

North American Response Centers
HP 3000 APPLICATION NOTE



**PORT FAILURES
TERMINAL HANGS
and
TERMDSM**

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PORT FAILURES, TERMINAL HANGS, AND TERMDSM

A high volume of calls placed to the Response Center involve terminals that do not respond. Oftentimes it is difficult to determine if the problem is a hardware problem with the terminal or communications equipment, a software problem with the program running on the terminal causing it to "hang", or an error detected by the software in the system terminal controller. On the HP 3000 (series 30-70), the Advanced Terminal Processor (ATP) and the Asynchronous Data Communications Controller (ADCC) have the ability to mark a terminal port as "broken" if they encounter errors from which they can not recover. This is sometimes referred to as a "port failure".

This Application Note discusses how to isolate such terminal problems, how to handle ATP and ADCC port failures, how to use the Online Diagnostic/Support Monitor (TERMDSM), and what information you should collect before calling the Response Center for a port-related problem. Although a WARMSTART will, in most cases, clear hung or broken ports, it is often possible to do so without resorting to a system restart. This guide is intended to minimize port and system downtime and to maximize the effectiveness of PICS calls.

The first step is to determine whether your terminal port is hung or if it is considered "broken" by the software. If you receive a console message such as the following:

ATP FAILURE 6810 ON LDEV nn. RUN TERMDSM TO ANALYZE FAILURE.

or

ADCC FAILURE 9518 ON LDEV nn. RUN TERMDSM TO ANALYZE FAILURE.

then you have a broken port -- refer to Section I, "Handling Port Failures". If you do not receive a console message then you need to follow the steps in Section II, "Handling Port Hangs", to isolate the problem.

I. HANDLING PORT FAILURES

An ATP or ADCC failure occurs when the ATP/ADCC software (which handles I/O to and from the terminal) encounters an unexpected event it cannot recover from. This could be the result of a hardware failure or possibly a problem in the ATP/ADCC code. Isolated failures do not usually indicate a serious problem, and often can be corrected without replacing software or hardware. Multiple failures, where a number of ports fail within a short time, or one or two ports fail a number of times, are more cause for concern. Multiple failures generally call for Response Center involvement, where we can analyze the failures and initiate appropriate action.

An occasional single failure usually doesn't warrant a call to the Response Center unless you wish to pursue the reason for the failure or need help in correcting it. We do, however, recommend keeping a log sheet or log book of system problems and including port failures in this log.

Returning the Port to Service

If you see a console message that says you had a failure, log the time, date, LDEV number and failure code in the log book. Next run TERMDSM to DUMP and RESET the port as described in Section III.

Calling the Response Center

If a port fails repeatedly, or if a number of different ports fail, collect information as described below and call the Response Center.

When you call the Response Center to report port failures, it would be helpful to know the following information:

1. LDEV numbers of failed ports - this is critical!
2. Port type, ATP or ADCC - if you're not sure which, check the port unit numbers on the system I/O configuration listing. If the unit numbers are zero, the ports are ADCCs. If the unit numbers are non-zero, the ports are ATPs.
3. Type, subtype and termtype of failed ports - these also appear on the system I/O configuration listing.
4. Unit number of an ATP or DRT Number of an ADCC - from the I/O configuration
5. Port failure number(s) - these appear on the system console when the port failure occurs. If they have already left the screen, the RC engineer can obtain the failure number from the port dumps.
6. ATP/ADCC software versions - these appear when you run TERMDISM.
7. Failure dates and times - keeping a record of these can help in tracking down problems.
8. MPE version - obtain this by typing the :SHOWME command
9. Current ATP/ADCC patches - if any patches have been applied for ATP/ADCC problems, record the patch number in your system log book. This will help us in identifying problems.
10. What is attached to the port - terminal, modem, printer, plotter, multiplexer, data switch, etc.
11. What was happening? - what port activity, if any, was taking place at the time of the failure.
12. TeleSupport phone numbers and passwords - we may want to dial in and look at the port dumps or system configuration.

II. HANDLING PORT HANGS

Sometimes a terminal will "hang" without the ATP/ADCC software indicating a failure has occurred. This can result in a terminal that doesn't respond (if no session was associated with that terminal) or a "stuck" session (a session that cannot be aborted). In this section, we describe steps you can take in an attempt to bring the port back to service before resorting to a WARMSTART.

