; JLIMIT= 2; SLIMIT= 15

TEXT DISCUSSION

Page 4-1.

=SHOWOUT

Displays status information about output devicefiles.

SYNTAX

```
=SHOWOUT [ SP  
          #Onnn  
          STATUS  
          item [ ;item [ ;item ] ] ]
```

PARAMETERS

- SP** A request for all output spooled devicefiles. (Optional parameter.)
- #Onnn** The identifier of the output devicefile for which information is to be displayed. (Optional parameter.)
- STATUS** A request to summarize information for all current output devicefiles. (Optional parameter.)
- items** A request for all output devicefiles that satisfy the following qualifications:

```
[ DEV= { ldn  
        devclass } ]  
[ JOB= { @J  
        @S  
        #Jnnn  
        #Snnn } ]  
[ ACTIVE  
  READY [ ,N ]  
  OPENED [ ,D ]  
  LOCKED ]
```

ldn — output devicefile residing on device identified by logical device number

@J — a request for jobs only

@S — a request for sessions only

#Jnnn — a job number

#Snnn — a session number

ACTIVE
READY
OPENED
LOCKED } all output devicefiles that are in this processing state

N — a request for only non-deferred files.

D — a request for only deferred files.

(Optional parameter.)

NOTES

This command displays devicefile information, which includes:

- Assigned logical device number and device class.
- Devicefile identification (*devicefileid*), in the form #Onnn.
- Job/session Number (#Jnnn/#Snnn), if not *ready* or *active* data; otherwise, the job/session *name* appears on a line following the standard device information.
- The *filename* assigned to the devicefile.
- State

ACTIVE = The spooled devicefile on disc is actually being written to a printer or plotter.

READY = The devicefile on disc is ready for output.

OPENED = The devicefile on disc is being accessed by a program.

LOCKED = Equivalent to the READY state, but prevents the devicefile from being put in the ACTIVE state.

- Forms message indicator
- Disc space currently used, in sectors, for spooled output devicefiles only.
- RANK — an indication of the order the files are entered on the system.
- D — indicates a deferred file.
- File priority (*outputpriority*).
- Number of copies needed (#C).

If no parameter is used in this command, all output devicefiles are displayed. =SHOWOUT displays information reflecting the status of devicefiles at the time the command is entered.

=SHOWOUT

EXAMPLES

To obtain the status of output devicefile #021, enter:

```
=SHOWOUT #021  
DEV/CL  DFID  JOBNUM  FNAME  STATE FRM  SPACE  RANK  PRI  #C  
12      #021  #J3     $STDLIST  READY      16    D 8    3  
OUTFENCE= 13
```

To obtain a summary of output devicefile status, enter:

```
=SHOWOUT STATUS  
8 FILES:  
  0 ACTIVE  
  4 READY; INCL 4 SPOOFLES, 0 DEFERRED  
  4 OPENED; INCL 2 SPOOFLES  
  0 LOCKED; INCL 0 SPOOFLES  
  6 SPOOFLES: 2164 SECTORS  
  
OUTFENCE= 1
```

TEXT DISCUSSION

Page 4-6, 4-14.

=SHOWQ

Displays information about the scheduling of processes.

SYNTAX

=SHOWQ

PARAMETERS

none

NOTES

The information displayed is divided into three major columns. In the right-hand column, the processes are listed in high-to-low priority order. These processes currently (or will imminently) require the CPU in order to continue. The CPU will automatically be given to the first process which is able to use it.

In the center column, also listed in order of high-to-low priority, are willing to yield their main memory resources to other processes. Memory is automatically taken (segment by segment) from lower priority processes first. These processes are displayed when the process does not require the CPU for a relatively long time. Note also that processes which are neither main or user processes are system processes.

In the left-hand column, the processes which are listed in numerical order and have no main memory resources. These processes are waiting on longer-term events, and will again contend for the CPU when those events occur.

After displaying the process queues, =SHOWQ will print the number of processes and the scheduling parameters currently in effect.

NOTE

On occasion, a process will appear in the right-hand column as well as in one of the columns to the left. This indicates that the process was being moved to the right during the execution of =SHOWQ.

The following information is displayed for each process:

$$\left\{ \begin{array}{l} L \\ C \\ D \\ E \end{array} \right\} \left[\begin{array}{l} \{M\} \\ \{U\} \end{array} \right] \langle pin \rangle \left[\begin{array}{l} \# \{J\} \\ \{S\} \end{array} \right] \langle jobnum \rangle$$

where

L is a linearly scheduled process on the AS, BS, or Master queue.

C is a circularly scheduled process on the CS queue.

=SHOWQ

D is a circularly scheduled process on the DS queue.

E is a circularly scheduled process on the ES queue.

M is a job/session main process.

U is a user process.

pin is the process identification number for this process.

J is the process executing in a batch job.

S is the process being executed from a session.

jobnum is the job or session number.

EXAMPLES

To display the queues of processes within MPE, enter:

```
=SHOWQ
Q PIN JOBNUM Q PIN JOBNUM Q PIN JOBNUM
L 4 C U26 #S2 L 3
L 5 C U23 #S2 C U24 #S2
L 6 C U25 #S2
L 7 D U30 #J5
L 10
L 11
L 12
L 13
L 14
L 15
C M16
D M17
C M20
C U21 #S1
C U22 #S2
D M27

22 PROCESSES; 500 QUANTUM, 152 TPRI, 160 CPRI, 180 DPRI
```

TEXT DISCUSSION none

=SHOWTIME

Prints the current date and time.

SYNTAX

=SHOWTIME

PARAMETERS

none

NOTES

Prints the current date and time, as indicated by the system clock.

EXAMPLES

To display the date and time, enter:

=SHOWTIME

MON, FEB 18, 1976, 12:05 AM

TEXT DISCUSSION

none

=SHUTDOWN

Initiates shut down of MPE.

SYNTAX

=SHUTDOWN

PARAMETERS none

NOTES

The =SHUTDOWN command does an implicit =LOGOFF. It stops all system processes in an orderly fashion, such that all pending system activity is completed and appropriate processing is performed to ensure that the integrity of all system tables and directories is maintained. When all this has been performed, SHUT will be printed and the CPU will be HALTed with %030377 in the Current Instruction Register (CIR). Console interrupt will not be effective after =SHUTDOWN.

Device configuration changes made after the preceding load (=UP,=DOWN,=GIVE,=TAKE,=ACCEPT,=REFUSE and =SPOOL) will not be retained. Notice, configuration changes made during cold load are permanently recorded, and retained until the next tape cold load. Newly assigned or released global Resource Identification Numbers (RINs) are permanently recorded.

WARMSTART will retain the current =LIMITs.

EXAMPLES

To issue a warning message to all users and then shut the system down, proceed as follows:

```
=WARN @;SYSTEM WILL SHUT-DOWN IN FIVE MINUTES..PLS LOG-OFF
```

Allow time for users to log-off

```
=SHUTDOWN  
ST/10:49/#S40/LOGOFF  
ST/10:49/ALL JOBS LOGGED-OFF  
ST/10:49/SP#12/STOPPED  
10/10:49/LDEV#10 NOT READY  
  
SHUT
```

TEXT DISCUSSION

Page 5-23.

=SPOOL (Input only)

Initiates input spooling of a device.

SYNTAX

```
=SPOOL ldn [ , STARTIN  
            [, STOP    [, DELETE] ]
```

PARAMETERS

ldn The logical device number of the input device. This device must be an unowned accepting card reader or magnetic tape device. If DOWNed, the device will be UPed by the =SPOOL command. (Required parameter.)

STARTIN Initiates an input spooler for the device specified by the logical device number (*ldn*). (Optional parameter.)

STOP Terminates the input spooling operation on the device specified by *ldn*, after completing the operation on the active spooled devicefile. If the DELETE optional parameter is specified, action is immediate. The device assumes an unspooled state after STOP. (Optional parameter.)

DELETE Requests immediate deletion of the active spooled devicefile, i.e., the file currently being spooled to the disc. (Optional parameter.)

NOTES

Before using the STOP or DELETE optional parameters, it is desirable to physically stop the input device first. For example, depress STOP on the card reader. This allows you time to enter the command, and to ascertain that the currently active spooled file corresponds to the devicefile physically being read by the device.

EXAMPLES

To start input spooling on logical device 10 (a magnetic tape), enter:

```
=ACCEPT 10  
=SPOOL 10, STARTIN  
ST/16:12/SP#10/SPOOLED IN  
IO/16:12/LDEV#10 NOT READY
```

NOTE

The =ACCEPT command is required if the device was not configured to be :JOB or :DATA accepting at configuration time.

=SPOOL (Input only)

To stop an input spooler, clear the pending input requests and display the device status, enter:

```
=SPOOL 5, STOP  
IO/15:51/LDEV#5 NOT READY  
=ABORTIO 5  
IO/15:51/LDEV#5 QUEUE EMPTY  
=SHOWDEV 5  
LDEV AVAIL OWNERSHIP  
  
5 A AVAIL
```

NOTE

When stopping an input spooler, two outstanding read requests are pending (due to anticipatory reads issued by the spooler process) and must be aborted to completely free the device.

To delete an ACTIVE input spooled file entered from logical device 5 (a card reader), first stop the device, then enter:

```
IO/15:52/LDEV#5 NOT READY  
=SPOOL 5, DELETE  
IO/15:52/LDEV#5 NOT READY
```

TEXT DISCUSSION

Pages 4-7-4-11.

=SPOOL (Start/resume output)

Initiates starting and resuming output spooling of a device.

SYNTAX

```
=SPOOL ldn [ ,STARTOUT ] [ ,OPENQ ]  
           [ ,RESUME ] [ ,SHUTQ ]
```

PARAMETERS

ldn The logical device number of the output device. This device must be an unowned line printer, card punch or plotter. (Required parameter.)

STARTOUT Initiates an output spooler for the device specified by the logical device number (*ldn*). If DOWNed the device will automatically be UPed when this parameter is present in the =SPOOL command. The device must be in an unspooled state before this parameter is entered. (Optional parameter.)

RESUME Resumes a WAITing spooler. (Optional parameter.)

OPENQ Allows spooled device files to be created by a program. An implied OPENQ is performed whenever a =SPOOL *ldn*,STARTOUT command is executed. This option is provided for those situations when the spooler process must be stopped (i.e., the printing operation) but enough spool file space exists to enable the system to continue to generate spooled devicefiles for later processing (=SPOOL *ldn*,STOP, OPENQ).

SHUTQ Provides a method to stop the creation of spooled devicefiles. An implied SHUTQ is performed whenever a =SPOOL *ldn*,STOP command is executed. This option is provided for those situations when the system runs out of spool file disc space. A command =SPOOL *ldn*,SHUTQ will prevent any more spooled device files from being created but will allow the physical device to continue producing output. Eventually, enough spool file space will be freed up to allow the queue to be open again.

NOTES

none



EXAMPLES

To start spooling on logical device 6 (a line printer), enter:

```
=SPOOL 6,STARTOUT  
ST/9:09/SP#6/SPOOLED OUT
```

=SPOOL (Start/resume output)

To cause the output spooler (currently driving logical device 6) to resume normal operation, enter:

```
=SPOOL 6, RESUME
```

To prevent the creation of new output spooled files for logical device 6 (a line printer), enter:

```
=SPOOL 6, SHUTQ
```

NOTE

The SHUTQ optional parameter is useful for draining all previously spooled files. This action may cause JOBS to enter a WAIT state because spooled files can not be created and the real device is unavailable. User programs opening files on the spooled device may also experience FOPEN failures. This parameter should be used with restraint.

To re-open a queue (after a =SHUTQ) and allow JOBS WAITING for logical device 6 (a line printer) to execute, enter:

```
=SPOOL 6, OPENQ
```

TEXT DISCUSSION

Pages 4-9, 4-11-4-14.

=SPOOL (Stop/delete/defer output)

Initiates stopping, deleting, or deferring output spooling of a device.

SYNTAX

=SPOOL <i>ldn</i>	[,STOP ,WAIT]	[,DELETE ,DEFER ,RESET]	[,OPENQ ,SHUTQ]
-------------------	--------------------	---------------------------------	----------------------

PARAMETERS

- ldn* The logical device number of the output device. This device must be an unowned line printer, card punch or plotter. (Required parameter.)
- STOP** Terminates the output spooling operation of the device specified by *ldn*. This parameter takes effect immediately if DELETE or DEFER also is specified; otherwise spooling stops after completing the active spooled device file. (Optional parameter.)
- WAIT** Suspends output spooling on the device specified by *ldn*. The spooled device remains owned by the spooling process. This parameter takes effect immediately if DELETE or DEFER also is specified; otherwise, spooling stops after completing the ACTIVE spooled devicefile. (Optional parameter.)
- DELETE** Requests immediate deletion of the currently ACTIVE spooled device file. (Optional parameter.)
- DEFER** Results in the *outputpriority* of the currently ACTIVE spooled device file being changed immediately to 0 and the file being returned to the READY state, thus deferring the file. (Optional parameter.)
- RESET** Specifies that outputting of the ACTIVE spooled device file is to be discontinued by returning it to the READY state without deferring it. Unless there is another READY file of equal or higher priority, it will be restarted immediately.
- OPENQ** Allows spooled devicefiles to be created by a program. An implied OPENQ is performed whenever a =SPOOL *ldn*,STARTOUT command is executed. This option is provided for those situations when the spooler process must be stopped (i.e., the printing operation) but enough spool file space exists to enable the system to continue to generate spooled devicefiles for later processing (=SPOOL *ldn*,STOP, OPENQ).
- SHUTQ** Provides a method to stop the creation of spooled devicefiles. An implied SHUTQ is performed whenever a =SPOOL *ldn*,STOP command is executed. This option is provided for those situations when you wanted to stop spooling yet allow sending files to be output. A command =SPOOL *ldn*,SHUTQ will prevent any more spooled device

=SPOOL (Stop/delete/defer output)

files from being created but will allow the physical device to continue producing output. Eventually, enough spool file space will be freed to allow the queue to be open again.

NOTES

Before using the STOP, WAIT, DELETE, DEFER option parameters it is desirable to physically stop the output device first (for example, depress STOP on the line printer). This allows you time to enter the command and to ascertain that the currently ACTIVE spooled file corresponds to the devicefile physically being output.

The action of the RESET optional parameter is to place the currently ACTIVE file back in the READY state. If no other READY files are present the RESET file becomes ACTIVE again and the output operation continues. If higher priority READY files are present, the RESET file output operation will be delayed until the higher priority READY files are processed.

EXAMPLES

To stop spooling on logical device 6 (a line printer), enter:

```
=SPOOL 6, STOP  
ST/9:03/SP#6/STOPPED
```

NOTE

This command causes the spooler process to deallocate the device (spooler), when the currently ACTIVE file has been printed. The device assumes an unspooled state.

To cause the output spooler (currently driving logical device 6) to enter the WAIT state, enter:

```
=SPOOL 6, WAIT
```

To DELETE an ACTIVE output spooled file being output to logical device 6 (a line printer), first stop the device, then enter:

```
I0/9:11/LDEV#6 NOT READY  
=SPOOL 6, DELETE
```

To reset the currently ACTIVE output spooled file being output to logical device 6 (a line printer), first stop the device, then enter:

```
I0/9:12/LDEV#6 NOT READY  
=SPOOL 6, RESET
```

NOTE

Stopping the printer insures that the correct file (the one being printed) will be restarted. The RESET optional parameter was provided simply to restart a print operation after a device malfunction, such as a paper jam.

=SPOOL (Stop/delete/defer output)

To defer the currently ACTIVE spooled file being output to logical device 6 (a line printer), first stop the device, then enter:

```
=SPOOL 6, DEFER
```

NOTE

The DEFER optional parameter places the currently ACTIVE output spooled file in the READY state and in addition lowers the outputpriority to 0 (lowest priority). Action by you is required to raise the outputpriority of the DEFERred file. (Refer to the =ALTFILe example in this section.)

TEXT DISCUSSION

Pages 4-9, 4-11-4-14.

=STREAMS

Enables or disables the user's ability to submit job/session and/or data streams.

SYNTAX

=STREAMS	{	<i>ldn</i>	}
		OFF	}

PARAMETERS

ldn The logical device number of the device being enabled. Any *accepting* input device can be used, except terminals or the system console. (Required parameter.)

OFF Disables the stream facility. (Required parameter.)

NOTES

This command enables users to designate any file containing jobs (or data) which is then spooled in as if it came from a normal accepting device. The device is in no way affected (its state is unaltered; a spooler is not created for it, etc.). The state of the device also is not relevant — it can be job and/or data-accepting.

STREAMS is disabled on all cold loads.

EXAMPLES

To enable jobs and data streams on logical device number 5, enter:

```
=STREAMS 5
```

To disable data streams, enter:

```
=STREAMS OFF
```

TEXT DISCUSSION none

=TAKE

De-assigns a =GIVEn device from diagnostics.

SYNTAX

```
=TAKE ldn
```

PARAMETERS

ldn

The logical device number of the device taken from diagnostics but left =DOWNed. (Required parameter.)

NOTES

none

EXAMPLES

To take logical device number 35 from diagnostics, enter:

```
=TAKE 35
=SHOWDEV 35
LDEV AVAIL OWNERSHIP

35 A UNAVAIL DOWN
=UP 35
=SHOWDEV 35
LDEV AVAIL OWNERSHIP

35 A AVAIL
```

TEXT DISCUSSION

Page 4-3.

=TELL

Sends a message to jobs/sessions.

SYNTAX

```
=TELL { @  
      #Jnnn  
      #Snnn  
      jsname, username, acctname } ;message
```

PARAMETERS

@	Requesting the message be sent to all non-Quiet sessions. (Required parameter.)
#Jnnn	A job number. Only jobs submitted on interactive devices can receive messages. Although syntactically correct in this command, messages are rarely sent to jobs. (Required parameter.)
#Snnn	A session number. (Required parameter.)
jsname	The name of the session to which the message is to be sent. (Required parameter.)
username	A user name. (Required parameter.)
acctname	An account name. (Required parameter.)
message	An ASCII string; the length of the string must not exceed 58 characters. The message is terminated by a carriage return. (Required parameter.)

NOTES

The message is printed on the standard list device of the user as soon as possible, but not during a write, read in progress, or unreceptive job (one that has been submitted on a non-interactive device) or unreceptive session (one that has been set QUIET by a :SETMSG command).

The message appears on the list device as:

FROM/OPERATOR/message

If there are several sessions logged-on under the same user and account name, only one will receive the message. It is impossible to predict which session will be selected by MPE. In this case, use of #Snnn is recommended in order to avoid ambiguity.

EXAMPLES

To send a message to session number 105, enter:

```
=TELL #S105;PLEASE LOG OFF
```

=TELL

To send a message to all sessions, enter:

=TELL @:THE SYSTEM WILL SHUTDOWN IN 5 MINUTES..

TEXT DISCUSSION

Page 6-1.

=UP

Allows a =DOWNed device to function again.

SYNTAX

```
=UP ldn
```

PARAMETERS

ldn The logical device number of a particular device being placed on-line.
(Required parameter.)

NOTES

This command allows a previously DOWNed device to function again but does not change ownership of the device.

EXAMPLES

To allow logical device number 10 to function again, enter:

```
=UP 10  
=SHOWDEV 10  
LDEV AVAIL OWNERSHIP  
  
10 A AVAIL
```

NOTE

When this device was =DOWNed, it was owned by the system and remains unchanged by the =UP command.

TEXT DISCUSSION

Page 4-2.

=WARN

Sends an urgent message to jobs/sessions.

SYNTAX

<code>=WARN</code>	$\left\{ \begin{array}{l} @ \\ \#Jnnn \\ \#Snnn \\ [jsname,] \textit{username.acctname} \end{array} \right.$	$\left. \right\} ;\textit{message}$
--------------------	---	-------------------------------------

PARAMETERS

<code>@</code>	Requesting the message be sent to all non-QUIET sessions. (Required parameter.)
<code>#Jnnn</code>	A job number. Only jobs submitted on interactive devices can receive messages; although syntactically correct in this command, messages are rarely sent to jobs. (Required parameter.)
<code>#Snnn</code>	A session number. (Required parameter.)
<code>jsname</code>	The name of the job or session to which the message is to be sent. (Optional parameter.)
<code>username</code>	A user name. (Required parameter.)
<code>acctname</code>	An account name. (Required parameter.)
<code>message</code>	An ASCII string; the length of the string must not be greater than 67 characters. The message is terminated by a carriage return. (Required parameter.)

NOTES

An urgent message (=WARN), interrupting any current pending read — or write in progress, will appear on the list devices of all sessions (even QUIET) as:

WARN/*message*

WARN messages will be received by jobs only if the job was submitted on an interactive device.

The user has the option of running his session in QUIET mode, wherein :TELL messages from other users and =TELL messages from the Console Operator will be refused. (=WARN messages from the Console Operator, however, will override the QUIET mode condition.)

=WARN

EXAMPLES

To send a WARN message to all sessions followed by a WARN message to session #S51, enter:

```
=WARN @;THE SYSTEM WILL SHUTDOWN IN FIVE MINUTES..PLS LOG-OFF  
=WARN #S51;LAST CHANCE TO LOG-OFF GRACEFULLY..
```

TEXT DISCUSSION

Page 6-1.

=WELCOME

Defines the welcome message.

SYNTAX

```
=WELCOME return  
# message return  
# message return  
# return
```



PARAMETERS

message An ASCII string. (Required parameter.)

NOTES

Unlike other console commands which are restricted to one line, the =WELCOME command can be entered on multiple lines in an interactive fashion. The first line contains only the =WELCOME command followed by a carriage return. You are then prompted with a # to begin each line of the message. Any number of lines may be used for the welcome message. The message is terminated and the command completed when a carriage return is entered in response to the # prompt character. When the response to the first prompt is a carriage return, the old welcome message (if any) is deleted.

The welcome message is preserved when the WARMSTART, COOLSTART, and UPDATE system restart options are used.

The WELCOME message will be printed on the \$STDLIST device of each job or session as it goes into execution.

EXAMPLES

To create a multi-line welcome message, enter:

```
=WELCOME  
ST/8:35/#S20/LOGOFF  
#HEWLETT-PACKARD DEMONSTRATION CENTER SANTA CLARA, CALIFORNIA  
#WELCOME TO THE HP/3000 SERIES II COMPUTER SYSTEM  
#NOTE: FILES WILL BE STORED EACH DAY BETWEEN 6AM-7AM.
```

TEXT DISCUSSION

Page 6-1.

OPERATIONAL OVERVIEW

SECTION

IV

JOB/SESSION EVOLUTION

Jobs and sessions are introduced to MPE through *accepting* input devices. The term *accepting* means the system will accept :JOB or :HELLO commands from a specified device. The System Manager will decide which devices will be allowed to accept jobs or sessions at configuration time. Card readers and terminals are normally configured to accept jobs and sessions respectively. Accepting input devices which are not owned (being used) are controlled by the *MPE Device Recognition process*. This process issues an automatic read whenever an accepting input device is "made ready". On a terminal, this occurs after the carriage return key is pressed. On a card reader, the first card is read as soon as the "ready" light comes on. This automatic reading is required to allow system users to log-on to the system, therefore the first input record must be a legitimate :JOB or :HELLO command. Incorrect :JOB commands result in a flushing (rapid reading) of the remainder of the job deck as the system examines each card looking for a legitimate :JOB card image. Incorrect :HELLO commands cause the terminal read operations to be discontinued. Recovery in this case requires pressing the carriage return key again, and re-entering the correct :HELLO command.

The *Device Recognition* process is responsible for the validation of all :HELLO commands and for :JOB commands from non-spooled devices. After passing the initial validation, a new job or *session-to-be* must (in addition) pass through a number of preliminary job *states* before actual program execution begins.

After :HELLO or :JOB validation from a non-spooled device, a job or session will enter the WAITING state. This state signifies that the job or session is ready for processing and is to be considered as a candidate for job/session dispatching, providing the required system resources are available. Each job and session requires creation of certain table entries within MPE. If table entries are unavailable it would cause the job/session to WAIT. Jobs require the availability of a (real or spooled) list device for job output purposes.

Lack of an available list device will cause jobs to WAIT until a device becomes available. A function of MPE called the *Job Scheduler* determines when a job or session can be accepted. The job scheduler selects the best candidate among WAITING jobs/sessions (whose required resources are available) and dispatches the job/session for execution.

The determination that another job/session can be accepted is based on whether the =LIMITed number of jobs/sessions would be exceeded, the input priority for the job/session exceeds the current job fence and the necessary system resources are available.

NOTE

=LIMIT is a Console Operator command used to restrict the number of jobs and or sessions which can run concurrently.

Input priority is the priority used for job/session selection and consists of a number between 1 (lowest) and 13 (highest) included by a user in the :JOB or :HELLO command.

The job fence is set by the Console Operator through the =JOBFENCE command and consists of a number between 0 (lowest) and 14 (highest). When the job fence is higher than or equal to the input priority set by a user for a job, it becomes a WAITING job, while sessions are refused. The session user gets a message indicating that the system is unable to initiate new sessions. Jobs WAITING because of a JOBFENCE/INPRI conflict are said to be deferred.

A WAITING session which cannot be dispatched because of a resource problem (lack of MPE table entries), LIMIT conflict (Session limit exceeded), or a JOBFENCE conflict (JOBFENCE>=INPRI) is aborted with a message to the user which states that the system is unable to initiate new sessions at this time. The WAITING state for a session normally does not exceed 30 seconds.

A WAITING job can only be considered for dispatching if a list device (real or spooled) is available. Jobs can remain in the WAITING state indefinitely. As soon as the required resource is available or LIMIT/JOBFENCE conflicts are removed, the job will achieve the execution state.

The job scheduler examines all WAITING jobs/sessions whose input priority exceeds the current job fence and makes a selection according to the following rules, and in the order shown.

1. A session is chosen over a job.
2. A job/session of higher input priority is chosen over one with lower.
3. A job/session introduced earlier is chosen over a *younger* one.

When the best job/session candidate is selected, it is dispatched and the MPE Command Interpreter begins to execute. The job/session remains in the EXECUTING state (except for =BREAKJOB, which could be suspended) until it completes, at which time it is removed from the system.

NOTE

Batch jobs input on spooled devices are first established in the INTRODUCED state. In this case the spooler process validates the :JOB command and if legitimate, copies the job input records to the disc. INTRODUCED jobs become WAITING (ready) jobs as soon as the spooling operation is complete. Jobs input from spooled devices are selected in the same manner as jobs input from real devices after the WAITING state is achieved.

INTRODUCTION TO DEVICEFILE MANAGEMENT

In many operating systems, the term "file" is a reference to a group of records on a disc. The identity of the file, where it is located, and other pertinent information is normally kept in a file directory. While operations associated with disc files are vital and important, they are only a part of the total input/output operation. Other peripheral devices such as, magnetic tapes, terminals, card readers, line printers, card punches, plotters, and paper tape equipment must be controlled by the operating system as well. Since each physical device has its own characteristics and peculiarities many operating systems choose to separate I/O operations into two mutually exclusive sections:

1. A file system for handling disc files.
2. A standard software interface for all other devices.

This requires the users of the system to learn two methods of performing input/output operations and truly device independent programming is inhibited.

In MPE, the concept of a file system has been enlarged to include control of physical devices as well as disc files. The advantage to the user is a much more consistent interface for all input/output operations. The MPE user treats all input/output operations as if he were reading or writing to a file. A rough definition of a file could be simply; *one or more data items*. If the data items are written to a disc, it would become a *disc file*. If the data items were punched on cards it would become a *card file*, and so on. On most systems the majority of data files are disc files, so the term “disc file” has become simply “file”.

DEVICEFILES

The term *devicefiles* refers to a file originating from or directed to a non-disc device.

MPE makes available to you, commands for managing and monitoring devicefiles and the input/output devices themselves. Each input/output device known to the system has a unique logical device number (*ldn*). In addition to a logical device number each device is assigned a class name. A class name can be unique to a device, or a class name may be associated with more than one *ldn*. For example:

DEVICE	LDN	CLASS
CARD READER	5	CARD
LINE PRINTER	6	LP PRINTER
MAG TAPE	7	TAPE1 TAPE
MAG TAPE	8	TAPE2 TAPE
MAG TAPE	9	TAPE3 TAPE

The card reader is assigned *ldn* 5 and the device class name CARD. In this case, a unique reference to the card reader could be made using either *ldn* 5 or the device class CARD. In the case of a magnetic tape, specific references could be made to logical devices 7, 8, or 9 or the device classes TAPE1, TAPE2, or TAPE3 respectively. A non-specific reference could be made to any magnetic tape device by using the class name “TAPE”. In this way the user does not have to select a specific device and is willing to use any device in the class. You would then assign any available magnetic tape unit to the user request.

In addition to the device, the devicefile itself is provided with a unique value called a *devicefileid*. The form of the *devicefileid* is:

#Innn

or

#Onnn

where

I — denotes input.

O — denotes output. (This is an alphabetic “O”.)

nnn — is a unique number assigned by MPE when the file becomes known to the system.

An idle device is known by its *ldn* or unique device class name only. An active device (being used) has a *devicefileid*. In order for the system to keep track of who is using the device, (i.e., who created the devicefile) additional information is provided:

job or session number — number assigned by MPE at log on time.

file name — system defined or user defined file name.

username — user name supplied on :DATA card only.

acctname — account name supplied on :DATA card only.

ldn — logical device number of the device.

state — file state, (OPENED, READY, ACTIVE, LOCKED).

INPUT DEVICEFILES

Input devices that accept :JOBS or :DATA commands always attempt to read the first command automatically. (See the paragraph on *Device Recognition* in this section.) There are three types of input device files:

1. Job/session input devicefiles
2. Data devicefiles
3. Operator-assigned devicefiles

JOB/SESSION INPUT DEVICEFILES. A :JOB or :HELLO command entered on a device that is configured to *accept* jobs or sessions will cause the creation of a devicefile on behalf of that job or session. This file always assumes the system defined name \$STDIN.

DATA DEVICEFILES. The :DATA command provides the user with a method of associating a data devicefile with a specific *user.account name* and optionally a *filename*. Data accepting devices will always attempt to read the first command automatically (See the paragraph on *Device Recognition* in this section.) The system scans the :DATA card for validity (similar to :JOB command processing). If the command is syntactically correct, and the user and account specified

in the command are present on the system, the devicefile is created. At this point, the specified user could access this devicefile without operator intervention, but only by accessing the devicefile via the *user.accountname* and optional *filename* specified on the :DATA card. This mechanism provides a reasonable amount of security for devicefiles and simplifies your job of trying to keep track of what data belongs to what user. When the :DATA accepting device is spooled, the system will automatically read the first command (:DATA) as before. However, if the :DATA command is valid, the entire devicefile is spooled to the disc where it will reside until accessed by the creating user (:DATA USER.ACCOUNT;FILENAME) or deleted by you.

OPERATOR-ASSIGNED DEVICEFILES. Input devices that do not accept :JOB/:HELLO or :DATA commands are not auto-recognizing. When a user requests to input data from a non-accepting device, you must assign the device for the exclusive use of the requestor. These are called operator-assigned devicefiles.

Command images that have a colon as the first character may be read on non-accepting devices, this is not true of :JOB/:HELLO or :DATA accepting devices which treat a colon in column one as an end-of-file indication.

OPERATOR INVOLVEMENT WITH INPUT DEVICEFILES

User programs gain access to input data by “opening” the input devicefile. Since you normally control the device, and the user (usually located at a remote terminal) controls the devicefile opening program, some coordination or cooperation between the two are required. If the device to be used is configured as data-accepting, the appropriate :DATA command and :EOD command are added to the data as the first and last records respectively. The complete data file is placed in the device and the system automatically reads the :DATA command. The devicefile is *now known to the system* and can be accessed by the user program.

If the user program is executed prior to the reading of the :DATA command, the devicefile would not be known to the system and a message would appear on the system console asking you to assign a device for the user request. In this case, you would place the file in the appropriate device as before, and after the :DATA command was read you would perform a =REPLY command. The command would cause the accessing program to scan for the devicefile again, and upon finding the correct entry open it.

If the device selected by the user is not the data accepting type, you must allocate the device when the user program requests it.

It should be remembered that a user program WAITING for your reply will remain suspended indefinitely. If for some reason the device requested by the user is not available or non-existent you can reply with an assigned logical device number (*ldn*) of 0. This will cause the requesting program devicefile open operation to fail. The program failure will allow the user to make the necessary changes and run the program again.

Example

The following display is the result of a =SHOWNIN command. This command will display all input devicefiles “known” to MPE.

=SHOWIN

DEV/CL	DFIN	JOBNUM	FNAME	STATE	FRM	SPACE	RANK	PRI	#C
25	#I16	#S14	\$STDIN	OPENED					
43	#I14	#S13	\$STDIN	OPENED					
5	#I15		GOODFILE	READY					4
			FIELD.SUPPORT						
5	#I17	#S14	CARDDECK	OPENED					

4 FILES:

Ø ACTIVE
1 READY; INCL 1 SPOOFLES, Ø DEFERRED
3 OPENED; INCL Ø SPOOFLES
Ø LOCKED; INCL Ø SPOOFLES
1 SPOOFLES: 4 SECTORS

Devicefiles #I16 and #I14 are session input devicefiles on ldn 25 and 43 respectively. #I15 is a :DATA devicefile that was spooled from ldn 5. It was created by the user FIELD under the account SUPPORT with the assigned file name GOODFILE. #I17 is an operator-assigned devicefile read from ldn 5 with the filename CARDDECK. At this time ldn 5 is owned by session #S14.

NOTE

After devicefile #I15 was created the input spooler for this device was stopped and the =REFUSE command was used to temporarily disable the :JOB, :DATA accepting attributes. This allowed the creation of operator-assigned devicefile #I17.

OUTPUT DEVICEFILES

An output devicefile is composed of output data from a user program, going to output devices such as, line printer, card punches, magnetic tapes and plotters.

JOB/SESSION LIST DEVICEFILES. Each job/session accepting device is assigned a default output device during system configuration. The default device may be a ldn or a device class. For each job/session submitted on a given accepting input device, the corresponding default output device is used to assign a destination device for the job/session list devicefile.

There is exactly one such job/session list devicefile assigned to each executing job/session. It always assumes the system defined file name \$STDLIST.

OTHER OUTPUT DEVICEFILES. A job/session may create other output devicefiles by specifying a ldn (different from the job/session list device) or a device class.

OPERATOR INVOLVEMENT WITH OUTPUT DEVICEFILES

If a magnetic tape (ldn or device class) has been specified, you will be asked to assign the device:

1. If the user has requested a tape device class you may specify any available *ldn* in the class.
2. If the user has requested the *ldn* of a specific tape drive, you may assign the device if it is available.

Example

The following display is the result of a =SHOWOUT command. All output devicefiles "known" to MPE are displayed by this command.

```
= SHOWOUT

DEV/CL  DFID    JOBNUM  FNAME    STATE FRM SPACE RANK PRI #C
LP      #016    #S3     PRINTER  OPENED          128    13  1
8       #017    #S2     BOBTAPE  OPENED
20      #05     #S3     $STDLIST OPENED
21      #01     #S1     $STDLIST OPENED
27      #04     #S2     $STDLIST OPENED

5 FILES:
  0 ACTIVE
  0 READY; INCL 0 SPOOFLES, 0 DEFERRED
  5 OPENED; INCL 1 SPOOFLES
  0 LOCKED; INCL 0 SPOOFLES
  1 SPOOFLES: 128 SECTORS

OUTFENCE= 0
```

Devicefiles #05, #01 and #04 are session output devicefiles on *ldn* 20, 21 and 27 respectively. #016 is an output devicefile that was spooled to device class LP with the assigned file name PRINTER. #017 is an output devicefile going to logical device number (*ldn*) 8 with the *filename* BOBTAPE.

SPOOLING

MPE is equipped with a spooling facility to assist the operation of certain non-sharable devices. A simplified version of this input/output spooling process is shown in Figure 3-1 along with an explanation of the process.

INPUT SPOOLING

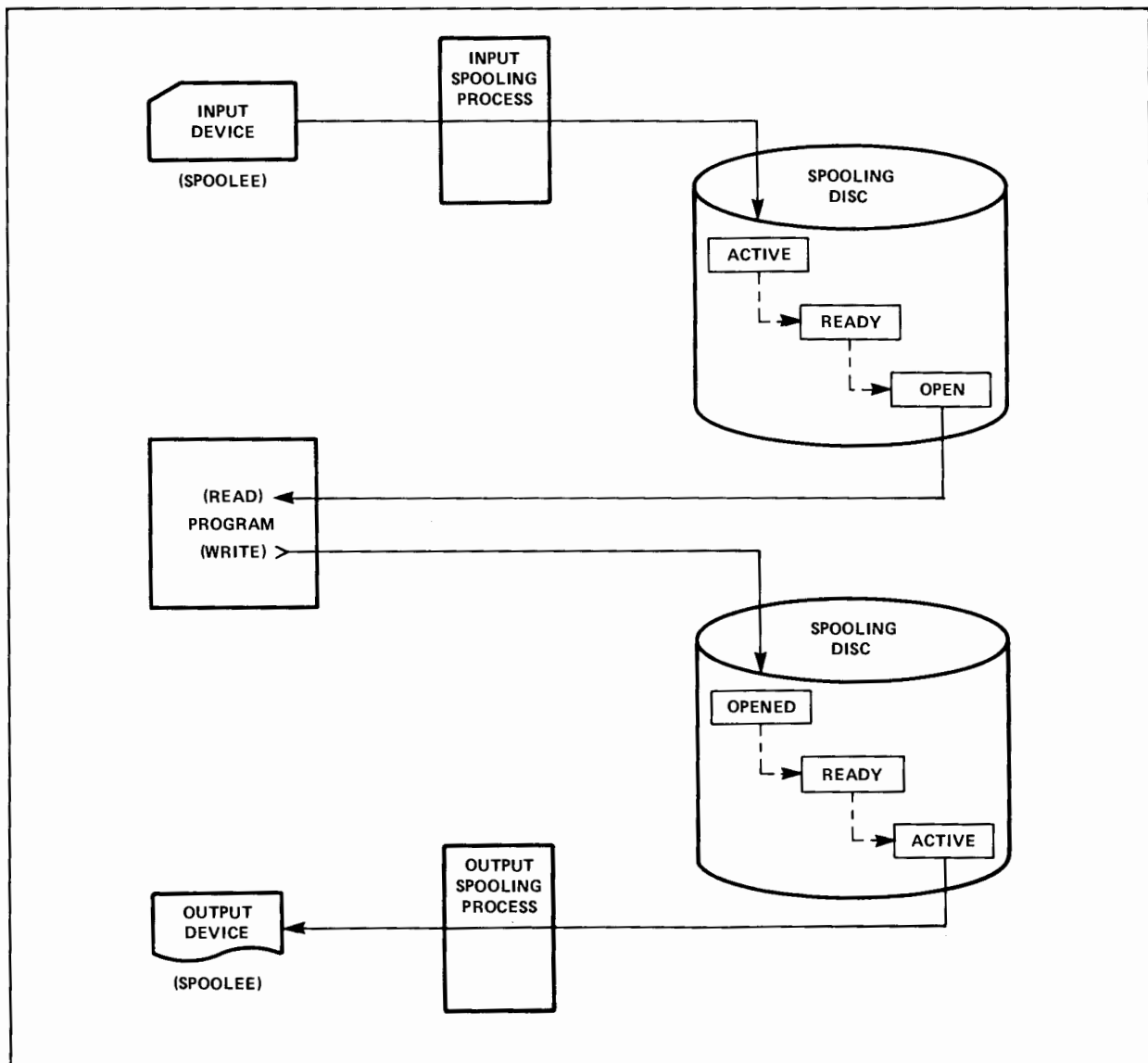
When a non-sharable JOB or DATA accepting input device is spooled, the device (called the spooler) is acquired (belongs to) the spooling process. This process is activated when the spooling operation is enabled. The purpose of the process is to perform read operations from the device (spooler) and copy or write this input data to a disc file called the ACTIVE file. Reading from the input device, and writing to the ACTIVE file continues, record by record, until the logical end of file indication is encountered. At this time the ACTIVE file on the spooling disc becomes a READY file, and as such is available for access by program or MPE. A program that performs a proper FOPEN on a spooled input devicefile will gain access to the newly created READY file, at which time this file assumes the OPEN state. When the FOPENing program FCLOSES the file, it is deleted from the system. The *normal* transition for spooled input devicefiles is:

1. ACTIVE — in the process of being created but not yet complete.
2. READY — ready for access by a program or deletion by the Console Operator.
3. OPEN — being accessed by a user program or MPE, i.e., being *read*.

NOTE

A spooled devicefile also may be in the LOCKED state, which is equivalent to the READY state but disables the file from being accessed by a program. It also defers you from deleting a request.