1. Determine if the terminal hang is an isolated problem or if all other terminals are affected. If they are, then you may have a system hang or failure. Are there any console

messages? Is there any system activity? If it appears that this is not a system-wide problem continue with checklist item number 2.

2. Is the hung terminal running a program? Hit **(BREAK)** to suspend execution of the running process and see if you get the colon prompt.
3. Reset the terminal to make sure the terminal isn't hung. For 264X terminals, hit the RESET button two or three times in succession. For all other terminals, hold down **(CONTROL)(SHIFT)** and press RESET. You can also try turning the power off and back on again on the terminal.
4. Check the terminal configuration. Verify that the baud rate and parity are correct, and the terminal is in REMOTE MODE and not BLOCK MODE. The AUTO LF should NOT be set.
5. Is the correct cable being used and is it securely connected?
6. Verify that the terminal is not physically broken. Take the terminal out of REMOTE MODE and run a self-test on it.
7. Perform a **(CONTROL)A** RECALL on the system console to see if any console requests are pending. Sometimes a session appears to be hung when it's actually waiting for a console reply.
8. Run TERMDSM.PUB.SYS and use "BROKEN" to see if the port is flagged as a broken port. In any case, use RESET or DUMP on the port as described in Section III. A reset or dump will abort the session if it's successful, so be prepared to lose the session when trying this option.
9. Use FCOPY to try to write to the hung port. Many times this will clear up the port. For example:

```
:FILE TERM;DEV=nnn      where nnn is the LDEV of the hung terminal  
  
:FCOPY FROM;TO=*TERM  
  
HELLO??? TESTING 1,2,3..  
  
:EOF
```

10. Perform an :ABORTIO on the LDEV that appears to be hung.
11. Perform an :ABORTJOB on the session (if there is one) attached to the port. To find out what session is currently on the port, use the :SHOWDEV command. If the :ABORTJOB command does not cause the session to log off, the session may have "ownership" of some system resource, so you will need to look at other devices.
12. If a session is writing to a printer, perform an :ABORTIO on the printer. To find out if I/O is pending on a printer, perform a :SHOWOUT SP or :SHOWDEV n, where n is the LDEV number of the printer. This will often free up a hung session.
13. If a session is writing to tape, perform an :ABORTIO on the tape drive. To find out if I/O is pending on a tape drive, perform a :SHOWDEV n, where n is the LDEV number of the tape drive. This may also free up the session.

14. If the session is coming across a DS line, try an :ABORTIO on the INP (or LANIC). This will probably abort the datacomm subsystem running on the INP or LANIC.
15. Isolate the problem to either the port or the terminal by swapping the terminal with a terminal known to be operating correctly, swap the connectors on the CPU side to see if the problem follows the port, or swap the cable(s) used.

If all else fails and it's critical to get the port back into operation as soon as possible, you may need to restart the system. If you do this, you may want to call the Response Center for advice on how to avoid restarting the system in the future. Many WARMSTARTS are not necessary, and can be time consuming and inconvenient.

III. TERMDSM

TERMDSM is a tool for use in debugging and repairing terminal ports. It allows you to run diagnostics on one or more ports, abort jobs or I/O, reset ports and associated tables, display tables, dump (to a disc file) tables for later analysis, format failure information dumped by the ATP/ADCC software, or identify broken ports.

TERMDSM runs on MPE V/E (Version G.00.00 or later) operating systems. For a complete description of the TERMDSM utility please refer to the reference manual (Part No. 30144-90013).

For pre-MPE V/E (Version E.00.00 or F.00.00 or earlier), use TERMDSM's predecessor, ATPDSM, which operates on ATP ports but not ADCC ports. ADCC ports can be tested, however, with the ADCC offline diagnostic, ADCCDIAG. Information about ATPDSM can be found in the Advanced Terminal Processor (DSN/ATP) On-Line Diagnostics Manual (Part No. 30144-90004).

To invoke this utility, simply type "RUN TERMDSM.PUB.SYS" at the MPE colon ":" prompt.