Figure 4-1. Simplified I/O Spooling Diagram



OUTPUT SPOOLING

When a non-sharable device is spooled, the device (called the spooler) is acquired by (belongs to) the spooling process. This process is activated when the spooling operation is enabled. A user program attempting to write data to a spooled output device writes the outbound record to an OPENED spooled devicefile instead of the device itself. Each time the user process writes a record destined for the output device, the record is diverted to the OPEN spooled devicefile. When the user process FCLOSES his output file, this causes the OPEN spooled devicefile to achieve the READY state. The output spooler process is constantly looking for spooled output devicefiles that have achieved the READY state. If the output device (spooler) is available, the spooler process selects a READY file for processing. This action changes the READY file status to ACTIVE, and the output to the device (spooler) commences. The normal transition for spooled output device files is:

1. OPEN — being accessed by a user program or MPE, i.e., being *written*.
2. READY — available and waiting to become the ACTIVE file, or deletion by the Console Operator.
3. ACTIVE — the file currently being output to the device.

NOTE

A spooled devicefile also may be in the LOCKED state, which is equivalent to the READY state but disables the file from becoming ACTIVE. If you delete the request, it is deferred until the file leaves the LOCKED state.

A more detailed diagram of this input/output spooling process is shown in Figure 3-2 and 3-3 with a thorough explanation of each.

INPUT SPOOLING CONTROL

The input spooling diagram (figure 4-2) illustrates the path of data from the input device, to the spooling disc, and then to the reading program. This diagram uses switches that are analagous to the operator =SPOOL command to help illustrate the function of this command and how it is used to control the input spooling operation.

The =SPOOL *ldn,STARTIN* command activates the spooler process and closes the switch that connects the input devicefile on disc. Devices that are initially spooled at configuration time are in the STARTIN mode after each start-up of the system.

Any time after the =SPOOL *ldn,STARTIN* command is issued the input spooling operation can be stopped, using the =SPOOL *ldn,STOP* command. If the DELETE option parameter is not used, the spooler process will de-allocate the input device as soon as the currently ACTIVE file input operation completes.

NOTE

The NULL switch position is not a spool command but is required to show the non-DELETE case,

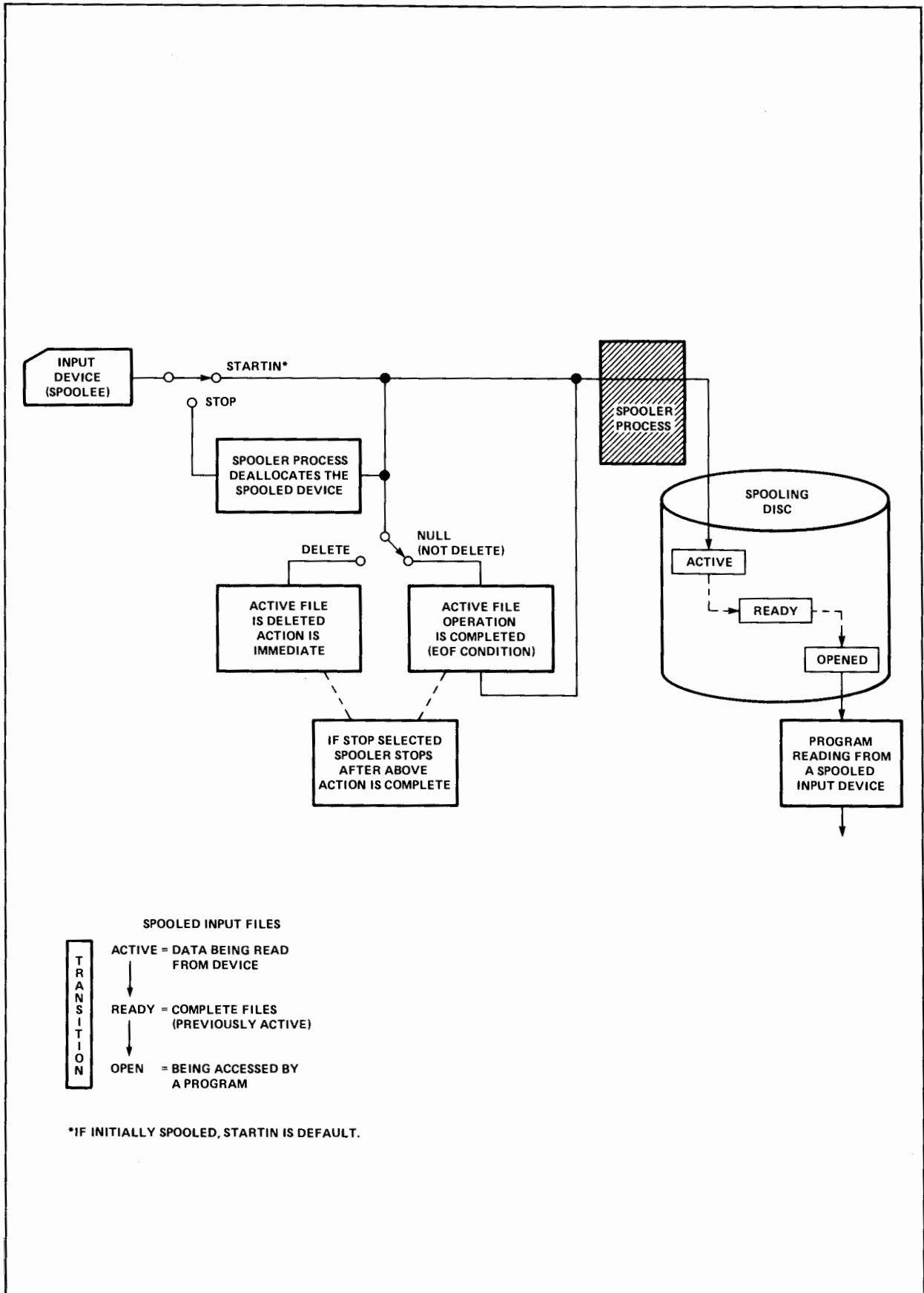


Figure 4-2. Input Spooling Diagram

If the DELETE option parameter of the =SPOOL command is used, the currently ACTIVE spooled devicefile is deleted from the system. The action of DELETE is immediate; but note that when DELETE is used without STOP the device remains allocated to the spooler process.

To summarize; the operation of the input spooler is to continually try and read data from the input device. An ACTIVE file is created when :JOB (if the spooler is job accepting) or :DATA (if the spooler is data accepting) command is encountered in the input device stream. The input spooler validates the :JOB or :DATA command and copies subsequent records into the ACTIVE spooled devicefile. When the spooler encounters an :EOD, :EOJ, :JOB, :DATA command, or a physical end-of-file (:EOF), the ACTIVE spooled devicefile becomes a READY file. READY input spooled devicefiles are thus available for access by user programs (:DATA) or by MPE (:JOB).

NOTE

Normally, every job in a sequence of jobs is independent of the other. Such jobs can be submitted and executed in any order. In certain exceptional cases, jobs are ordered such that a particular job must execute completely before the following job(s) are to be executed or even submitted. When such a job sequence is submitted on a non-spoiled device, this ordering is implicitly effected, because every command record is executed when it is physically read. Spooling a job-accepting device can essentially nullify this ordering, since 1), jobs are admitted by the spooler before preceding jobs have executed; and 2), more than one job may possibly concurrently execute. Therefore, when an ordered sequence of jobs is to be submitted, the safest procedure is to introduce the sequence on a non-spoiled job-accepting device. Establishing an account, for example, typically consists of one job (in behalf of the System Manager) which creates the account with one user and one group, followed by a job (on behalf of the new account's account manager) which establishes all the remaining users and groups. If this two-job sequence was submitted on a spoiled device, the first job would probably not have finished execution before the spooler attempted to validate the second job; that is, the user.acct, group for the second job would not yet exist at the time that the spooler attempts validation of that job — the second job would be rejected. These kinds of job sequences should be submitted on non-spoiled devices.



When there are no more devicefiles on the device, the spooler enters a WAITing state, waiting for more input.

OUTPUT SPOOLING CONTROL

The output spooling diagram (figure 4-3) illustrates the path of data from a user program, to the spooling disc and then to the output device. This diagram uses switches that are analogous to the operator =SPOOL command to help illustrate the function of this command and how it is used to control the output spooling operation.

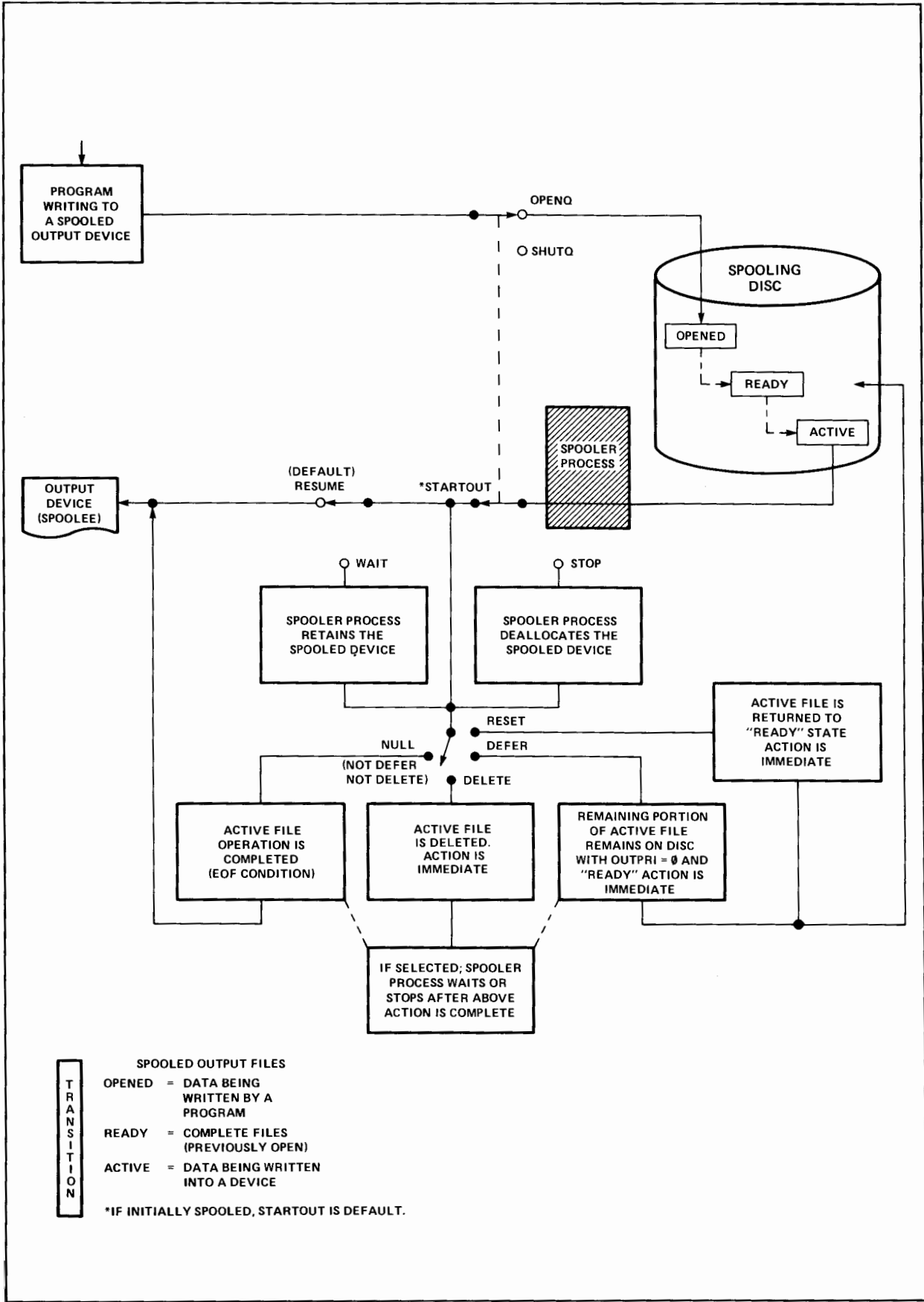


Figure 4-3. Output Spooling Diagram

The `=SPOOL ldn,STARTOUT` command activates the spooler process and closes the switch that connects the output device to the ACTIVE spooled devicefile on disc. Devices that are initially spooled at configuration time are in the STARTOUT mode after each start-up of the system. The dotted line that connects the STARTOUT switch to the OPENQ/SHUTQ switch implies a mechanical connection. Each time a `=SPOOL ldn,STARTOUT` command is issued it implies an OPENQ parameter whether present in the command or not. Similarly, the `=SPOOL ldn,STOP` command implies a SHUTQ parameter.

Anytime after the `=SPOOL ldn,STARTOUT` command is issued the output spooling operation can be stopped using the `=SPOOL ldn,STOP` command. If the DEFER, DELETE, or RESET option parameter is not specified, the spooler process de-allocates the output device as soon as the currently ACTIVE file is completed.

NOTE

The NULL switch position is not a spool command but is required to show the non-DELETE/non-DEFER case.

If the DELETE option parameter is used the ACTIVE file is deleted from the system immediately. If the DEFER option parameter is used, whatever remains of the ACTIVE file is retained on the disc and is placed in the READY state with an *outputpriority* of 0. Action of the DEFER option parameter is also immediate. The RESET option parameter is provided to allow a restart facility. The action is the same as DEFER with one exception. When the file is placed back in the READY state its *outputpriority* remains unchanged; therefore, if no READY files of equal or higher priority are present, the RESET file becomes ACTIVE and output to the device resumes.

The WAIT option parameter will stop the output device at the completion of the currently ACTIVE file, however, the device allocation is retained. The only way to proceed after a WAIT option parameter is to use RESUME.

The OPENQ/SHUTQ option parameters are unique to output spooling. These options provide control over the input or spooled file *creation* side of output spooling. Normally, if `=SPOOL ldn,STARTOUT` is the command, the queue is opened to allow spooled devicefile creation. Similarly, `=SPOOL ldn,STOP` causes the queue to be shut. There are times however, when it is desirable to drain all spooled devicefiles for an output device. In other words, you may wish to print all existing spooled devicefiles present on the disc, but you don't want any more spooled device files to be created. In such a case you could use: `=SPOOL ldn,SHUTQ`. Conversely, if a line printer were temporarily out of paper you may choose to stop the spooler, but it may be desirable to allow new spooled devicefiles to be created while the printer is unavailable. In this case, you could use: `=SPOOL ldn,STOP,OPENQ` (Remember that STOP implicitly performs a SHUTQ as well).

To summarize; the operation of the output spooler is to continually check for the presence of READY output spooled devicefiles. When the spooler finds a READY file and the output device is available, the file state changes from READY to ACTIVE and output to the device from this file commences. READY files are selected on the basis of their *outputpriority* and by age among those of equal priority.

In addition, you can set an output fence. Output devicefiles with a priority less than or equal to the current *outputfence* are deferred; deferred devicefiles are not selected for spooling by output spoolers. An output spooler which fails to find a READY spooled devicefile for copying to a device will enter a WAITING state. It will automatically be re-activated when a spooled devicefile becomes READY for copying.

You can change the *outputpriority*, destination, and number of copies of an OPEN or READY spooled devicefile.

FORMS MESSAGE

When a job/session FOPENS a new devicefile, special forms may be requested using the *formsmsg* parameter in the FOPEN call. The user forms message is printed on the console, along with a request to mount the forms:

1. If the user has requested a device class, you are asked to mount the forms on any free device in the class.
2. If the user has requested a specific *ldn*, you are asked to mount the forms on the device requested (if it is available).

If special forms are mounted on a device, and a devicefile not requiring special forms is assigned to the device, MPE will automatically ask you to mount *standard* forms.

When the user has requested special forms on a line printer, MPE will initiate a dialogue with you to align the forms. A standard record of the form:

```
0                               1 / 2                               3
..... / ..... / ..... / .....
```

is output to the line printer, followed by a console message which asks you if the forms are aligned. This transaction is repeated until you indicate that proper alignment has been achieved. Assuming proper alignment instructions are given to you, the file can then be output beginning at the proper, user-defined position.

SYSTEM STARTUP

Startup of MPE is done through a program called the MPE Initiator. The Initiator is a stand-alone program that creates an operational MPE using files and table information available to it on tape or in certain cases, on disc. The initiator program is brought into memory for execution via cold load.

The cold load operation loads a working subset of the Initiator program into memory from disc (COOLSTART/WARMSTART) or magnetic tape (COLDSTART/UPDATE/RELOAD). Depressing the RUN/HALT switch will start the Initiator program, wait for the carriage return from the console in order to determine its speed setting, then begin an interactive dialog with the user. Some flexibility is provided within the Initiator to change the main memory size or the input/output device configuration.

The Initiator provides an option of five types of cold loads:

1. WARMSTART cold loads the system from the system disc. This is the standard operating procedure for restarting the system, since it is the *only* option which results in the recovery of incompletely processed, spooled jobs and spooled files. On any other option, any spooled files found in the system are deleted.

If a COOLSTART, COLDSTART, UPDATE, or RELOAD does not complete for any reason, the next cold load may not be a WARMSTART. A violation of this results in an error message and halt.

NOTE

The Initiator program should never be halted. If error recovery is not possible via the dialog, the Initiator program should be allowed to complete, i.e., run until the request for DATE? appears.

2. COOLSTART cold loads the MPE system from the system disc. This is the standard operating procedure when a system is routinely shut down at night and brought up again the next day. All permanent user files (including programs such as FORTRAN/3000, COBOL/3000, SPL/3000, and EDIT/3000 that run as MPE subsystems) are saved; but the operational environment present prior to the last shutdown is not retained. Thus all temporary files, jobs and sessions in progress at shutdown (before COOLSTART) are lost.
3. UPDATE cold loads the MPE system from magnetic tape; the system files come from tape, while the I/O device configuration, directory, accounting information, and global RIN's come from the system disc; and the user files remain undisturbed on disc. This is the standard operating procedure used when starting the system with an updated MPE tape from Hewlett-Packard or an MPE tape prepared for a different HP 3000 Series II Computer System, and should be used *only* in those situations. If an UPDATE does not complete, it must be followed by a COLDSTART, UPDATE, or RELOAD. Any violation of this results in an error message and a halt.
4. COLDSTART cold loads the MPE system from magnetic tape; the system files and I/O device configuration come from tape while the user files, directory, accounting information and assigned resource identification numbers (global RIN's) are retained currently on disc. This allows modification of the system configuration while retaining the user's information. COLDSTART is commonly used to allow an installation to keep several cold load tapes, each with a different configuration. If a COLDSTART does not complete for any reason it must be followed by a COLDSTART, UPDATE, or RELOAD. Any violation of this results in an error message and a halt.
5. RELOAD cold loads the entire MPE system, including all system files and I/O device configuration information, from magnetic tape. This option assumes that there is no information on disc. If any user files were dumped on the tape, the directory, accounting information, assigned global RIN's and user files are restored to the disc from the tape. If no user files were dumped, a directory is created with the SYS account, PUB group, and MANAGER user. RELOAD is normally done when installing the system from the first MPE tape received from Hewlett-Packard, or when restoring the system following a disc crash (from a tape generated by the user through a :SYSDUMP command). If a RELOAD does not complete for any reason, the next cold load must also be a RELOAD.

When reloading from multiple sets of tapes created by the :SYSDUMP command, the first reel of the latest tape should be used for cold loading; it contains the up-to-date directory and accounting information. If not all of the files on the system are contained in this tape set, an additional set will be requested.

No startup option, except a powerfail recovery, permits resumption of user batch jobs or interactive sessions interrupted by a system shutdown or hardware or software failure; such jobs must be re-initiated from the beginning by the user.

All cold load options except WARMSTART allow you to alter the I/O device configuration currently in effect. This is done through an interactive dialogue between the user and the MPE Initiator. This dialogue is described in the *MPE System Manager/Supervisor Manual*, Section VI.

FUNCTIONS OF A CONSOLE OPERATOR

SECTION

V

The Console Operator performs many functions (tasks) in the day-to-day operation of the system. You, as a Console Operator, become responsible for the operational control of the HP 3000 Series II Computer System.

This section will give you many of the step-by-step procedures you need to perform these functions. For your convenience, these tasks are divided into four categories:

1. Jobs
2. Devices
3. Spooling
4. Maintenance

Table 5-1 has broken these tasks into the four categories. The PAGE NO. column refers to the page in this manual on which each function is discussed.

Table 5-1. Console Operator Functions

FUNCTION	PAGE NUMBER
JOBS:	
Control Job/Session Limits	3-18
Control Job Selection	3-10
Control Streaming Facility	3-50
Allowing :JOB and :DATA Commands from Input Devices	3-7
Disallow :JOB and :DATA Commands from Input Devices	3-23
Aborting Jobs	3-5, 3-6
Aborting all Jobs and Sessions	3-19
Displaying Job/Session Status	3-34
Displaying Scheduling Information	3-39
Using a Console as a Log-on Terminal	3-27
Reading Cards with a Colon in Column One	5-3
DEVICES:	
Allocating I/O Devices	3-25
Changing Forms on a Line printer	5-4
Clearing I/O Requests from Devices	3-4
Deleting Ready Devicefiles	3-12
Downing an I/O Device	3-13
Controlling the Order and Number of Copies of Output Spooled File	3-8
Enable a Downed Device	3-54
Displaying Device Configuration	3-29
Displaying Information for Spooled Input Files	3-31, 3-32

Table 5-1. Console Operator Functions (Continued)

FUNCTION	PAGE NUMBER
Displaying Information for Spooled Output Files	3-38
Adding an I/O Device	5-6
Deleting an I/O Device	5-9
SPOOLING:	
Starting Input Spooling	3-43
Stopping Input Spooling	3-44
Deleting Active Input Spooled Files	3-44
Starting Output Spooling	3-45
Stopping Output Spooling	3-48
Deleting/Deferring/Resetting Output Spooled Files	3-48
Pausing (WAIT) Spooling	3-48
Opening/Shutting the Output Spooler Queue	3-46
MAINTENANCE:	
System Power-up	5-11
System Power-down	5-12
System Start up	5-13
System Shutdown	5-24
Formatting Disc Packs (SLEUTH)	5-26
File and System Back-up Operation (:SYSDUMP)	5-28
Restoring User Files from SYSDUMP Tapes	5-30
Turning Logging on and off	5-33
Perform Cold Dump Operation	5-32
Replying to System and User Requests	3-24
Sending Operator Messages to Users (sessions)	3-52
Send Warning Messages	3-55

OPERATOR FUNCTION: READING CARDS WITH COLONS IN COLUMN ONE

DESCRIPTION: This procedure describes a technique used to read records containing MPE job control commands on :JOB or :DATA accepting devices. The procedure shown is for a spooled card reader; but the same technique can be used for other devices as well.

STEP	COMMAND	COMMENTS
1	=SPOOL <i>ldn</i> ,STOP	Used to stop the spooler.
2	=ABORTIO <i>ldn</i>	Abort pre-read request #1.
3	=ABORTIO <i>ldn</i>	Abort pre-read request #2.
4	=REFUSE <i>ldn</i>	Removes ACCEPT (:JOB,:DATA) attribute; disables auto-recognition.
		I/O message will request allocation of device.
5	=REPLY <i>pin</i> , <i>ldn</i>	Allocates the device to the user process.
6	=ACCEPT <i>ldn</i>	Re-enables auto-recognition, accept :JOB and :DATA
7	=SPOOL <i>ldn</i> ,STARTIN	Starts input spooler.

NOTES

If the device is not spooled, start with step 4 and end with step 6.

EXAMPLE

```
=SPOOL 5, STOP
IO/11:39/LDEV#5 NOT READY
ST/11:39/SP#5/STOPPED
=ABORTIO 5
=ABORTIO 5
IO/11:40/LDEV#5 QUEUE EMPTY
=REFUSE 5
ST/11:40/#S14/LOGON FOR: FIELD.SUPPORT ON LDEV#25
?IO/11:42/#S14/32/LDEV# FOR "CARDDECK" ON CARD (NUM)
=REPLY 32,5
IO/11:42/LDEV#5 NOT READY

=ACCEPT 5
=SPOOL 5, STARTIN
ST/11:46/SP#5/SPOOLED IN
IO/11:46/LDEV#5 NOT READY
```

OPERATOR FUNCTION: CHANGING FORMS ON A LINE-PRINTER

DESCRIPTION: This procedure describes a technique for changing forms on a line-printer. These special forms are requested when a user forms message is printed on the console, along with a request to mount the forms as shown below:

```
I0/15:46/22/FORMS: PLEASE MOUNT MAILING LABEL FORMS
?I0/15:46/22/SP#12/ LDEV# FOR #S93;OUTFILE ON LP (NUM)
```

STEP	COMMAND	COMMENTS
1	=REPLY pin ,ldn	Allocate the device the user has requested to mount the forms on. If the user did not request a device, you may assign a device.
2	=REPLY pin . {YES } {NO }	Respond to the message whether or not the forms are aligned (YES or NO). If the forms are aligned, go to step 4.
3	=REPLY pin . {YES } {NO }	A message will continue to print out until you indicate that proper alignment has been achieved.
4		The file can then be output beginning at the proper, user-defined position.
5		After the printing operation is complete the system will ask that standard forms be mounted.
6	=REPLY pin ,ldn	Respond to the message of re-mounting the standard forms.

NOTES

Refer to Forms Message in Section IV.

EXAMPLE

```
=REPLY 22,12

I0/15:47/LDEV#12 NOT EMPTY
?I0/15:47/22/LDEV#12 FORMS ALIGNED OK?(Y/N)

=REPLY 22,NO

?I0/15:47/22/LDEV#12 FORMS ALIGNED OK?(Y/N)

=REPLY 22,NO

?I0/15:47/22/LDEV#12 FORMS ALIGNED OK?(Y/N)
```

=REPLY 22,Y

10/15:54/22/STANDARD FORMS
?10/15:54/22/SP#12/ LDEV# FOR #S95;L ON LP (NUM)

=REPLY 22,12

OPERATOR FUNCTION: ADDING I/O DEVICES

DESCRIPTION: This procedure describes a technique for adding an input/output device to the system. (A magnetic tape has been added to this system.)

STEP	PROCEDURE
1	Set the SYSTEM SWITCH REGISTER for the disc to the specified Device Reference Table (DRT) Entry number (typically the disc is configured on DRT Entry number 5).
2	While pressing (and holding) the ENABLE switch, press the LOAD switch.
3	Wait for the RUN light to go out (the SYSTEM HALT light should not be lit).
4	<p>Press the RUN/HALT switch (the RUN light should be lit).</p> <p>The MPE Initiator enters execution and waits for the carriage return from the console in order to determine its speed setting. The following message is then printed on the console:</p> <p style="text-align: center;">HP32002v.uu.ff</p> <p>In this message <i>v</i> is the current MPE version, <i>uu</i> is the present update-level number, and <i>ff</i> is the fix-level number.</p>
5	<p>Answer the following questions from the Initiator:</p> <p>WHICH OPTION <WARMSTART/COOLSTART>? <i>COOL</i></p> <p>LOAD MAP? (return)</p> <p>ANY CHANGES? <i>Y</i></p> <p>MEMORY SIZE= <XXX>? (return)</p> <p>I/O CONFIGURATION CHANGES? <i>Y</i></p> <p>LIST I/O DEVICES? <i>Y</i></p> <p>The format of the output is:</p> <pre> LOG DRT UNIT CHAN TYPE SUB- TERM REC OUTPUT MODE DRIVER DEVICE DEV # # TYPE TYPE WIDTH DEV NAME CLASSES </pre> <p>HIGHEST DRT =<XX>? <i>return</i></p> <p>LOGICAL DEVICE #? <i>10</i></p> <p>DRT #? <i>6</i></p> <p>UNIT #? <i>3</i></p> <p>CHANNEL #? <i>0</i></p> <p>TYPE? <i>0</i></p> <p>SUB-TYPE? <i>0</i></p> <p>TERM TYPE? <i>0</i></p> <p>RECORD WIDTH? <i>128</i></p> <p>OUTPUT DEVICE? <i>FASTLP</i></p> <p>ACCEPT JOBS/SESSIONS? <i>Y</i></p>

STEP	PROCEDURE
	ACCEPT DATA? Y INTERACTIVE? <i>return</i> DUPLICATIVE? <i>return</i> INITIALLY SPOOLED? <i>return</i> DRIVER NAME? <i>IOTAPE0</i> DEVICE CLASSES? <i>JOBTAPE</i> LOGICAL DEVICE #? <i>return</i> MAX # OF OPEN SPOOLFILES =<XXX>? <i>return</i> LIST I/O DEVICES? <i>return</i> CLASS CHANGES? <i>return</i> LIST I/O DEVICES? <i>return</i> DISC VOLUME CHANGES? <i>return</i> DISABLE LOGGING? <i>return</i> RECOVER LOST DISC SPACE? <i>return</i> DATE? <i>mm/dd/yy</i> <i>enter current date</i> TIME? <i>hh:mm</i> <i>enter current time-of-day</i>
6	The initiator will print *WELCOME*



NOTES

Refer to Section VI of the *MPE System Manager/Supervisor Manual* for a complete discussion of the Initiator/User dialogue.

EXAMPLE

```

HP32002A.00.80
WHICH OPTION <WARMSTART/COOLSTART>? COOL
LOAD MAP?
ANY CHANGES? Y
MEMORY SIZE = 64.?
I/O CONFIGURATION CHANGES? Y
LIST I/O DEVICES?
HIGHEST DRT = 30.?
LOGICAL DEVICE #? 55
DRT #? 20
UNIT #? 15
CHANNEL #? 0
TYPE? 16

```

SUB TYPE? 0
TERM TYPE?
RECORD WIDTH? 36
OUTPUT DEVICE? 55
ACCEPT JOBS/SESSIONS? Y
ACCEPT DATA? Y
INTERACTIVE? Y
DUPLICATIVE? Y
INITIALLY SPOOLED?
DRIVER NAME? IOTERM0
DEVICE CLASSES? TERM
LOGICAL DEVICE #?
MAX # OF SPOOLFILES = 20.?
LIST I/O DEVICES?
CLASS CHANGES?
LIST I/O DEVICES?
DISC VOLUME CHANGES?
MAX # OF SPOOLFILES KILOSECTORS =128?
RECOVER LOST DISC SPACE?
DATE?
1/27/76
TIME?
8:02
TUE, JAN 27, 1976, 8:02 AM?
WELCOME

OPERATOR FUNCTION: DELETING I/O DEVICES

DESCRIPTION: This procedure describes a technique for deleting an input/output device currently assigned to the system. (A magnetic tape has been deleted from this system.)

STEP	PROCEDURE																								
1	Set the SYSTEM SWITCH REGISTER for the disc to the specified Device Reference Table (DRT) Entry number (typically the disc is configured on DRT Entry number 5).																								
2	While pressing (and holding) the ENABLE switch, press the LOAD switch.																								
3	Wait for the RUN light to go out (the SYSTEM HALT light should not be lit).																								
4	<p>Press the RUN/HALT switch (the RUN light should be lit).</p> <p>The MPE Initiator enters execution and waits for the carriage return from the console in order to determine its speed setting. The following message is then printed on the console:</p> <p style="text-align: center;"><i>HP32002v.uu.ff</i></p> <p>In this message <i>v</i> is the current MPE version, <i>uu</i> is the present update-level number, and <i>ff</i> is the fix-level number.</p>																								
5	<p>Answer the following questions from the Initiator:</p> <p>WHICH OPTION <WARMSTART/COOLSTART>? <i>COOL</i></p> <p>LOAD MAP? <i>return</i></p> <p>ANY CHANGES? <i>Y</i></p> <p>MEMORY SIZE = <XXX>? <i>return</i></p> <p>I/O CONFIGURATION CHANGES? <i>Y</i></p> <p>LIST I/O DEVICES? <i>return</i></p> <table border="1" data-bbox="305 1417 1372 1480"> <thead> <tr> <th>LOG DEV</th> <th>DRT #</th> <th>UNIT #</th> <th>CHAN #</th> <th>TYPE</th> <th>SUB- TYPE</th> <th>TERM TYPE</th> <th>REC WIDTH</th> <th>OUTPUT DEV</th> <th>MODE</th> <th>DRIVER NAME</th> <th>DEVICE CLASSES</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table> <p>HIGHEST DRT = <XXX>? <i>return</i></p> <p>LOGICAL DEVICE #? <i>10</i></p> <p>DRT #? <i>0</i></p> <p>LOGICAL DEVICE #? <i>return</i></p> <p>MAX # OF OPEN SPOOLFILES = <XXX>? <i>return</i></p> <p>LIST I/O DEVICES? <i>return</i></p> <p>CLASS CHANGES? <i>return</i></p> <p>LIST I/O DEVICES? <i>return</i></p> <p>DISC VOLUME CHANGES? <i>return</i></p> <p>MAX # OF SPOOLFILES KILOSECTORS = <XXX>? <i>return</i></p> <p>RECOVER LOST DISC SPACE? <i>return</i></p>	LOG DEV	DRT #	UNIT #	CHAN #	TYPE	SUB- TYPE	TERM TYPE	REC WIDTH	OUTPUT DEV	MODE	DRIVER NAME	DEVICE CLASSES												
LOG DEV	DRT #	UNIT #	CHAN #	TYPE	SUB- TYPE	TERM TYPE	REC WIDTH	OUTPUT DEV	MODE	DRIVER NAME	DEVICE CLASSES														

STEP	PROCEDURE
	DATE? <i>mm/dd/yy</i> <i>enter current date</i> TIME? <i>hh:mm</i> <i>enter current time-of-day</i>
6	The Initiator will print *WELCOME*

NOTES

Refer to Section VI of the *MPE System Manager/Supervisor Manual* for a complete discussion of the Initiator/User Dialogue.

EXAMPLE

```

HP32002A.00.80
WHICH OPTION <WARMSTART/COOLSTART>? COOL
LOAD MAP?
ANY CHANGES?Y
MEMORY SIZE = 64.?
I/O CONFIGURATION CHANGES?Y
LIST I/O DEVICES?
HIGHEST DRT = 30.?
LOGICAL DEVICE #? 10
DRT #?0
LOGICAL DEVICE #?
MAX # OF SPOOLFILES = 20.?
LIST I/O DEVICES?
CLASS CHANGES?
LIST I/O DEVICES?
DISC VOLUME CHANGES?
MAX # OF SPOOLFILE KILOSECTORS =128?
RECOVER LOST DISC SPACE?
DATE?
1/27/76
TIME?
8:02
TUE, JAN 27, 1976, 8:02 AM?
*WELCOME*

```

OPERATOR FUNCTION: SYSTEM POWER-UP

DESCRIPTION: This procedure describes a technique to turn the system power on.

STEP	PROCEDURE
1	Turn the circuit-breaker labeled MAIN SYSTEM POWER, on the back of the central processor bay, to the ON position. (If the circuit breaker will not stay on, try pressing the EMERGENCY OFF switch on the upper right-hand corner of the central processor bay.)
2	If the system includes a 30102A disc file, turn the circuit breaker labeled EXTENDED SYSTEM POWER, on the back of the peripheral bay, to the ON position.
3	If the system includes a 30311A Memory Power Supply turn all the power supply switches to the ON position.
4	On the DC Control Panel, turn the SYSTEM DC POWER switch and the LOWER/UPPER 128K MEMORY switch, behind the top right door of the central processor bay, to the ON position.
5	If the system includes a 30110A cartridge disc: a. Turn the POWER ON/OFF switch, on the disc power supply, to the ON position. b. Turn the LOAD/UNLOAD switch, on the front panel, to the LOAD position.
6	If the system includes a 30102A disc file: a. Turn the START/STOP switch, on the front panel, to the START position. b. Turn the ON-LINE/OFF switch to the ON-LINE position.
7	If the system's tape drives are to be used, turn the ON/OFF toggle switch, inside the door of each drive, to the ON position.
8	Turn the ON/OFF switch, on the back of the console, to the ON position.
9	If the system includes a 30108A or 30109A line printer: a. Press the POWER ON switch on the printer. b. Press the PRINT switch on the printer.
10	If the system includes a 30118A line printer: a. Press the ON switch on the printer. b. Press the PRINT switch on the printer.

NOTES

For further information on the DC Control Panel, refer to the Signal and Power Distribution Manual.

OPERATOR FUNCTION: SYSTEM POWER-DOWN

DESCRIPTION: This procedure describes a technique to turn the system power off.

STEP	PROCEDURE
1	Shut MPE down, as directed in the SYSTEM SHUTDOWN function.
2	If the system includes a 30118A line printer, release the ON switch on the printer.
3	If the system includes a 30108A or 30109A line printer, press the POWER OFF switch on the printer.
4	If the system includes a card reader, release the POWER ON/OFF switch on the reader.
5	Turn the ON/OFF switch on the back of the console to the OFF position.
6	If the system's tape drives are on, turn the ON/OFF switch inside the door of each drive, to the OFF position.
7	If the system includes a 30102A disc file, turn the START/STOP switch on the front panel, to the STOP position.
8	If the system includes a 30110A cartridge disc: a. Turn the LOAD/UNLOAD switch, on the front panel, to the UNLOAD position. b. Turn the POWER ON/OFF switch, on the disc power supply, to the OFF position.
9	On the DC Control Panel, turn the SYSTEM DC POWER switch and the LOWER/UPPER 128K MEMORY switch, behind the top right door of the central processor bay, to the STAND BY position. NOTE <i>This step concludes the routine shut-down procedure. However, if a lengthy period of shut-down or maintenance on the system is planned, to take a SYSDUMP to save memory data, then proceed with steps 10, 11 and 12, below.</i>
10	If the system includes a 30311A Memory Power Supply, turn all the power supply switches to the OFF position.
11	If the system includes a 30102A disc file, turn the circuit breaker labeled EXTENDED SYSTEM POWER, on the back of the peripheral bay, to the OFF position.
12	Turn the circuit-breaker labeled MAIN SYSTEM POWER, on the back of the central processor bay, to the OFF position.

NOTES

For further information on the DC Control Panel, refer to the Signal and Power Distribution Manual.

OPERATOR FUNCTION: SYSTEM STARTUP (WARMSTART)

DESCRIPTION: This procedure describes a technique to cold load the system from the system disc; it is the standard operating procedure which results in the recovery of incompletely processed spooled jobs and spooled device files.

STEP	PROCEDURE
1	Set the SYSTEM SWITCH REGISTER for the disc to the specified Device Reference Table (DRT) Entry number (typically the disc is configured on DRT Entry number 5).
2	While pressing (and holding) the ENABLE switch, press the LOAD switch.
3	Wait for the RUN light to go out (the SYSTEM HALT light should not be lit).
4	<p>Press the RUN/HALT switch (the RUN light should be lit).</p> <p>The MPE Initiator enters execution and waits for the carriage return from the console in order to determine its speed setting. The following message is then printed on the console:</p> <p style="text-align: center;">HP32002<i>v.uu.ff</i></p> <p>In this message <i>v</i> is the current MPE version, <i>uu</i> is the present update-level number, and <i>ff</i> is the fix-level number.</p>
5	<p>Answer the following questions from the Initiator:</p> <p>WHICH OPTION <WARMSTART/COOLSTART>? <i>WARMSTART</i></p> <p>LOAD MAP? <i>return</i></p> <p>ANY CHANGES? <i>return</i> ← At this point, there is a delay of about 1 minute as MPE starts itself.</p> <p>DATE?</p> <p><i>mm/dd/yy</i> (enter current date)</p> <p>TIME?</p> <p><i>hh:mm</i> (enter current time-of-day)</p>
6	<p>The Initiator will print</p> <p style="text-align: center;">*WELCOME*</p>

NOTES

Refer to the *MPE System Manager/Supervisor Manual*, (Section VI) to help you answer the questions asked in step 6 or any other questions that may be used by the Initiator.

EXAMPLE

HP32002A.00.80
WHICH OPTION <WARMSTART/COOLSTART>? WARM
LOAD MAP?
DATE?
2/18/76
TIME?
12:05
WELCOME

OPERATOR FUNCTIONS: SYSTEM STARTUP (COOLSTART)

DESCRIPTION: This procedure describes a technique to cold-load the system from the system disc; it is the standard operating procedure when a system is routinely shut down at night and brought up again the next day.

STEP	PROCEDURE
1	Set the SYSTEM SWITCH REGISTER for the disc to the specified Device Reference Table (DRT) Entry number (typically the disc is configured on DRT Entry number 5).
2	While pressing (and holding) the ENABLE switch, press the LOAD switch.
3	Wait for the RUN light to go out (the SYSTEM HALT light should not be lit).
4	<p>Press the RUN/HALT switch (the RUN light should be lit).</p> <p>The MPE Initiator enters execution and waits for the carriage return from the console in order to determine its speed setting. The following message is then printed on the console:</p> <p style="text-align: center;">HP32002<i>v.uu.ff</i></p> <p>In this message <i>v</i> is the current MPE version, <i>uu</i> is the present update-level number, and <i>ff</i> is the fix-level number.</p>
6	<p>Answer the following questions from the Initiator:</p> <p>WHICH OPTION <WARMSTART/COOLSTART>? <i>COOLSTART</i></p> <p>LOAD MAP? <i>return</i></p> <p>ANY CHANGES? <i>return</i></p> <p>DATE? ← At this point, there is a delay of about 1 minute as MPE starts itself.</p> <p><i>mm/dd/yy</i> (enter current date)</p> <p>TIME?</p> <p><i>hh:mm</i> (enter current time-of-day)</p>
7	<p>The Initiator will print</p> <p style="text-align: center;">*WELCOME*</p>

NOTES

Refer to the *MPE System Manager/Supervisor Manual*, (Section VI) to help you answer the questions asked in step 6 or any other questions that may be used by the Initiator.