Version numbers of ATP and/or ADCC software appear on the screen immediately below the TERMDSM banner when the program is run. ATP/ADCC version numbers also appear in all port dumps.

TERMDSM Requirements and Considerations

You must have OP capability to run TERMDSM. To save TERMDSM port dumps, you must have SF capability and Write access to the logon group and account. DI capability is required to run ATP diagnostics.

TERMDSM will NOT run when the system is down; MPE must be executing for TERMDSM to run.

Several TERMDSM commands, if successfully executed, will abort a session. When using the ABORTJOB, DUMP or RESET commands, be prepared to lose a session if one is still logged onto the affected port.

Example of Dumping and Resetting a Broken Port

When you encounter a broken port, run TERMDSM.PUB.SYS by performing the following steps:

1. Log on to the 3000 as MANAGER.SYS or OPERATOR.SYS or some other logon with OP capability, so you can run TERMDSM.

2. Run **TERMDSM.PUB.SYS**. When the arrow prompt "**->**" appears, type **BROKEN** (or just **B**) and press **(RETURN)** to display a list of broken ports. If an asterisk "*" appears in the "Unfixable" column, or if several ports show up as broken, call the Response Center.
3. At the arrow prompt again, type **DUMP** (or **DU**) and press **(RETURN)**. When **TERMDSM** prompts you with "Enter ldev number:", enter the number of the broken port and press **(RETURN)**. A dump will cause an automatic reset of the port.
4. If you are dumping an ATP port, **TERMDSM** will ask the question, "Do you want to dump the PCC memory?" Always reply "YES".
5. When **TERMDSM** asks you "Do you want to include a message", answer **YES** (or **Y**), and include a message with the time and date of the port failure. If an application was running, you may want to include the application name. Press **(RETURN)** at the arrow prompt (**->**) to conclude the message and start the dump.

TERMDSM creates a file with the dump information, and names it **TERMxxx**, where **xxx** is the **LDEV** number of the dumped port. This file is stored in your current logon group and account. Add the group, account, and filename of the dump file to your log entry.

This completes the dump process. The **DUMP** function automatically resets the port, so the port should now be available for use. If you wish to inspect the dump, just **FCOPY** the **TERMxxx** file to a printer or use a text editor.

If several broken ports failed with the same failure number, you can take dumps from two or three ports and use the **RESET** command of **TERMDSM** to reset the rest of the ports. You do not need to **RESET** a port after performing a **DUMP**, because a dump also resets the port.

TERMDSM Commands

o **ABORTIO** and **ABORTJOB**

These commands work just like their MPE equivalents.

o **BROKEN**

This command lists all ports on a system that are currently considered broken. The port may also be flagged as "UNFIXABLE" if:

- a port is configured on a missing AIB, i.e. there is no hardware for a configured logical device
- an ATP data segment cannot be built
- self test fails on the Port Controller Chip (PCC)

The list of broken ports is not conclusive. Certain errors may go undetected by ATP software.

o **DIAGNOSTICS**

The **DIAG** command initiates ATP diagnostics, of which there are three flavors. The first one tests the 3000 connection out to the PCC. The second tests out to the junction panel and requires loopback connectors. You should have received these connectors when you installed your ATP/ADCC subsystems. If you can't find them contact your Account CE. The third test is a Read/Write test to a powered-on HP terminal.

o **DISPLAY**

The **DIS** command can be used to display the values of various ATP and ADCC tables.

o **DUMP**

The **DU** command initiates dialog for dumping the current state of the ATP or ADCC tables, terminal buffers, and ATP PCC memory contents to a disc file.

The **DUMP** command, resets the port and aborts any session. Use this command with caution.

A user-generated message up to 20 lines long may be included with the dump.

o **EXIT**

The **E** command terminates execution of **TERMDSM** and returns you to the **MPE** colon prompt.