EXAMPLE

HP32002A.00.80

WHICH OPTION <WARMSTART/COOLSTART>? COOL

LOAD MAP?

ANY CHANGES?

DATE?

2/18/76

TIME?

12:10

WELCOME

OPERATOR FUNCTION: SYSTEM STARTUP (COLDSTART)

DESCRIPTION: This procedure describes a technique to cold load the system from magnetic tape; it allows modification of the system configuration while retaining the user's information. COLDSTART is commonly used to allow an installation to keep several cold load tapes, each with a different configuration.

STEP	PROCEDURE
1	Set bits 5, 6, 13 and 14 of the SYSTEM SWITCH REGISTER to octal 3006.
2	Mount the MPE tape on unit 0 of the magnetic tape drive.
3	While pressing (and holding) the ENABLE switch, press the LOAD switch.
4	Wait for the RUN light to go out (the SYSTEM HALT light should be off). This is the cold-load operation which reads into memory the MPE Initiator.
5	<p>Press the RUN/HALT switch (the RUN light should be lit).</p> <p>The MPE Initiator enters execution and waits for the carriage return from the console in order to determine its speed setting. The following message is then printed on the console:</p> <p style="text-align: center;">HP32002<i>v.uu.ff</i></p> <p>In this message <i>v</i> is the current MPE version, <i>uu</i> is the present update-level number, and <i>ff</i> is the fix-level number.</p>
6	<p>Answer the following questions from the Initiator:</p> <p>WHICH OPTION <COLDSTART/RELOAD/UPDATE>? <i>COLDSTART</i></p> <p>LOAD MAP? <i>return</i></p> <p>ANY CHANGES? <i>return</i></p> <p style="margin-left: 150px;">← At this point, the tape is read and rewound; then there is a delay of about 1 minute as MPE starts itself.</p> <p>DATE?</p> <p><i>mm/dd/yy</i> (enter current date)</p> <p>TIME ?</p> <p><i>hh:mm</i> (enter current time-of-day)</p> <p>The Initiator will print</p> <p style="text-align: center;">*WELCOME*</p>

NOTE

Refer to the *MPE System Manager/Supervisor Manual*, (Section VI) to help you answer the questions asked in step 6 or any other questions that may be used by the Initiator.

EXAMPLE

HP32002A.00.80
WHICH OPTION <COLDSTART/RELOAD/UPDATE>? COLD
LOAD MAP?
ANY CHANGES?
DATE?
2/18/76
TIME?
12:20
WELCOME

OPERATOR FUNCTION: SYSTEM STARTUP (UPDATE)

DESCRIPTION: This procedure describes a technique to cold-load the system from the magnetic tape; this is the standard operating procedure used when starting the system with an updated MPE tape from HP or an MPE tape prepared for a different 3000 System.

STEP	PROCEDURE
1	Set bits 5, 6, 13 and 14 of the SYSTEM SWITCH REGISTER to octal 3006.
2	Mount the MPE tape on unit 0 of the magnetic tape drive.
3	While pressing (and holding) the ENABLE switch, press the LOAD switch.
4	Wait for the RUN light to go out (the SYSTEM HALT light should be off). This is the cold-load operation which reads into memory the MPE Initiator.
5	<p>Press the RUN/HALT switch (the RUN light should be lit).</p> <p>The MPE Initiator enters execution and waits for the carriage return from the console in order to determine its speed setting. The following message is then printed on the console:</p> <p style="text-align: center;">HP32002<i>v.uu.ff</i></p> <p>In this message <i>v</i> is the current MPE version, <i>uu</i> is the present update-level number, and <i>ff</i> is the fix-level number.</p>
6	<p>Answer the following questions from the Initiator:</p> <p>WHICH OPTION <COLDSTART/RELOAD/UPDATE>? <i>UPDATE</i></p> <p>LOAD MAP? <i>return</i></p> <p>ANY CHANGES? <i>return</i></p> <p style="text-align: center;">← At this point, the tape is read and rewound, then there is a delay of about 1 minute as MPE starts itself.</p> <p>DATE?</p> <p><i>mm/dd/yy</i> (<i>enter current date</i>)</p> <p>TIME?</p> <p><i>hh:mm</i> (<i>enter current time-of-day</i>)</p>
7	<p>The Initiator will print</p> <p style="text-align: center;">*WELCOME*</p>



NOTE

Refer to the *MPE System Manager/Supervisor Manual*, (Section VI) to help you answer the questions asked in step 6 or any other questions that may be used by the Initiator.

EXAMPLE

HP32002A.00.80

WHICH OPTION <COLDSTART/RELOAD/UPDATE>? UPDATE

LOAD MAP?

ANY CHANGES?

DATE?

2/18/76

TIME?

12:30

WELCOME

OPERATOR FUNCTION: SYSTEM STARTUP (RELOAD)

DESCRIPTION: This procedure describes a technique to cold-load the *entire* system, including all system files and system and I/O configuration information, from magnetic tape. It destroys any files which may be on any of the discs.

STEP	PROCEDURE
1	Set bits 5,6,13 and 14 of the SYSTEM SWITCH REGISTER to octal 3006.
2	Mount the MPE tape on unit 0 of the magnetic tape drive.
3	While pressing (and holding) the Enable switch, press the LOAD switch.
4	Wait for the RUN light to go out (the SYSTEM HALT light should be off). This is the cold-load operation which reads into memory the MPE Initiator.
5	<p>Press the RUN/HALT switch (the RUN light should be lit).</p> <p>The MPE Initiator enters execution and waits for the carriage return from the console in order to determine its speed setting. The following message is then printed on the console:</p> <p style="text-align: center;">HP32002v.uu.ff</p> <p>In this message <i>v</i> is the current MPE version, <i>uu</i> is the present update-level number, and <i>ff</i> is the fix-level number.</p>
6	<p>Answer the following questions from the Initiator:</p> <p>WHICH OPTION <COLDSTART/RELOAD/UPDATE> ? <i>RELOAD</i></p> <p>WHICH OPTION <SPREAD/COMPACT/RESTORE/ACCOUNTS/NULL> ? <i>return</i></p> <p>LOAD MAP? <i>return</i></p> <p>ANY CHANGES? <i>return</i></p> <p style="margin-left: 150px;">← At this point, the tape is read and rewound; then there is a delay of about 1 minute as MPE starts itself.</p> <p>DATE?</p> <p><i>mm/dd/yy</i> (enter current date)</p> <p>TIME?</p> <p><i>hh:mm</i> (enter current time-of-day)</p>
7	<p>The Initiator will print</p> <p style="text-align: center;">*WELCOME*</p>

NOTE

The options, discussed in step 7, select the algorithm used to determine on which disc a file is placed during RELOAD, as follows:

SPREAD

MPE attempts to place the file back on a disc of the device class as it was originally created. If this fails, MPE attempts to replace the file on a disc of the same type and sub-type as the disc on which it was previously located (for instance, on a cartridge disc). If this fails, MPE attempts to place it on a disc of the same type (for example, a moving-head disc). If this fails, MPE attempts to place the file on any disc in device class DISC. If this fails, a message is printed and the file is not reloaded. In each of these attempts, the files are spread among similar discs, if possible. Suppose, for example, that when the system was dumped, there was one cartridge disc that was full, and when it is reloaded there are two cartridge discs; in this case, each disc will be approximately half full. The advantages of the SPREAD option are reduced disc seeking since files are spread out, and reduced fragmentation since the disc is repacked. The disadvantage is that if the discs are nearly full, it may not be possible to restore all files that were previously stored on the discs. This situation is encountered very rarely; when it is, one of the other options may be used.

COMPACT

MPE attempts to place the file back on the same volume from which it came. If this fails, the SPREAD option is used. The major advantage of COMPACT is that if there are no new deleted tracks and the same discs are used, reloading of the system is guaranteed, no matter how full the discs are. In addition, each disc is compacted within the area between deleted tracks (if there are n deleted tracks, there will be at most $(n + 1)$ fragments). The disadvantage is that the discs may become disparately full.

RESTORE

MPE attempts to place the files back on the same volume at the same locations from which they came. If this fails, MPE attempts to place the files anywhere on the volume from which they came. If this fails, the SPREAD option is used. The advantages to RESTORE are that it offers the same guarantee made in COMPACT for reloading the system, and that the same files that were previously using alternate tracks are still using them. The disadvantage is that no compacting of the discs is done so that the same fragmentation still exists.

ACCOUNTS

This option loads the system, creates a directory from the magnetic tape, and loads the system files which reside in the PUB group of the SYS account. No user files are loaded onto the system.

The directory which is created will consist of all accounts, groups, and user structures which were current at the time the magnetic tape was written (by the :SYSDUMP Configurator program).

This option is useful because files saved on magnetic tape by the :SYSDUMP program are compatible with files stored using the :STORE command. In this way you could, for example:

1. Create a new directory structure if the previous directory was destroyed.

2. Conserve vital disc space by selectively loading files into certain accounts with the :RESTORE command (after the system is operational).

NULL

MPE creates a null directory and no user files are copied to the disc.

NOTE

In general, the SPREAD option should be used for reloading the system. If all files cannot be reloaded using this method, COMPACT should be used. RESTORE is useful only when fragmentation is not important but maintaining alternate track assignments is.

Refer to the *MPE System Manager/Supervisor Manual*, (Section VI) to help you answer the questions asked in step 6 or any other questions that may be used by the Initiator.

EXAMPLE

```
HP32002A.00.80
WHICH OPTION <COLDSTART/RELOAD/UPDATE>? REL
WHICH OPTION <SPREAD/COMPACT/RESTORE/ACCOUNTS/NULL>?
LOAD MAP?
ANY CHANGES?
DATE?
2/18/76
TIME?
12:39
*WELCOME*
```

OPERATOR FUNCTION: SYSTEM SHUTDOWN

DESCRIPTION: A technique for performing a system shutdown in an orderly manner. It is the responsibility of you, the Console Operator, to warn all logged-on users of any scheduled system shutdown.

STEP	COMMAND	COMMENTS
1	=SHOWJOB	Are any users logged-on the system? If no jobs or sessions, go to step # 7.
2	=WARN @; msg	Warn all users of impending shutdown. If all jobs and sessions log off, go to step # 7.
3	=WARN #Snnn; msg	Warn specific sessions still logged-on to log off. If all jobs and sessions log off, go to step # 7.
4	=ABORTJOB #Snnn	Try and ABORT sessions that ignored all warnings. If all jobs and sessions log off, go to step # 7.
5	=RECALL	Are there any =REPLY messages pending ? If no messages, go to step # 6.
6	=REPLY pin ,0	Outstanding allocation messages must be REPLYed to. All jobs and sessions should now be logged-off.
7	=SHUTDOWN	All jobs logged off, spoolers stopped, "SHUT" printed, system HALTS. If system remains running more than 2 minutes, push HALT switch.

NOTES

Sometimes a pending I/O operation on a device will prevent the system from coming to an orderly halt. The only recourse is to manually halt the system after the =SHUTDOWN command.

EXAMPLE

```
=SHOWJOB
JOBNUM  STATE  IPRI  JIN   JLIST      INTRODUCED  JOB NAME
#S27    EXEC           22   22      WED  3:27P  FIELD.SUPPORT
#S15    EXEC           20   20      WED  1:21P  CHUCK.ODANIEL

2 JOBS:
  0 INTRO
  0 WAIT; INCL 0 DEFERRED
  2 EXEC; INCL 2 SESSIONS
  0 SUSP
JOBFENCE= 0; JLIMIT= 5; SLIMIT= 16
=WARN @;THE SYSTEM WILL SHUTDOWN IN FIVE MINUTES..PLS LOG-OFF
ST/15:30/#S15/LOGOFF
=WARN #27;PLEASE LOG-OFF..WE HAVE TO SHUT-DOWN FOR A COLD LOAD
```

=SHOWJOB

JOBNUM	STATE	IPRI	JIN	JLIST	INTRODUCED	JOB NAME
#S27	EXEC		22	22	WED 3:27P	FIELD.SUPPORT

JOBFENCE= 0; JLIMIT= 5; SLIMIT= 16

=ABORTJOB #S27

=RECALL

REPLY(S) PENDING:

?IO/15:32/#S27/21/LDEV# FOR "T" ON TAPE (NUM)

=REPLY 21,0

ST/15:33/#S27/LOGOFF

=SHUTDOWN

ST/15:33/ALL JOBS LOGGED-OFF

ST/15:33/SP#12/STOPPED

IO/15:33/LDEV#10 NOT READY

ST/15:33/SP#10/STOPPED

SHUT

OPERATOR FUNCTION: FORMATTING DISC PACKS

DESCRIPTION: This procedure describes a technique for formatting disc packs through the use of a stand-alone diagnostic called SLEUTH. This diagnostic is on a stand-alone magnetic tape.

STEP	PROCEDURE
1	Mount the cold-loadable magnetic tape containing SLEUTH on a magnetic tape drive. (Ensure that unit 0 is selected for the drive and it is on-line.)
2	Set the SYSTEM SWITCH REGISTER on the control panel to octal 003006.
3	While pressing (and holding) the ENABLE switch, press the LOAD switch. This action causes the first portion of the master diagnostic program to be read into main memory. The system will then halt.
4	Set the SYSTEM SWITCH REGISTER to the number which indicates the physical position of SLEUTH on the diagnostic magnetic tape. This number must be obtained from your HP Customer Engineer prior to execution.
5	Press the RUN/HALT switch. The system will search the magnetic tape for the SLEUTH program. It will read into main memory when found and the tape will rewind.
6	When the magnetic tape is back at the load point, the diagnostic is in execution.
7	Depress the carriage return key on the system console so that the electronic hardware can speed sense the console device. The console should print: DI SLEUTH 3000 (HP D411A.00.00) >10 You can now enter the dialogue necessary to format a disc pack.

NOTES:

The following examples for the various disc subtypes require the DRT number (DRTN) and the unit number (UNIT) to be inserted where applicable. These examples will suffice for the standard operations. However, you should consult your HP Customer Engineer to ensure that there have been no changes to the program before execution of these examples.

In all of the examples, when a pack has been formatted, you may restart the diagnostic again by continuing to type in new programs or restarting from step 1.

EXAMPLE

2888A Disc Pack

```
>10 DEV 0,DRTN,14,100,UNIT  
>10 NOFF  
>20 RC 0  
>30 PR  
>40 FMT 0  
>50 END  
>60 RUN
```

After the pack has been formatted, the diagnostic will prompt with:

```
>60
```

7900A Disc Pack

```
>10 DEV 0,DRTN,13,100,UNIT  
>10 FMT 0  
>20 END  
>30 RUN
```

After pack has been formatted, the diagnostic will prompt with:

```
>30
```

7905A Disc Pack

```
>10 DEV 0,DRTN,15,100,UNIT  
>10 FMT 0,9  
>20 END  
>30 RUN
```

After pack has been formatted, the diagnostic will prompt with:

```
>30
```

OPERATOR FUNCTION: FILE AND SYSTEM BACK-UP OPERATION

DESCRIPTION: This procedure describes a technique for copying (saving) the operating system, the current directory and accounting information, and either all of the user files or only those user files which have most recently been changed. It is the responsibility of you, the Console Operator, to tell all logged-on users of any scheduled system dump.

STEP	COMMAND	COMMENTS
1	=SHOWJOB	Are any users logged-on the system? If no jobs or sessions, go to step # 6.
2	=WARN @; msg	Warn all users of impending system dump. If all jobs and sessions log off, go to step # 6.
3	=WARN @, msg	Warn sessions still logged-on that open files will not be saved and users will not be able to open any files that are not open now.
4	=REPLY pin ,0	Outstanding allocation messages must be cleared. All jobs and sessions now should be logged-off.
5	=SESSION	Permit the console to be used for a session.
6	:HELLO <i>username, acctname</i>	Log-on to the system account (MANAGER.SYS).
7	:FILE <i>filename</i> ; DEV= <i>devclass</i>	Define the output file (device) on which the system is to be copied to. If the system is only saved on one device, go to step #9.
8	:FILE <i>filename</i> ; DEV= <i>devclass</i>	Define the file which contains all listings requested during the dialogue.
9	:SYSDUMP * <i>dumpfile</i> [, * <i>auxlistfile</i>]	Begin an interactive dialogue. To save the system and all files, the dialogue is as follows: <ol style="list-style-type: none"> 1 ANY CHANGES? NO You enter NO (or carriage return) to omit modification to the system. 2 ENTER DUMP DATE? 0 The Configurator copies the system, the account, group, user, file structure and all files on the system. 3 LIST FILES DUMPED? YES To obtain a listing showing the name of each file copied, enter YES. To suppress the list, enter NO. (A list showing the number of files copied, the number of files <i>not</i> copied, the names of the files not copied, and the reasons why they are not copied is always provided.)
		You are now requested to assign the magnetic tape to which you have arranged a magnetic tape to be mounted. After you reply, the system, all accounting structures, and all files on the system are copied to tape. If multiple reels of magnetic tape are required, you will be requested to mount the succeeding reels at the appropriate time. When the program has terminated, the system prints the following message: <p style="text-align: center;">END OF SUBSYSTEM</p>

NOTES

In the :SYSDUMP command, each *filename* is preceded with an asterisk to indicate a back-referencing :FILE command.

EXAMPLE

=SHOWJOB

JOBNUM	STATE	IPRI	JIN	JLIST	INTRODUCED	JOB NAME
#S27	EXEC		22	22	WED 3:27P	FIELD.SUPPORT
#S15	EXEC		20	20	WED 1:21P	CHUCK.ODANIEL

2 JOBS:

Ø INTRO
Ø WAIT; INCL Ø DEFERRED
Ø EXEC; INCL 2 SESSIONS
Ø SUSP

JOBFENCE= Ø; JLIMIT= 5; SLIMIT=16

=WARN @;A SYSTEM DUMP WILL BE TAKEN IN FIVE MINUTES..PLS LOG-OFF
ST/15:30/#S15/LOGOFF

=WARN @;OPEN FILES NOT SAVED..NOT ABLE TO OPEN FILES NOT OPEN NOW.

=SHOWJOB

JOBNUM	STATE	IPRI	JIN	JLIST	INTRODUCED	JOB NAME
#S27	EXEC		22	22	WED 3:27P	FIELD.SUPPORT

JOBFENCE= Ø; JLIMIT= 5; SLIMIT= 16

=ABORTJOB #S27

?I0/15:32/#S27/21/LDEV# FOR "T" ON TAPE (NUM)

=REPLY 21,Ø

ST/15:33/#S27/LOGOFF

=SESSION

:HELLO MANAGER.SYS

SESSION NUMBER = #S29

TUE, FEB 24, 1976, 2:48 PM

HP32002A.00.03

:FILE T;DEV=TAPE

:FILE LIST;DEV=LP

:SYSDUMP *T,*LIST

ANY CHANGES?

ENTER DUMP DATE?

LIST FILES DUMPED?

END OF SUBSYSTEM

:

OPERATOR FUNCTION: RESTORING USER FILES FROM SYSDUMP TAPES

DESCRIPTION: This procedure describes a technique for retrieving user files from SYSDUMP tapes; it permits you to restore those files which belong to a particular set of groups or accounts that exist on the disc.

STEP	COMMAND	COMMENTS
1	=SESSION	Activate the operator's console as a user terminal.
2	:HELLO <i>username</i> . <i>acctname</i>	Log-on to the system account (MANAGER.SYS).
3	:FILE <i>tapefile</i> ; DEV= <i>devclass</i>	Define the tape device for restoring the tape.
4	:FILE SYSLIST; DEV= { <i>ldn</i> <i>devclass</i> }	Define SYSLIST (the :RESTORE standard list file) to the desired list output device.
5	:RESTORE * <i>tapefile</i> [; <i>file.group.acct</i> ; SHOW]	Restore the user files and print a listing on the standard output device.
		An I/O message will request allocation of device.
6	=REPLY <i>pin</i> , <i>ldn</i>	Request to mount tape of designated tape drive.

NOTES

A file will be restored only if the account name, group name, and file creator exist on disc (in the system directory).

If a copy of a file to be restored already exists on disc, the user must have write access to the disc file (or System Manager/Supervisor capability) since it will be purged by :RESTORE. If this disc copy has a negative file code, the user must have Privileged Mode capability to restore it.

Files currently opened, loaded into memory, or being stored or restored, cannot be acted upon by a :RESTORE command. (Refer to Section VI of the *MPE System Manager/Supervisor Manual*.)

EXAMPLE

```
=SESSION
:HELLO MANAGER.SYS
SESSION NUMBER = #S29
TUE, FEB 24, 1976, 2:48 PM
HP32002A.00.80

:FILE BARB;DEV=TAPE
:FILE SYSLIST;DEV=LP
:RESTORE *BARB;SHOW
?I0/2:50/#S29/21/LDEV# FOR "T" ON TAPE (NUM)
=REPLY 21,0
```

The following is a list output of :RESTORE with SHOW and KEEP:

FILES RESTORED = 6				
FILE	.GROUP	.ACCOUNT	LDN	ADDRESS
DATA	.PUB	.SUPPORT	1	%23463
FTEST	.PUB	.SUPPORT	1	%24324
FTESTJ1	.PUB	.SUPPORT	1	%23741
FTESTJOB	.PUB	.SUPPORT	1	%23753
FTESTS	.PUB	.SUPPORT	1	%23765
PEOF	.PUB	.SUPPORT	1	%24354

FILES NOT RESTORED = 7				
FILE	.GROUP	.ACCOUNT	FILESET	REASON
FSMT	.PUB	.SUPPORT	1	ALREADY EXISTS
FSMTS	.PUB	.SUPPORT	1	ALREADY EXISTS
FTESTJ2	.PUB	.SUPPORT	1	ALREADY EXISTS
FTESTJ3	.PUB	.SUPPORT	1	ALREADY EXISTS
FTESTJX	.PUB	.SUPPORT	1	ALREADY EXISTS
JUNKJOB	.PUB	.SUPPORT	1	ALREADY EXISTS
PEOFS	.PUB	.SUPPORT	1	ALREADY EXISTS



OPERATOR FUNCTION: PERFORM COLD DUMP OPERATION

DESCRIPTION: This procedure describes a technique to initiate a cold dump operation which dumps all of memory to magnetic tape.

STEP	PROCEDURE
1	Mount a tape on unit 0 of the magnetic tape drive that is configured as the dump device (it usually is the tape drive in DRT #6).
2	If you have a Maintenance Control Panel, set the ERROR FREEZE switch to the INHIBIT position (down), otherwise go to step 3.
3	If the computer is in the RUN state, press the RUN/HALT switch. If the computer does not halt, be sure the panel is enabled (check the PANEL DSBL-ENBL switch) then press the CPU RESET switch.
4	While pressing (and holding) the ENABLE switch, press the DUMP switch; a number, usually octal 2006, will appear in the SYSTEM SWITCH REGISTER.
5	If the computer halts with the correct number for your memory size (64K, 96K, 128K, 160K, 192K, 224K, 256K) appearing in the CURRENT INSTRUCTION REGISTER, the dump is completed. If the computer does not halt with the correct address, mount another tape and go to step 4.

OPERATOR FUNCTION: TURNING LOGGING ON AND OFF

DESCRIPTION: This procedure describes a technique to turn on and off logging until the next cold load.

STEP	COMMAND	COMMENTS
1	=SESSION	Permit the console to be used for a session.
2	:HELLO <i>username</i> . <i>acctname</i>	Log on to the system account (MANAGER.SYS).
3	:FILE <i>filename</i> ; DEV= <i>devclass</i>	Define the output file (device) on which the system is to be copied to.
4	:SYSDUMP *dumpfile	Start a configurator dialogue.
5	<p>Answer the following questions:</p> <p>ANY CHANGES? Y</p> <p>SYSTEM ID = HP32002A.00.76</p> <p>MEMORY SIZE = < XXX > ? <i>return</i></p> <p>I/O CONFIGURATION CHANGES? <i>return</i></p> <p>SYSTEM TABLE CHANGES? <i>return</i></p> <p>MISC. CONFIGURATION CHANGES? Y</p> <p>LIST GLOBAL RINS? <i>return</i></p> <p>DELETE GLOBAL RINS ? <i>return</i></p> <p># OF RINS MIN =< YYY > , MAX =< XXX > . ? <i>return</i></p> <p># OF GLOBAL RINS USED = < YYY > , MAX = < XXX > . ? <i>return</i></p> <p># OF SECONDS TO LOGON = < XXX > ? <i>return</i></p> <p>MAX # OF CONCURRENT RUNNING SESSIONS = < XXX > ? <i>return</i></p> <p>MAX # OF CONCURRENT RUNNING JOBS = 1 . ? <i>return</i></p> <p>DEFAULT JOB CPU TIME LIMIT = < XXXXX > . ? <i>return</i></p> <p>LIST MESSAGE CATALOG? <i>return</i></p> <p>MESSAGE CATALOG CHANGES ? <i>return</i></p> <p>LOGGING CHANGES ? Y</p> <p>LIST LOGGING STATUS? Y</p> <p>To print a list of the events that can be logged and whether or not they are currently being logged, enter YES.</p> <p>To suppress the listing, enter NO.</p> <p>STATUS CHANGES? Y</p> <p>To prepare for changes to the logging status, enter YES.</p> <p>ENTER TYPE , ON/OFF? 1,ON</p> <p>ENTER TYPE, ON/OFF? <i>return</i></p> <p>You should enter the type number of the event, a comma, and ON to signify that it is to be logged or OFF to signify that it is not.</p> <p>LIST LOGGING STATUS? NO</p> <p>LOG FILE RECORD SIZE (SECTORS) = < XX > . ?</p> <p>LOG FILE SIZE (RECORDS) = < XXXXX > . ?</p> <p>DISC ALLOCATION CHANGES? <i>return</i></p>	

STEP	PROCEDURE
	SCHEDULING CHANGES? <i>return</i> SEGMENT LIMIT CHANGES? <i>return</i> SYSTEM PROGRAM CHANGES? <i>return</i> SYSTEM SL CHANGES? <i>return</i> ENTER DUMP DATE? <i>return</i>
	You are now requested to assign the magnetic tape to which you have arranged a magnetic tape to be mounted. After you reply, the system, all accounting structures, and all files on the system are copied to tape. If multiple reels of magnetic tape are required, you will be requested to mount the succeeding reels at the appropriate time.
	When the program has terminated, the system prints the following message: END OF SUBSYSTEM

NOTES

Refer to the *MPE System Manager/Supervisor Manual* (Section VI), to help you answer the questions asked in step 5 or any other questions that may be used by the configurator.

EXAMPLE

```

=SESSION
:HELLO MANAGER.SYS
USER PASSWORD?
#####
  SESSION NUMBER = #S15
  TUE, FEB 24, 1976, 2:48 PM
  HP32002A.00.03

:FILE T;DEV=TAPE
:SYSDUMP *T

ANY CHANGES? Y
SYSTEM ID = HP32002A.00.03.?
MEMORY SIZE = 192.?
I/O CONFIGURATION CHANGES?
SYSTEM TABLE CHANGES?
MISC CONFIGURATION CHANGES? Y
LIST GLOBAL RINS?
DELETE GLOBAL RIN?
# OF RINS MIN = 5, MAX = 48.?
# OF GLOBAL RINS USED = 0, MAX = 0.?
# OF SECONDS TO LOGON = 120.?
MAX # OF CONCURRENT SESSIONS = 48.?
MAX # OF CONCURRENT RUNNING JOBS = 40.?
DEFAULT JOB CPU TIME LIMIT = 0.?
LIST MESSAGE CATALOG?
MESSAGE CATALOG CHANGES?

```

LOGGING CHANGES? Y
 LIST LOGGING STATUS? Y

TYPE	EVENT	STATUS
1	LOGGING ENABLED	ON
2	JOB INITIATION	ON
3	JOB TERMINATION	ON
4	PROCESS TERMINATION	ON
5	FILE CLOSE	ON
6	SYSTEM SHUTDOWN	ON
7	POWER FAIL	ON
8	SPOOLING	ON
9	LINE DISCONNECTION	ON
10	LINE CLOSE	ON
11	I/O ERROR	ON

STATUS CHANGES? Y
 ENTER TYPE , ON/OFF? 1,ON
 ENTER TYPE , ON/OFF?
 LIST LOGGING STATUS? NO
 LOG FILE RECORD SIZE (SECTORS) = 8.?
 LOG FILE SIZE (RECORDS) = 1024.?
 DISC ALLOCATION CHANGES?
 SCHEDULING CHANGES?
 SEGMENT LIMIT CHANGES?
 SYSTEM PROGRAM CHANGES?
 SYSTEM SL CHANGES?
 ENTER DUMP DATE?

END OF SUBSYSTEM

:

MESSAGES

SECTION

VI

The system console can be used to send messages to users, to reply to messages from the MPE system, and to receive messages from the system and from users.

The four possible formats for messages output to the system console are shown in Table 6-1.

Table 6-1. Message Formats

FORMAT NO.	FORMAT
0	? <i>prefix/time/PIN/message reply type</i>
1	<i>prefix/time/message</i>
2	? <i>prefix/time/#</i> $\left. \begin{matrix} \text{J} \\ \text{S} \end{matrix} \right\}$ <i>number/PIN/message reply type</i>
3	<i>prefix/time/#</i> $\left. \begin{matrix} \text{J} \\ \text{S} \end{matrix} \right\}$ <i>number/message</i>

Each type of message may have any one of the following *prefixes*.

ST (status)

IO (input/output)

MS (message from user)

Time is the time the message was sent.

PIN is the process identification number of the message sender.

#J number is the job number of the sender.

#S number is the session number of the sender.

Message is an ASCII string input by the sender.

The two types of messages issued to help you diagnose various errors received from the system are:

1. Status (ST) Messages
2. I/O Messages

These messages are discussed in this section, along with the messages received from the users. Messages sent to users (=TELL and =WARN), and replies to messages from the system (=REPLY) are discussed in Section III, Commands.

STATUS MESSAGES

Status (ST) messages will give you the status of job/sessions, devices and devicefiles encountered during system operation. Table 6-2 contains a listing of the status message formats.

I/O MESSAGES

I/O message formats are shown in table 6-3. These messages may appear while requesting certain actions of the I/O devices.

MESSAGES FROM USERS

If a user sends a message to you, the message is printed on the system console in the following form:

MS/time/jsnum/message

where

time is the time the message was sent.

jsnum is the job or session number assigned to the user who sent the message.

message is an ASCII string input by the user.

Table 6-2. Status Messages

MESSAGE	MEANING	RECOVERY PROCEDURE
ALL JOBS LOGGED OFF	You aborted all executing jobs with a =LOGOFF or you shut down the system (=SHUTDOWN).	You must enter the =LOGON command to re-establish the pre-log off limits.
DATA COMMAND ERROR <i>number, number</i> ON LDEV <i># ldn</i>	A data command error was detected on the indicated device (the bracketed numbers are the command interpreter error numbers).	The system detected an invalid :DATA command. Correct syntax for command is: :DATA(<i>jobname</i>), <i>username</i> (<i>userpass</i>) .acctname(<i>acctpass</i>)(<i>filename</i>) Most common errors-undefined user or account specified, or groupname specified (not required).
DATA IN INVALID DEVICE, LDEV <i># ldn</i>	A user input :DATA on a non-data accepting device.	If not user error, use =ACCEPT DATA, <i>ldn</i> command to allow :DATA from this device.
DEFERRED JOB INTRODUCED ON LDEV <i># ldn</i>	A user entered a batched job on a logical device (<i>ldn</i>) whose input priority is less than the currently defined job fence.	You must intervene by either lowering the job fence or raising the job's input priority.

Table 6-2. Status Messages (Continued)

MESSAGE	MEANING	RECOVERY PROCEDURE
:HELLO COMMAND ERROR <enum,pnum> ON LDEV # ldn	A :HELLO command error was detected on the indicated <i>ldn</i> which cannot be printed on the default list device. (<i>enum</i> and <i>pnum</i> correspond to command interpreter error and parameter numbers, respectively.)	If not user error, use =ACCEPT JOBS, <i>ldn</i> to enable :HELLO from this device.
:HELLO ON INVALID DEVICE, LDEV # ldn	A user input :HELLO either on a non job-accepting device or on a non-interactive device.	If not user error, use =ACCEPT JOBS, <i>ldn</i> to enable :HELLO from this device.
ILLEGITIMATE ACCESS ON LDEV # ldn (fully qualified jobname)	You made one of the following errors: <ol style="list-style-type: none"> 1. A user specified a non-existent account, user or group. 2. A user specified an illegal password. 3. A user did not specify a group and no home group was assigned by default. Fully qualified jobname= (<i>jobname</i> ,) <i>username.acctname</i>	If the accessor is a legitimate user of the system, instruct him to: <ol style="list-style-type: none"> 1. Specify the proper account name, user name or group. 2. Specify the proper password. 3. Specify a group name.
:JOB COMMAND ERROR <enum,pnum> ON LDEV # ldn	A :JOB command error was detected on the indicated <i>ldn</i> which cannot be printed on the default list device. (<i>enum</i> and <i>pnum</i> correspond to command interpreter error and parameter numbers, respectively.)	If the accessor is a legitimate user of the system, instruct him to consult the list of command interpreter error messages, correct his :JOB command and resubmit the job. (Refer to the <i>MPE Commands Manual</i> .)
JOB ON INVALID DEVICE, LDEV # ldn	A user input a :JOB on a non job-accepting device.	If not a user error, use the =ACCEPT JOBS, <i>ldn</i> to allow :JOBS from this device.
JOB OVERLOAD,TYPE <i>number</i>	It was not possible to initiate a job because of insufficient system resources, as indicated by the TYPE number: <ol style="list-style-type: none"> 0 = no process control block (PCB) available 1 = no data segment table (DST) available for stack 2 = no DST available for job information table (JIT) 	Recovery of this type of overload is automatic. However, if the condition occurs frequently it indicates a chronic condition that should be remedied. The System Manager can enlarge the number of entries in the appropriate table using the :SYSDUMP command.

Table 6-2. Status Messages (Continued)

MESSAGE	MEANING	RECOVERY PROCEDURE
	<p>3 = no DST available for job directory table (JDT)</p> <p>4 = no job process count table (JPCNT) entry available</p>	
LDEV # <i>Idn</i> IN USE BY DIAGNOSTICS	You have attempted to bring UP a device without first TAKEing it from diagnostics.	With the =TAKE command, get the device from diagnostics, then bring the device =UP.
LDEV # <i>Idn</i> IN USE BY FILE SYSTEM	You have attempted to assign a device to diagnostics without taking the device off-line.	With the =DOWN command, take the device off-line then assign the device to diagnostics using the =GIVE command.
LDEV # <i>Idn</i> IN USE, DOWN PENDING	You have issued a =DOWN command, but the device is in use by the file system.	As soon as the use-count goes to zero, the device will be DOWNed and you will be notified.
LDEV # <i>Idn</i> OFFLINE	You are trying to access a device that is no longer available to the file system.	If the device is functional, use the =UP <i>Idn</i> command to place device on-line.
LOG FILE NUMBER <i>number</i> ERROR # <i>number</i> . LOGGING STOPPED	A fatal log file error occurred. Logging is disabled. (Refer to the error numbers explained in Section VI of the <i>MPE System Manager/Supervisor Manual</i> .)	To re-enable logging after this error you must shut the system down (when convenient) and Coolstart the system.
LOG FILE NUMBER <i>number</i> ERROR # <i>number</i> . LOGGING SUSPENDED	A recoverable Log File error occurred. Logging is temporarily suspended. (Refer to the error numbers explained in Section VI of the <i>MPE System Manager/Supervisor Manual</i> .)	Recovery is very dependent upon cause of error. Most likely errors are log file space problems or duplicate log file names. To re-enable logging, the System Manager or a user with System Supervisor (OP) capability must enter the :RESUMELOG command.
LOG FILE NUMBER <i>number</i> IS 1/2 FULL	The total space now occupied by the log file data is half the allotted file size.	Information only.
LOG FILE NUMBER <i>number</i> IS 3/4 FULL	The total space now occupied by the log file data is 3/4 the allotted file size.	Information only.
LOG FILE NUMBER <i>number</i> . LOGGING RESUMED	You successfully executed a :RESUMELOG command.	Information only.
LOG FILE NUMBER <i>number</i> ON	The System Supervisor created a new log file. This message always appears before the	Information only.

Table 6-2. Status Messages (Continued)

MESSAGE	MEANING	RECOVERY PROCEDURE
	WELCOME message after cold load. When this message appears while the system is running, it indicates that the previous current log file has been closed. File name is LOGxxxx where xxxx = number (with leading zeros).	
LOGOFF	A job has logged off.	Information only.
LOGON FOR: <i>fully qualified jobname</i> ON LDEV# <i>ldn</i>	A job has logged on.	Information only.
MAX SPOOFLE KILOSECTORS IN USE, ALL QUEUES SHUT	The configured maximum number of spooled device file kilosectors are in use. MPE shut all output queues (equivalent to =SPOOL <i>ldn</i> , SHUTQ), so that users are automatically prevented from creating new spooled devicefiles.	When space becomes available, you may reopen the queues with the =SPOOL <i>ldn</i> , OPENQ command.
NO MORE SPACE IN SPOOL CLASS, ALL QUEUES SHUT	There is no more space in the (disc) class SPOOL. MPE shut all output ques (equivalent to =SPOOL <i>ldn</i> , SHUTQ), so that users are automatically prevented from creating new spooled devicefiles.	When space becomes available, you may reopen the queues with the =SPOOL <i>ldn</i> , OPENQ command.
SP# <i>ldn</i> /#O <i>devicefileid</i> DEFERRED	The output spooler on the specified <i>ldn</i> has deferred the spooled devicefile with the specified devicefile identification (#O <i>devicefileid</i>), due to some action made by you (e.g., refusing a spooler's forms request).	To allow the deferred devicefile to resume output use the =ALTFILE # <i>Oxxx</i> ; OUTPRI=K (where K is a value above the current outfence).
SP# <i>ldn</i> /#O <i>devicefileid</i> DEFERRED, SPOOFLE IO ERROR	The output spooler on <i>ldn</i> has deferred the spooled devicefile with the specified devicefile identification (#O <i>devicefileid</i>) due to a disc I/O error or an unexpected end of file. (Commonly seen when listing an incomplete spooled file after a WARMSTART.)	To allow the deferred devicefile to resume output use the =ALTFILE # <i>Oxxx</i> ; OUTPRI=K (where K is a value above the current outfence). To delete the file use the =DELETE # <i>Oxxx</i> command.

Table 6-2. Status Messages (Continued)

MESSAGE	MEANING	RECOVERY PROCEDURE
SP# <i>ldn</i> /#1 <i>devicefileid</i> DELETED, SPOOFLE IO ERROR	The input spooler on the specified spooler <i>ldn</i> has deleted the spooled devicefile with the specified devicefile identification due to a disc I/O error, or a problem obtaining disc space.	Make sure that a sufficient space exists for the spooled devicefile. Have the System Manager :RUN FREE2.PUB.SYS Check free space for all SPOOL class discs. =DELETE unreferenced spooled devicefiles if possible. Allow output spoolers to free up space and try input operation again. Try to recover lost disc space by doing a COOLSTART. If trouble is not disc space, then a disc I/O error is indicated.
SP# <i>ldn</i> /SPOOLED IN	The spooler on the specified spooler <i>ldn</i> has begun input spooling.	Information only.
SP# <i>ldn</i> /SPOOLED OUT	The spooler on the specified spooler <i>ldn</i> has begun output spooling.	Information only.
SP# <i>ldn</i> /STOPPED	A normal termination of a spooler on the specified spooler <i>ldn</i> is confirmed.	Information only.
SP# <i>ldn</i> /STOPPED, NO SUCH DEVICE	You attempted to initiate a spooler on an undefined spooler <i>ldn</i> .	Information only.
SP# <i>ldn</i> /STOPPED, SPOOFLE IO ERROR	The input spooler on the specified spooler <i>ldn</i> has detected a disc I/O error or a problem obtaining disc space for a spooled devicefile; the spooler stops and the active devicefile is deleted.	Make sure that sufficient space exists for the spooled devicefile. Have the System Manager :RUN FREE2.PUB.SYS Check free space for all SPOOL class discs. =DELETE unreferenced spooled devicefiles if possible. Allow output spoolers to free up space and try input operation again. If trouble is not disc space then a disc I/O error is indicated.
SP# <i>ldn</i> /STOPPED, SPOOLEE NOT ACCEPTING	The specified <i>ldn</i> is neither :JOB nor :DATA accepting, causing the input spooler to stop (it cannot recognize further :JOB or :DATA commands).	Use the =ACCEPT [<i>JOB</i> , <i>DATA</i> ,] <i>ldn</i> and =SPOOL <i>ldn</i> , STARTIN commands to restart the input spooler.