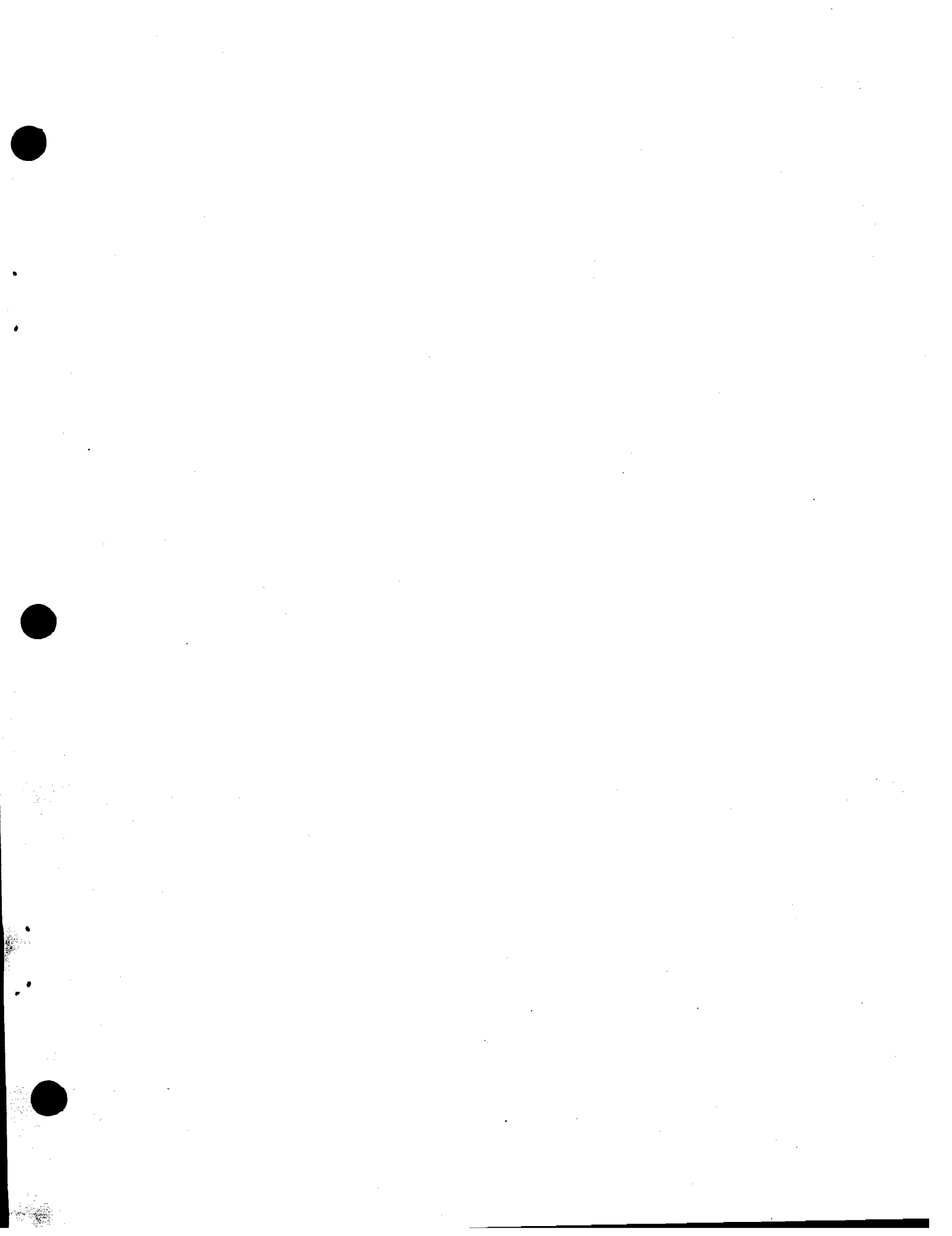
o **HELP**

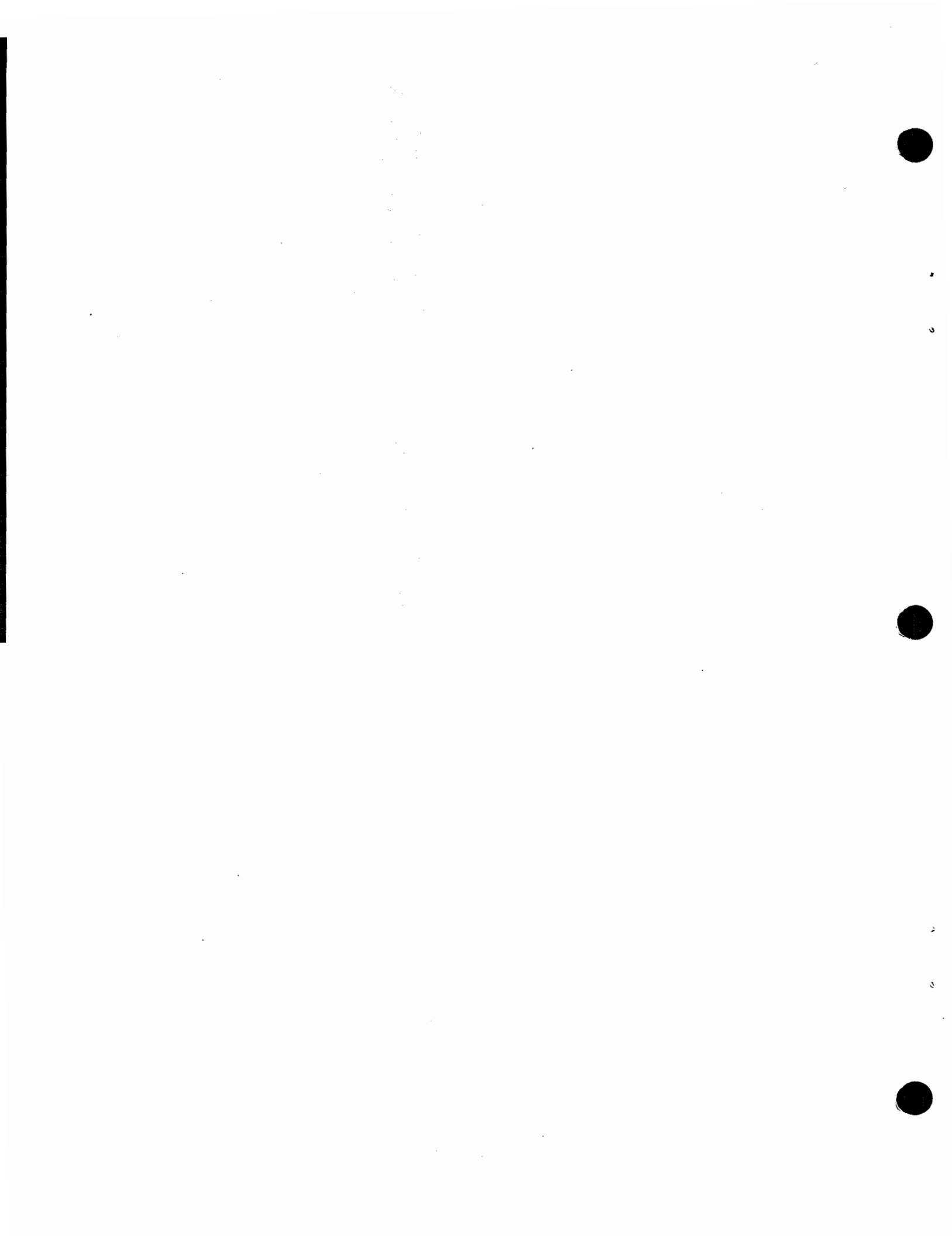
You can type **HELP** at any prompt to get more help on a particular operation.

o **RESET**

The **RESET** command initiates dialog for resetting one or more ATP/ADCC ports. Sessions logged on will be aborted, ATP/ADCC tables will be reset, and the port prepared for speed sensing.

RESET, if successful, will abort a session on the port. Use this command with caution.





READER COMMENT SHEET

North American Response Centers
HP 3000 Application Note: Port Failures, Terminal Hangs, and TERMDSM
RC Questions & Answers (July 1, 1986)

We welcome your evaluation of this Application Note and attached RC Questions & Answers Sheet. Your comments and suggestions help us to improve our publications. Please explain your answers under Comments, below, and use additional pages if necessary.