Table 6-3. I/O Messages

MESSAGE	MEANING	RECOVERY PROCEDURE
CAN'T INITIALLY SPOOL LDEV# <i>Idn</i>	You configured a <i>Idn</i> to be initially spooled. You did not specify a legitimate spooler (<i>Idn</i>) or you did not specify a <i>Idn</i> that was job/session accepting or data-accepting.	This indicates a system configuration error. The device specified cannot be spooled. The =ACCEPT [JOBS, DATA,] <i>Idn</i> command can be used to allow :JOBS or :DATA, if the device is a legitimate spooler. Then start spooler with =SPOOL <i>Idn</i> , STARTIN.
FORMS: <i>formsmsg</i>	A user has requested special forms to be mounted on a line printer. The devicefile and jobnum are printed on a following device assignment request by the PIN (Process Identification Number).	Information only.
IS FILE <i>filename</i> ON LDEV# <i>Idn</i>	You are asked by the system whether the specified file is on the specified <i>Idn</i> .	You are required to =REPLY with YES or NO.
LDEV# FOR <i>filename</i> ON <i>classname</i>	You are asked by the system whether the logical device is for the specified file on the specified class.	You are required to =REPLY with a <i>Idn</i> . (If the REPLY is a 0 (zero), the device is denied.)
LDEV# <i>Idn</i> FORMS ALIGNED OK?	You are asked by the system, following the printing of the standard "forms alignment image", if the FORMS are positioned correctly on the specified <i>Idn</i> .	You are required to =REPLY with YES or NO. If the image is correctly positioned, =REPLY YES and the requesting program will continue. If the image is not correctly positioned, reposition the forms and =REPLY NO (this will cause the alignment image to be printed again and the question will be re-issued).
LDEV# <i>Idn</i> INVALID HOLLERITH COL# <i>column number</i>	The data from a defective card was not transferred. (The error applies only to a card reader).	You need to fix the card, put it back in the hopper, and ready the device.
LDEV# <i>Idn</i> NOT READY	You did not ready the indicated device.	Information only.
LDEV# <i>Idn</i> NO WRITE RING	You did not put on a WRITE ring.	To allow the process to continue, you will need to remove the reel, put on a write ring, remount the reel and ready the unit. (To abort the I/O request ready the unit without putting in a write ring.)

Table 6-3. I/O Messages (Continued)

MESSAGE	MEANING	RECOVERY PROCEDURE
LDEV# <i>Idn</i> PAPER OUT	You ran out of paper on the indicated device.	You need to install the paper, press PAGE EJECT, and ready the device.
LDEV# <i>Idn</i> QUEUE EMPTY	You attempted an =ABORTIO and no requests were pending on the device.	Information only.
LDEV# <i>Idn</i> TRANSFER ERROR	The data was not transferred.	You need to put the last card read back in the hopper and ready the device. (The error applies only to card readers.)
MOUNT NEXT REEL ON LDEV# <i>Idn</i>	You are asked to mount the next tape for multi-reel files on magnetic tape and paper tape reader.	You need to mount the tape on the indicated device and ready the unit.
MOUNT REEL# number ON LDEV# <i>Idn</i>	You are asked to mount the next indicated tape required on the indicated device for multi-reel RESTOREs. (The REEL# is the sequence number (2 for 2nd, 3 for 3rd, etc.)	You need to mount the tape and ready the indicated device.
NEW TAPE REQD. ON LDEV# <i>Idn</i> . IS TAPE MOUNTED?	You did not mount the tape on the indicated device.	You need to put a new tape in the paper tape punch and =REPLY with a YES.
SP# <i>Idn</i> /#O devicefileid PREVIOUS FORMS ASSUMED	The output spooled devicefile with the indicated devicefile identification is about to be copied to the spooler <i>Idn</i> , but it was previously deferred while forms were mounted. The spooler assumes these forms are currently mounted on the indicated device (<i>Idn</i>).	If correct forms are not mounted, physically stop the printer and enter =SPOOL <i>Idn</i> ,DEFER. Mount correct forms and resume output with =ALTFILE # <i>Oxxx</i> ; OUTPRI=14.
SP# <i>Idn</i> /STOPPED, SPOOLEE IO ERROR	The spooler on the indicated spooler <i>Idn</i> has detected an error in attempting to read, write, or control its spooler. The spooler stops immediately: an input spooler will delete any currently ACTIVE spooled device file, while an output spooler will defer (set OUTPRI to 0) any currently ACTIVE spooled device file. This	Try and restart the spooler: =SPOOL <i>Idn</i> ,STARTIN (input) =SPOOL <i>Idn</i> ,STARTOUT (output) If problem persists the device or the medium (cards, magnetic tape, etc.) is faulty.

Table 6-3. I/O Messages (Continued)

MESSAGE	MEANING	RECOVERY PROCEDURE
	generally indicates a hardware problem, but can also occur in response to an =ABORTIO command.	
SP# <i>spoolenumber</i> / IS <i>jobnum</i> ; filename ON LDEV# <i>ldn</i>	You are asked to verify that you did request <i>jobnum</i> ; <i>filename</i> forms on the device (<i>ldn</i>) indicated.	You need to =REPLY with a YES, which means they are requested, or NO, which means to reject the request.
SP# <i>spoolenumber</i> / LDEV# FOR: <i>jobnum</i> ; filename ON <i>devclass</i>	You are requested device assignment (or rejection, 0) following a forms request for spooled devicefiles.	You need to =REPLY with a <i>ldn</i> to assign the correct printer (with forms to the requesting job/session).
STANDARD FORMS	You have special forms mounted on a device, and a devicefile not requiring special forms is assigned to the device.	You need to reply to the message by entering a =REPLY YES if standard forms are mounted or NO if special forms are mounted and printing is to be deferred.
WRONG REEL ON LDEV# <i>ldn</i> . ANOTHER AVAILABLE?	When doing multi-reel RESTOREs, you allocated tapes in the wrong order, or you mounted a tape which was not in this tape set.	If another reel is available, you need to =REPLY with a YES and mount the new reel on the logical device specified in the message. If not, =REPLY NO.

COLD LOAD HALTS

APPENDIX

A

While cold loading the system, one of the error messages shown in Table A-1 may appear. MPE will output a special message on the operator console and halt. There are hardware halts that also occur while cold loading the system, as shown in Table A-3.



Table A-1. Cold Load Error Messages

MESSAGE	MEANING	RECOVERY PROCEDURE
BAD DISC ADDRESS	An address greater than the available number of sectors on the disc driver. This indicates an error internal to the system.	Attempt to COLDSTART from another tape. If this fails attempt a RELOAD; if this fails use the disc diagnostic to re-format all discs and try to RELOAD again. If RELOAD is unsuccessful contact your HP Customer Engineer.
BAD FILE ADDRESS	You attempted to write outside the range of one of the system files.	You should attempt a RELOAD. If this is unsuccessful use the disc diagnostic to re-format all discs and try to RELOAD again. If this fails contact your HP Customer Engineer.
COLD LOAD TAPE READ ERROR	A tape-read error was detected during the cold load operation.	You should clean the tape heads and re-try. If this is unsuccessful, try a different tape (any tape produced by :SYSDUMP with the current version of the operating system being cold loadable).
DIRECTORY ERROR A = < A >, B = < B >	An error occurred while accessing the directory. (Refer to Table A-2.)	
DISC SPACE ERROR	A conflict exists between the disc free-space map and the space used as defined in the directory.	You should attempt a RELOAD. If RELOAD is unsuccessful use the disc diagnostic to reformat all discs then attempt to RELOAD again. If this fails contact the HP Customer Engineer.
DISC DRIVER DOES NOT EXIST	You attempted a transfer to a disc with a type or subtype unknown to the system, which indicates a disc error has occurred on the specified logical device.	You should attempt to cold load again. If any non-standard drivers (non-HP I/O Drivers) are in the configuration they should be deleted. See <i>Operator Functions</i> , <i>Deleting an I/O Device</i> in Section V. If this fails attempt to Cold Load from a different tape. If this fails try to RELOAD. If this fails run the disc diagnostic to format all

Table A-1. Cold Load Error Messages (Continued)

MESSAGE	MEANING	RECOVERY PROCEDURE
		discs and try to RELOAD again. If RELOAD is unsuccessful contact your HP Customer Engineer.
DISC { READ } { WRITE } ERR ON { SEEK } LDEV# < LDEV > STATUS= % < STATUS > ADDR=% < ADDR > WORDS= < WORDS >	A disc error has occurred on the specified ldn.	You should cold load again as you will be prompted to take action on the bad track.
EOF	An attempt has been made to read past the end of one of the system files.	You should attempt a RELOAD. If this fails use a different system tape and try again. If this fails contact your HP Customer Engineer.
IMPROPER TAPE FORMAT	The information on the tape you used for RELOAD does not agree with the format of tapes produced by the :STORE and :SYSDUMP commands.	You should locate the correct tape set and start the RELOAD operation again. If you are sure the tape set you are using was produced by :SYSDUMP go back to a previous generation of back up tapes and try again. Use a different tape drive if possible. If that fails contact your HP Customer Engineer.
IOP ERROR	An impossible status indication was returned by the tape controller, indicating a failure in the controller or the input/output processor.	This message is always caused by a hardware problem and is not usually recoverable. Try the cold load operation again. If successful or not, contact your HP Customer Engineer and inform him of this error. It can indicate IOP, controller, or memory errors.
MOUNT CORRECT VOLUMES OR RELOAD	On a COOLSTART, COLDSTART or UPDATE, not all of the previously-defined volumes were found.	You should either mount the correct volumes and start the COOLSTART, COLDSTART or UPDATE over, or you should RELOAD.
OUT OF BOOTSTRAP DISC SPACE	The 30 sectors of the system disc allocated to the bootstrap program and certain tables have been exceeded; this is an error internal to the system.	You should attempt to RELOAD the system. If this fails attempt to RELOAD from a different tape set. If you are still unsuccessful contact your HP Customer Engineer for assistance.
OUT OF MEMORY	The amount of space needed to build the main-memory resident portion of the system, and contain one segment of the Initiator program and its associated tables, has exceeded the available memory size (usually 64K).	The Initiator program requires a minimum of 64K words (128K bytes) to run. If the system has been configured incorrectly below this value during a cold load, correct the error and try again. If the tables configured have memory sizes greater than 64K words, then all resident tables must reside in bank 0. If the system tape you are using for cold load was configured in error it can

Table A-1. Cold Load Error Messages (Continued)

MESSAGE	MEANING	RECOVERY PROCEDURE
		be corrected by changing the memory size via the Initiator dialog. (See <i>Operator Functions</i> in Section V.
OUT OF SYSTEM DISC SPACE	The virtual memory, directory, and system file disc space required exceeds that available on the system disc. Usually, the system disc is cluttered with user files and an attempt is made to update to a new system.	The System Manager/Supervisor must create a new system tape to correct the problem. It may be necessary to use the previous system tape to bring up MPE, then delete the files on system disc.
PREVIOUS RELOAD ABORTED; MUST RELOAD	The last cold load was a RELOAD that was aborted.	You must cold load again with a RELOAD.
PREVIOUS TAPE COLD LOAD ABORTED :MUST COLD LOAD FROM TAPE	The last cold load was a COLDSTART or UPDATE that was aborted.	You must cold load again with COLDSTART, UPDATE or RELOAD.
READING BLANK TAPE	There is either a defective tape or a defective tape controller. (Reported by the magnetic tape controller.)	You should try to cold load using a known good system tape. If this fails contact your HP Customer Engineer.
SYSTEM TABLE ON DEFECTIVE TRACKS – CANNOT WARMSTART	At least one of the tables (DST Descriptor table, JMAT, IDD or ODD) which must be recovered for a WARMSTART is located on defective tracks.	You may attempt either a COOLSTART, COLDSTART, or RELOAD. You will be requested to take some action on the defective track. See <i>Operator Functions</i> , Defective Disc Track Operations in Section V.
TAPE I/O CMD REJECTED	There is a defective tape controller (Reported by the magnetic tape controller.)	If possible, you should try another tape drive. If this fails, contact your HP Customer Engineer.
TAPE PARITY ERROR	A parity error was detected while reading the magnetic tape.	You should clean the tape heads and try again. If the problem persists try another system tape, or try another tape drive if possible. If this fails contact your HP Customer Engineer.
TAPE TRANSFER ERROR	There is either a defective tape or a defective tape controller. (Reported by the magnetic tape controller.)	You should clean the tape heads and try again. If the problem persists try another system tape, or try another tape drive if possible. If this fails contact your HP Customer Engineer.
TAPE UNIT WENT NOT READY	There is either a bad tape controller or you switched the tape unit off-line during an operation.	You should make sure the unit is selected and ready. If the HP 3000 Control Panel and Maintenance Panel are available, select the P register and display; set the SYSTEM SWITCH REGISTER to the P value plus 2 and load P register. Press the RUN/HALT switch. If the panels are not available, the error is not recoverable.

Table A-1. Cold Load Error Messages (Continued)

MESSAGE	MEANING	RECOVERY PROCEDURE
TIMING ERROR	There is a bad tape controller. (Reported by the magnetic tape controller.)	You should contact your HP Customer Engineer.
VOLUME TABLE DESTROYED; MUST RELOAD	The Volume Table maintained on the system disc has been overwritten.	You must RELOAD the system.

Table A-2. Directory Errors

A = 1 DUPLICATE FILENAME DETECTED	B = NOT RELEVANT
A = 2 NON-EXISTENT NAME AT SOME POINT IN THE SEARCH	B = THE NON-EXISTENT NODE IN THE FORM OF A NUMBER AS FOLLOWS: 0 = FILE 1 = GROUP 2 = ACCOUNT 3 = USER
*A = 3 USER DOES NOT HAVE "SAVE" ACCESS	B = THE ACCESS LEVEL TO WHICH USER DOES NOT HAVE ACCESS IN THE FORM OF A NUMBER AS FOLLOWS: 1 = GROUP 2 = ACCOUNT
A = 4 NO ROOM. CANNOT ACCOMMODATE ANY MORE ENTRY BLOCKS IN DIRECTORY.	B = PERCENTAGE OF TOTAL ENTRY SPACE ACTUALLY IN USE.
*A = 5 NO ROOM. MORE THAN 65K ENTRIES IN DIRECTORY.	B = NOT RELEVANT
A = 6 NO ROOM. CANNOT ACCOMMODATE MORE CONTIGUOUS BLOCKS IN DIRECTORY.	B = NUMBER OF CONTIGUOUS BLOCKS BEING REQUESTED.
*A = 7 ENTRY CANNOT BE PURGED BECAUSE IT IS BUSY.	B = NOT RELEVANT
*A = 8 FILE SPACE LIMIT EXCEEDED	B = THE PERMANENT FILE SPACE REQUESTED HAS BEEN EXCEEDED FOR THE NODE IN THE FORM OF A NUMBER AS FOLLOWS: 1 = GROUP 2 = ACCOUNT
* Invalid error conditions for the Initiator only.	

Table A-3. Hardware Halts List

SEGMENT NAME (OR CST NUMBER) (snum)	APPROX. DELTA-P (snum)	HALT ARGUMENT	PROCEDURE NAME	OFFSET IN PROCEDURE	CAUSE	ACTION
1		1			Power fail	Cold load
1		2			Power on	Cold load
1		3			Stack overflow	Run diagnostic
1		4			Module interrupt	Run diagnostic
1		0			Console interrupt	Cold load
1		0			Cold load	Run diagnostic
1		0			(Unused internal interrupt)	Run diagnostic
1		0			(Unused internal interrupt)	Run diagnostic
1		11			Module error	Run diagnostic
1		12			Parity error	Run diagnostic
1		13			Stack underflow or CST/STT violation	Run diagnostic
1		14			Code segment absent before code segment swapping started.	Run diagnostic
1		15			STT entry uncallable	Run diagnostic
1		0			Trace trap	Run diagnostic
1		0			Traps	Run diagnostic
DIRECTORY2 (26)	223	0	USERCLEAN	23	Bad call from DIRESCAN.	Reload
DIRECTORY2 (26)	554	0	DIRECTORY-CLEAN	314	Bad call from DIRESCAN.	Reload
SETUP(32)	1062	0	DIRERROR	127	Halts after printing error message*	Cold load
RESIDENT(36)	1142	0	DISCERROR	220	Halts after printing error message*	Cold load
BOOTSTRAP (37)	114	5	BOOTSTRAP	62	Bad disc cold load information table	Reload
BOOTSTRAP (37)	2616	0	MHDISK	523	Disc seek error while in bootstrap.	Run diagnostic on system disc.
BOOTSTRAP (37)	3043	0	MHDISK	1050	Disc read/write error while in bootstrap.	Run diagnostic on system disc.
BOOTSTRAP (37)	1460	0	MH7905	1257	Disc read/write error while in bootstrap.	Run diagnostic on system disc.

Table A-3. Hardware Halts List (Continued)

SEGMENT NAME (OR CST NUMBER) (snum)	APPROX. DELTA-P (snum)	HALT ARGUMENT	PROCEDURE NAME	OFFSET IN PROCEDURE	CAUSE	ACTION
BOOTSTRAP (37)	3433	0	FHDISK	222	Disc error while in bootstrap.	Run diagnostic on system disc.
BOOTSTRAP (37)	3617	4	ERRMESSAGE	7	Halts after printing error message.*	Cold Dump
*Error message printed on console. Please refer to Table A-1 in this section for a list of these messages.						

SYSTEM FAILURES

APPENDIX

B

System failures result in system failure messages followed by a halt. These occur *only* during system initialization; MPE must be in control (up and running) to receive these messages. MPE halts by executing the HALT 15 (% 030377) instruction in the current instruction register (CIR).

System failures fall into seven categories:

1 - 99	System Internals
100 - 199	Memory Management
200 - 299	I/O System
300 - 399	Process and User Related
400 - 499	File System
500 - 599	User Interface
900 - 999	Miscellaneous

When a pre-defined system failure occurs, MPE outputs a message on the console, as shown in the following format:

```
****SYSTEM FAILURE # enum; STATUS snum; DELTAP pnum
```

where

enum is the error number that identifies the type of error.

snum is the code segment number from which the system failure was called.

pnum is the program counter (delta-P) off-set.

For a discussion of any particular message, please see Table B-1. This table shows the system failure error numbers, the names of the procedures in which the failure was detected, the cause of the errors, and what action you should take in response to the messages. Notice, that a list of abbreviations used in Table B-1 is shown in Table B-2.

Besides the system failures you may receive, there are other failures that may occur. These failures are detected by abnormal behavior of the system, such as:

- No response on one or more terminals.
- No system activity (a lasting PAUSE instruction in the CIR will occur).
- System halt light is lit (hardware halt).
- Negligible throughput.

Under these circumstances a COLD DUMP should be initiated.

Table B-1. System Failure List (System Internals)

ERROR NUMBER	PROCEDURE NAME	CAUSE	ACTION
1	REQUCOP	UCOP request list full	Enlarge the UCOP table (see your System Manager).
2	TIMER	I/O failure to clock	Hardware problem, run diagnostic if it re-occurs.
3	TIMEREQ	Timer request list full	Enlarge the table (see your System Manager).
4	PSEUDOINT	Illegal pseudo interrupt	Perform a Cold Dump.
5	RESETDB	Absolute DB = 0	Perform a Cold Dump.
6	EXCHANGEDB	Called with absolute DB	Perform a Cold Dump.
7	TICK	I/O failure to clock	Hardware problem, run diagnostic if it re-occurs.
8	TESTCRUNCH	Bounds violation, illegal address, non-responding module when CPCB = 0	Perform a Cold Dump.
9	TESTCRUNCH	Bounds violation, illegal address, non-responding module on ICS	Perform a Cold Dump.
10	TESTCRUNCH	Bounds violation, illegal address, non-responding module in intrinsic	Perform a Cold Dump.
11	SYSTEMPARITY	System parity error	Hardware problem, run diagnostic if it re-occurs.
12	ADDRESSPARITY	Address parity error	Hardware problem, run diagnostic if it re-occurs.
13	DATAPARITY	Data parity error ^①	Hardware problem, run diagnostic if it re-occurs.
14	MODULEINTERRUPT	Module interrupt	Hardware problem, run diagnostic if it re-occurs.
15	GHOST	Undefined internal interrupt	Hardware problem, run diagnostic if it re-occurs.
16	DSTVIOLATION	DST violation internal interrupt	Perform a Cold Dump.
17	STACKOVERFLOW	Second overflow while interrupts off and PSDB	Perform a Cold Dump.
18	MAMDONE	Five successive preparation failures	Perform a Cold Dump.
19	AWAKE	Attempt to wake process with invalid PCB pointer	Perform a Cold Dump.
20	CLOCK	CODE >7 (unassigned)	Perform a Cold Dump.