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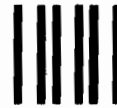
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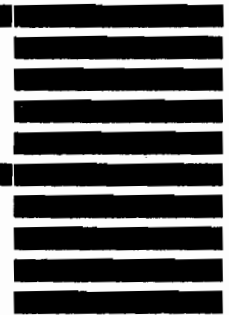
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MIT RESPONSE CENTER QUESTIONS & ANSWERS

HP 3000 Questions Commonly Received by the North American Response Centers

Q. How do I FCOPY multiple files from tape to disc without having the tape rewind between files?

A. The following example shows how you can copy your files back from tape onto your system, without the tape rewinding after each file:

```

:FILE T;DEV=TAPE
:RUN FCOPY,PUB,SYS
>FROM=*T;TO=f11eA;NEW
>FROM=*;TO=f11eB;SKIPEOF=*1;NEW
>FROM=*;TO=f11eC;SKIPEOF=*1;NEW
>EXIT

```

Use of the asterisk (*) alone, as in the last two 'FROM' clauses, indicates that the next record read should be the record following the last record from the file specified in the immediately preceding 'FROM' clause (in this case, *T -- the TAPE file).

Note: This example assumes all files have the same record size.

Q. I am getting a "NONEXISTENT PERMANENT FILE (FSERR 53)" message when using DBRECOV to restore a tape log file. Why?

A. This error was introduced with DBRECOV version B.04.60 (T-MIT) and can also occur with DBSTORE/DBRESTOR. This problem should be fixed in a future release. In the meantime, in order to avoid this problem you can to issue a file equation before running DBRECOV:

```

:FILE logfile;DEV=TAPE;LABEL=void

```

Q. I tried to change the Virtual Memory size on LDEV 2 by doing a COLDSTART from a SYSDUMP tape with the changes on it but it didn't work!

A. According to the System Operation and Resource Management Reference Manual (P/N 32033-90005) "Logical device 1 memory allocation may be changed during RELOAD only; virtual memory allocation on other discs may also be changed during COOLSTART, COLDSTART, or UPDATE". Unfortunately, due to a problem in MPE, this is not totally accurate. It IS true that LDEV 1 Virtual Memory (VM) changes must be done during a RELOAD. However, VM allocation changes for other discs specified in the SYSDUMP dialogue will be ignored. They MUST, instead, be done in the INITATOR/USER dialogue during a system startup, such as a COOLSTART.

Q. I am receiving the message "GLOBAL RIN UNAVAILABLE (FSERR 60)" but I have my Global RIN's configured at 'x'. Can I really be out of Global RIN's? If so, what are they being used for?

A. It is possible that you are out of Global RIN's. However, it could also be that you are out of either Local or File RIN's which would also cause a FSERR 60. MPE provides three types of RIN's (Resource Identification Numbers): local, file, and global. RIN's are typically used to guarantee temporary exclusive access to a resource, such as a file, data segment, or program.

Local RIN's are only used in a Process-Handling environment and are known only to the job/session which acquires them. When that job/session logs off, any local RIN's which it acquired are returned to the system. MM/3000 is a heavy user of local RIN's. File RIN's are used by the File System for file locking and Global RIN's (acquired by the MPE GETRIN command) are used by programs which need to lock resources across job/session boundaries. HPWORD uses Global RIN's.

When a RIN is not available, FSERR 60 is returned. However, this does not necessarily imply that a global RIN is unavailable but rather that a RIN is unavailable.

How do we configure RIN's? To change your RIN configuration you need to do a RELOAD. There are two parameters for configuring RIN's within SYSDUMP. They are:

OF RINS = xxx, MAX = yyy?

and

OF GLOBAL RINS USED = xxx, MAX = yyy?

The first question specifies how many RIN's of ANY type you wish to have available. The second question specifies, of the total number of RIN's, what number are permitted to be Global RIN's. Note that this neither adds to the total number of RIN's nor does it reserve any RIN's as global.

RELOAD with the NULL option or from a DATE=<cr> SYSDUMP tape will initialize the RIN table, losing any Global RIN assignments made. All other types of restart (including the other types of RELOAD) will preserve the current Global RIN assignments.

The unsupported utility RININFO found in TELESUP version A4860101 will list your current RIN usage. The use of RIN's is described in the MPE Intrinsic Manual (Part No. 32033-90007) and in the Special MPE Capabilities Course (course number 22805B).