① The following message is printed on the console before the system failure message is printed:

PARITY ERROR
 B = *nnn* (bank number)
 A = *addr* (address)

Table B-1. System Failure List (System Internals) (Continued)

ERROR NUMBER	PROCEDURE NAME	CAUSE	ACTION
21	PUT ' LIST	PCB PTR invalid, or unassigned pin	Perform a Cold Dump.
22	PUT ' LIST	PCB PTR to invalid entry	Perform a Cold Dump.
23	STACKOVERFLOW	I/O Failure on clock	Hardware problem, run diagnostic if it re-occurs.
30	LOG (PROCESS)	Process awakened with non-full buffer to be written	Perform a Cold Dump.
31	LOG (PROCESS)	Want to switch to other buffer but it is not empty	Perform a Cold Dump.
32	LOG	Invalid log record type number	Perform a Cold Dump.
33	LOG	Invalid log record parameter type number	Perform a Cold Dump.
50	FILESYS	File system problem	If error occurs everytime file is accessed, delete filename from directory and recover lost disc space; otherwise perform :SYSDUMP and RELOAD.

Table B-1. System Failure List (Memory Management) (Continued)

ERROR NUMBER	PROCEDURE NAME	CAUSE	ACTION		
100	CSTCONV	EN > %300 but PIN =0 ~ illegal call	Perform a Cold Dump.		
101	MAKEPRESENT	Unblocked request from source other than I/O system	Perform a Cold Dump.		
102	MAKEPRESENT	Presence request for unassigned data segment	Perform a Cold Dump.		
103	MAM	Unrecoverable write error on overly request	Possible hardware problem on System disc, run diagnostic if it re-occurs.		
104	ADDTOWS	Working set is full - nothing can be deleted, yet a new location must be added (paradox)	Perform a Cold Dump.		
105	REL <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>CORESEG</td></tr><tr><td>DATASEG</td></tr></table>	CORESEG	DATASEG	Unassigned entry	Perform a Cold Dump.
CORESEG					
DATASEG					
106	MAM	Error on segment read	Possible hardware problem; delete or re-assign the track on the next cold load, otherwise run diagnostic.		
107	MAM	Invalid entry in make present request (i.e., size =0)	Perform a Cold Dump.		
108	MAKEPRESENT	PDISABLE converter > 1 or blocked request	Perform a Cold Dump.		
109	ENTRYINDEX	EN > %300 but PIN = 0 ~ illegal call	Perform a Cold Dump.		
110	MAMIO	INC odd	Perform a Cold Dump.		
111	EXCHANGEDB	Index out of range	Perform a Cold Dump.		
118	EXCHANGEDB	Attempt exchangedb to uninitialized entry	Perform a Cold Dump.		
119	EXCHANGEDB	More than 15 processes in core with DB @ this data segment, but not on a list	Perform a Cold Dump.		
125	GETENTRYS	Table error - attempting to allocate allocated entry	Perform a Cold Dump.		
126	RETURNENTRYS	Table error - deallocating unassigned entry	Perform a Cold Dump.		
127	RELCODESEG/ RELDATASEG	Releasing a segment which is non-overly able	Perform a Cold Dump.		
128	ALCSTBLOCK	CST block table empty	Perform a Cold Dump.		
129	STACKOVERFLOW	Stack overflow while aborting	Perform a Cold Dump.		
130	BUILDQENTRY	MTAB table empty	Perform a Cold Dump.		
131	STACKOVERFLOW	No-mem	Perform a Cold Dump.		

Table B-1. System Failure List (Memory Management) (Continued)

ERROR NUMBER	PROCEDURE NAME	CAUSE	ACTION
150	STKOVERFLOW	Stack frozen, core resident or locked	Perform a Cold Dump.
175	RELDATASEG/ RELCODESEG	Returning entry which is being frozen	Perform a Cold Dump.
199	DEBUG	Illegal condition in MANAGE-STOP, LOC=0	Perform a Cold Dump.



Table B-1. System Failure List (I/O Systems) (Continued)

ERROR NUMBER	PROCEDURE NAME	CAUSE	ACTION
201	TIP	I/O Failure, non-responding ^② device on I/O Instruction (frequent cause misconfigu- ration)	Reconfiguration needed, other- wise it may be a hardware problem so run diagnostic.
202	DEQUEUE	Nothing to dequeue	Perform a Cold Dump.
203	LOGGEDON	Invalid logical device number	Perform a Cold Dump.
204	ADDTAIL	Element already in a list	Perform a Cold Dump.
205	ADDHEAD	Element already in a list	Perform a Cold Dump.
206	ATTACHIO	Invalid LDEV	Perform a Cold Dump.
208	IOTERMIO	Bad request state	Perform a Cold Dump.
209	ATTACHIO	No PCB request specifies a read or write	Perform a Cold Dump.
220	PMTIP	Non-responding device con- troller (Block mode/Terminal/ Controller)	Hardware problem, run diagnostic if it re-occurs.
221	PMTINIT	Non-responding device controller (Block mode/ Terminal/Controller)	Hardware problem, run diagnostic if it re-occurs.
222	PMTDVR	Non-responding device controller (Block mode/ Terminal/Controller)	Hardware problem, run diagnostic if it re-occurs.
248	ATTACHIO	Special bit set in flags word	Perform a Cold Dump.
249	ALLOVER	Invalid TBUF, SBUF, IOQ INDEX	Perform a Cold Dump.
250	GETSYSBUF	Bad SYSBUF Index	Perform a Cold Dump.
251	RETURN SYSBUF	Bad SYSBUF Index	Perform a Cold Dump.
252	RETURN SYSBUF	Bad SYSBUD Index	Perform a Cold Dump.
262		No DIT for this unit (GIP)	Perform a Cold Dump.
270		Bad Reply from PUT- MESSAGE (IOMESSPROC)	Perform a Cold Dump.
290		No IOQ Element available for MAM request processing (SIODM)	Perform a Cold Dump.
299		Return from IOUNFREEZE (SIODM)	Perform a Cold Dump.

② The following message is printed on the console before the system failure message is printed:
NONRESPONDING DEVICE DRT *nnn*, LDEV *ldn* (The LDEV may not always appear.)

Table B-1. System Failure List (Process and User Related) (Continued)

ERROR NUMBER	PROCEDURE NAME	CAUSE	ACTION
300	EXPIRE	FREELOCRIN failed, RIN locked	Perform a Cold Dump.
301	EXPIRE	UCOP did not kill process	Perform a Cold Dump.
302	ABORTPROG	Main process does not have a son	Perform a Cold Dump.
303	FREELOCRIN	Global RIN in local RIN list	Perform a Cold Dump.
304	OPENVDD	DB not at stack on call	Perform a Cold Dump.
305	GETCATENTRY	Disc I/O error	Possible hardware problem; delete or reassign the track on the next cold load, otherwise run diagnostic.
310	ABORT	Request to abort system process	Perform a Cold Dump.
311	ABORT	Abort while critical	Perform a Cold Dump.
312	UCOP		Perform a Cold Dump.
313	UCOP		Perform a Cold Dump.
350	ALLOCENTRY	Failed to increment XDD segment file	Perform a Cold Dump.
351	DEALLOCENTRY	Failed to decrement XDD segment file.	Perform a Cold Dump.
352	SREUNKODD	Logical device not found in ODD head entries	Perform a Cold Dump.
353	SPUTXDD	Logical device not found in XDD head entries	Perform a Cold Dump.
360	GETCLASS	Bad class table pointer	Perform a Cold Dump.
361	ALLOCATE	Invalid class table pointer	Perform a Cold Dump.
362	ALLOCATE	Bad device number in class table	Perform a Cold Dump.
363	ALLOCATE	Invalid logical device number	Perform a Cold Dump.
364	ALLOCATE	Invalid class index	Perform a Cold Dump.
365	GETCLASS	Illegal procedure parameters	Perform a Cold Dump.
366	DEALLOCATE	Negative account upon device deallocation	Perform a Cold Dump.
370	INITSPoolING	Initial spooling attempt failed.	Perform a Cold Dump.
371	DELETEJOB	ABORTJOB failed	Perform a Cold Dump.
372	CONSSHUTDOWN	Unable to stop spooler	Perform a Cold Dump.

Table B-1. System Failure List (File System) (Continued)

ERROR NUMBER	PROCEDURE NAME	CAUSE	ACTION
400	DIRC	Directory I/O error	Reload
401	DIRC	Directory I/O error	Reload
402	DIRC	Directory I/O error	Reload
403	DIRC	Directory I/O error	Reload
404	DIRC	Directory I/O error	Reload
405	DIRC	Directory I/O error	Reload
406	DIRC	Directory I/O error	Reload
407	DIRC	Directory I/O error	Reload
408	DIRC	Directory I/O error	Reload
409	DIRC	Directory I/O error	Reload
410	DIRC	Directory I/O error	Reload
411	DIRC	Directory I/O error	Reload
412	DIRC	Directory I/O error	Reload
413	DIRC	Directory I/O error	Reload
414	DIRC	Directory I/O error	Reload
420	DISKDEALLOC	Negative usecount	Perform a Cold Dump.
421	DISCSPACE	Negative count of freespace entries	Perform a Cold Dump.
422	DISCSPACE	Return space that is already free	Perform a Cold Dump.

Table B-1. System Failure List (User Interface) (Continued)

ERROR NUMBER	PROCEDURE NAME	CAUSE	ACTION
500	REMJENTRY	Failure to contract DST	Perform a Cold Dump.
501	XADDJENTRY	Invalid pointer	Perform a Cold Dump.
502	CXNEWACCT	Directory cannot be purged	Perform a Cold Dump.
503	CXNEWACCT	Duplicate entry in directory	Perform a Cold Dump.
504	CXNEWGROUP	Cannot find account logged on under	Perform a Cold Dump.
	CXALTGROUP	Cannot find account logged on under	Perform a Cold Dump.
	CXNEWUSER	Cannot find account logged on under	Perform a Cold Dump.
	CXALTUSER	Cannot find account logged on under	Perform a Cold Dump.
505	CXNEWGROUP	Non-existent name in directory search	Perform a Cold Dump.
505	CXALTGROUP	Non-existent name in directory search	Perform a Cold Dump.
506	CYDIRERR	Catastrophic directory error	Reload
507	CNDINTRY	Unable to get Jcut Index	Perform a Cold Dump.
508	SHOWJOB	Invalid job type	Perform a Cold Dump.
520	CXSTORE	X expansion call failed	Perform a Cold Dump.
522	IRESTORE	Spec=2 and PROOT=2	Perform a Cold Dump.
523	FRESTORE	FSF failed - File skipped forward to tape mark	Perform a Cold Dump.
524	FRESTORE	Discspace error: NSECT no good	Perform a Cold Dump.
525	FRESTORE	Discspace error: Table overflow	Perform a Cold Dump.
526	FRESTORE	Disc alloc error (1)	Perform a Cold Dump.
527	FRESTORE	Disc alloc error (5)	Perform a Cold Dump.
528	FRESTORE	XDISKSPACE error (2)	Perform a Cold Dump.
529	FRESTORE	XDISKSPACE ERROR (3)	Perform a Cold Dump.
530	ADJUSTFPTR	File level < > 0	Perform a Cold Dump.
531	FSTORE	Sector count > 0D	Perform a Cold Dump.
532	FRESTORE	Deallocation failed	Perform a Cold Dump.

Table B-1. System Failure List (Miscellaneous) (Continued)

ERROR NUMBER	PROCEDURE NAME	CAUSE	ACTION
900	CSINTRINSIC		Perform a Cold Dump.
901	CSINTRINSIC		Perform a Cold Dump.
902	CSINTRINSIC		Perform a Cold Dump.
903	CSINTRINSIC		Perform a Cold Dump.
904	CSINTRINSIC		Perform a Cold Dump.
905	CSINTRINSIC		Perform a Cold Dump.
906	CSINTRINSIC		Perform a Cold Dump.
907	CSINTRINSIC		Perform a Cold Dump.
908	CSINTRINSIC		Perform a Cold Dump.
909	CSINTRINSIC		Perform a Cold Dump.
910	CSINTRINSIC		Perform a Cold Dump.

Table B-2. Abbreviations

ABBREVIATION	DESCRIPTION
CPCB	Current process control block
CST	Code segment table
DB	Data Base
DST	Data segment table
EN	Entry
FSF	File skipped forward
ICS	Interrupt control stack
IOQ	I/O Queue
LDEV	Logical device
MTAB	Memory Table
PCB	Process control block
PIN	Process identification number
PSDB	Pseudo disable
RIN	Resource identification number
SBUF	System buffer
TBUF	Terminal buffer

MICRO-PROGRAMMED DIAGNOSTICS

APPENDIX

C

Stored in the microcode are diagnostics to test the CPU registers, memory, and the I/O channels. You can access these diagnostics by a cold load procedure from the HP 3000 System Control Panel.

If an error occurs while running a diagnostic, the maintenance panel can be connected to the system to help you (or the HP Customer Engineer) step through the microcode (refer to the *System Service Manual*).

CPU REGISTER TEST

This diagnostic tests the various registers. To run this diagnostic, perform the following steps:

1. Load octal 000201 into the SYSTEM SWITCH REGISTER.
2. Press the ENABLE and LOAD switches.

The program runs continuously until the RUN/HALT switch is pressed or until an error occurs.

When an error occurs, the CURRENT INSTRUCTION REGISTER (CIR) displays a coded register number that can be interpreted by referring to table C-1. Normal running time for a complete pass of the diagnostic is approximately one second.

NOTE

When the SYSTEM SWITCH REGISTER bit 8 is set to 0, all memory is initialized with a HALT %10 instruction (%030370) prior to executing the cold load. If bit 8 is set to 1, no initialization occurs prior to the cold load.

MEMORY TEST

Two tests are available from the microprogram for testing memory. The SYSTEM SWITCH REGISTER bit 0 state determines which test will be run. With bit 0 off, the memory configuration test is accessed. With bit 0 on, the N² memory test is accessed. The N² test is a lengthy more comprehensive memory test. Memory configuration test diagnostic time is approximately ten seconds while the N² test will take approximately 10 minutes for 32K words of memory (which means a full 256K system will take 80 minutes).

To run the memory diagnostic, perform the following steps:

1. Load octal 000200 (Memory Configuration Test) or octal 100200 (N² Test) into the SYSTEM SWITCH REGISTER.
2. Press the ENABLE and LOAD switches.

Table C-1. CPU Register Codes

CIR	REGISTER	CIR	REGISTER
00	SP1 (1) (Note)	20	OPND (5)
01	PL (1)	21	DL (2)
02	Z (1)	22	SP2 (2)
03	X (1)	23	PB (2)
04	RD (R BUS) (1)	24	PCLK (2)
05	RC (R BUS) (1)	25	RD (S BUS) (2)
06	RB (R BUS) (1)	26	RC (S BUS) (2)
07	RA (R BUS) (1)	27	RB (S BUS) (2)
10	SP0 (1)	30	RA (S BUS) (2)
11	CRTL (2)	31	CTRH (2)
12	P (2)	32	ABS BANK (3)
13	Q (2)	33	PB BANK (3)
14	DB (2)	34	DB BANK (3)
15	SM (2)	35	S BANK (3)
16	STA (4)		
17	SP3 (2)		

- (1) Located on R-Bus PCA
- (2) Located on S-Bus PCA
- (3) Located on Skip-Special Field PCA
- (4) Located on Skip-Special Field PCA and S-Bus PCA
- (5) Located on Current Instruction Register PCA

NOTE

SP1 is the first register tested and the problem may not necessarily be in SP1 but somewhere previous in the data path (Store logic, Shifter, ALU, etc.).



The program runs until an error occurs.

When an error occurs the program pauses and the CIR contains the error data (lamp on=error bit). By pressing the RUN/HALT switch, the CIR then contains the address information shown in table C-2. The test should be continued so all memory is tested before any repairs are made.

Table C-2. CIR Address Information

CIR BIT	FUNCTION
0:3	Address bits 0:3
6,7	Bank number
10:14	CPX1 register bits 2:6
10	Illegal Address
11	CPU Timer
12	System Parity Error
13	Address Parity Error
14	Data Parity Error
15	Address bit 15

To get a hard copy output when running the diagnostic, execute the following:

1. Connect a terminal to J1 of the system clock/console interface PCA, using cable part number 30031-60002, (CLK/TTY) to provide a hard copy of error messages. The errors will be printed in the following format:

```

  X           XXXXXX   XXXXXX   XXXXXX   XXXXXX   XXXXXX
  ~~~~~      ~~~~~    ~~~~~    ~~~~~    ~~~~~    ~~~~~
BANK        FIELD     TEST      BAD      SELECTED  F      E
            ADDRESS   WORD      BITS     DATA
                               ADDRESS
                               PARITY ERROR
  
```

- F = Field Data
- E = Error Code
- 0 = Data Parity Error in Test Data
- 1 = Test Data Error
- 2 = Data Parity Error in Field Data
- 3 = Field Data Error

After each half pass the counter is printed in the following format:

XXXXXX	X000000
~~~~~	~~~~~
PASSES	HALF
COMPLETED	PASS

## I/O TEST

A Test Input/Output (TIO) instruction is executed on each I/O device number (%3 through %177) in sequence. Only those device numbers with a device connected will respond; empty device numbers are skipped. To run the I/O test, perform the following steps:

### NOTE

If the HP30354A Maintenance Panel is connected to the system, the TIMERS switch must be set to ENABLE.

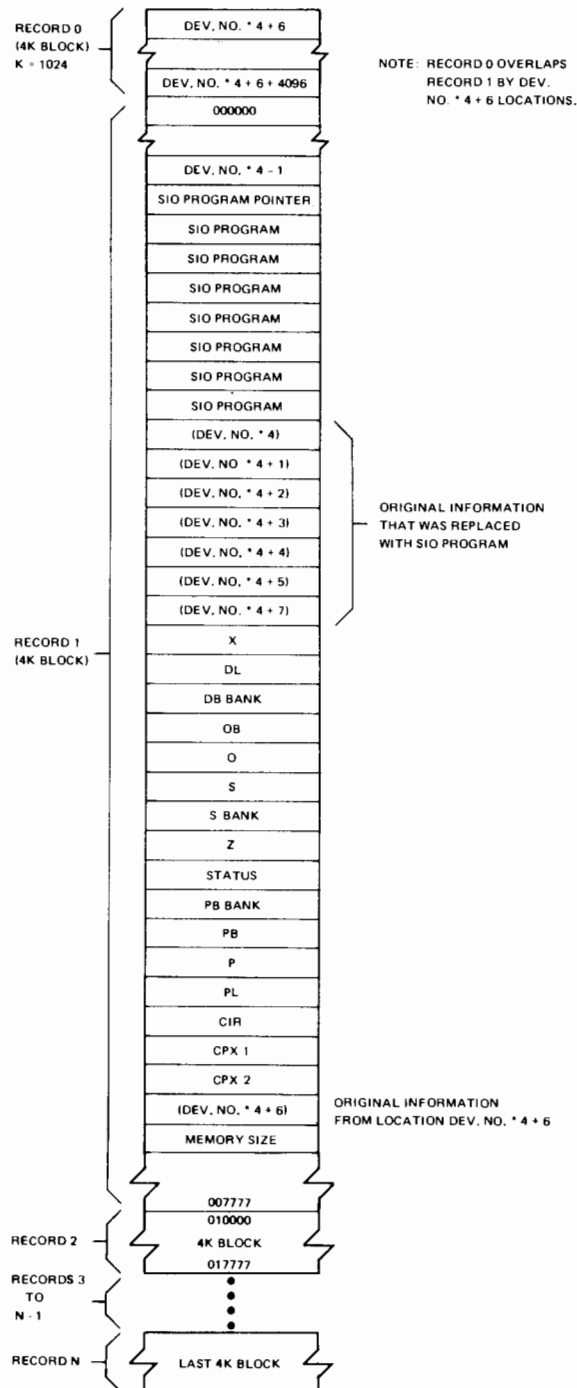
1. Load octal 000202 into the SYSTEM SWITCH REGISTER
2. Press the ENABLE and LOAD switches.  
When an existing device number is encountered, the program pauses with the device number in CIR. The RUN light will be lit.
3. Press the RUN/HALT switch. CIR then displays the device status, the RUN light will not be lit.
4. Press the RUN/HALT switch. Steps 2 and 3 are repeated until all device numbers have been interrogated. The diagnostic is finished when the system halts and CIR displays octal 000200 (the RUN light will not be lit).

# SYSTEM DUMP MAGNETIC TAPE FORMAT

APPENDIX

D

The format of the magnetic tape produced by a system dump appears below:





# DEFECTIVE DISC TRACK TABLE

APPENDIX

E

The Defective Track Table, used by MPE to maintain a record of any defective areas on a disc, resides in the second sector (Sector 1) of each disc. It is written in the following format:

Word	Contents
0	Number of entries (n) in the table (ranges from 0 to 120).
1-n	Track number. Status, where
(Bits 0:14)	
(Bits 14:2)	0 = Suspect track. 1 = Suspect alternate track. 2 = Deleted track. 3 = Reassigned track.
121-125	Reserved (filled with zeros).
126	Next available alternate track (moving-head discs only).
127	Logical disc pack size (in cylinders for moving-head discs, and tracks for fixed head discs).





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