ADDS MENTOR

Operations/Procedures Manual

(O/S RELEASE 2.0, AND M2000)

MENTOR PROCEDURES MANUAL

TABLE OF CONTENTS

: SYSPROG
SET_DATE 01 NOV 85

1 INTRODUCTION

This manual is intended to instruct the user in the operation of an ADDS MENTOR computer running Release 2.0 of the M80 Operating System. It details various operation procedures, including startup and shutdown procedures, backing up, restoring etc. For more information on each of these functions, the user is directed to the relevant section in this manual.

2 STARTING UP THE COMPUTER

Let us begin by assuming that your computer is ready for use, but that it has been shut off. To physically "power-up" the computer you must follow these steps:

1. Make sure that power is getting to the computer from your switching box (the appropriate circuit breakers should be on, etc.) This step is usually not necessary but should be checked if you cannot get the power to come on.

2. On all systems EXCEPT the MENTOR 2000, turn on the main system circuit breaker. This is a large toggle switch on the back of your MENTOR system, near the bottom.

3. On all systems EXCEPT the MENTOR 2000, insert the key in the front panel and rotate it to the ON position. The key is located on the front of the machine in the upper right corner. On a MENTOR 2000, turn on the main power switch, which is an orange toggle switch located behind the swinging door on the upper left-hand corner of the front of the computer.

4. The system will now run its diagnostic tests. These will test the Central Processor, Memory, Disc, Tape, and ports, and will take from six to twenty minutes depending upon the amount of memory on the computer. If any of these tests print the message *** FAILED ***, you should contact your maintenance representative, as this indicates a failure in a component of the system. Please note that on some systems, the FAILED message may be printed during the tape test if there is no tape loaded. This is not a fatal error.

5. When the diagnostics have completed, the system will then print the message: OPTIONS [X,F,NX]= on the console terminal.

6. If you are just re-starting the system then see the section called COLDSTARTING THE SYSTEM, otherwise, see the section called PERFORMING A FILE-RESTORE.

3 SHUTTING DOWN THE COMPUTER

Let us suppose that for maintenance or other reasons you wish to turn your MENTOR computer off. There are several levels at which this may be done. You may only wish to power off the Processor and the disc, or you may wish to shut down the entire system. To do either, follow these steps:

PASSWORD ; NTWD

1. Sign on to the SYSPROG account on line 0. Make sure that everyone has signed off the system and then type :SHUTDOWN. This will cause all of the components to cycle down and requires approximately one minute.

2. Turn off the tape drive if it is on (MENTOR 4000/5000 only).

3. On all system EXCEPT the MENTOR 2000, insert the key in the front panel and rotate it to the OFF position. The key is located on the upper right hand side of the cabinet. If you have a MENTOR 2000, turn the orange power switch on the front of the computer to the OFF position.

4. If you wish to turn off all power, then turn off the BATTERY unit by flipping the power toggle switch on the back of the system to the OFF position. This switch is located near the bottom of the rear of the cabinet. (MENTOR 3000/4000/5000 only).

4 LOADING THE TAPE DRIVE - MENTOR 4000/5000

This section explains how to put a tape on the tape drive for a MENTOR Model 4000 or 5000. The tape drive is used for performing backups and restores, archiving and retrieving data, communicating with other equipment, etc. To mount a tape on the tape drive, do the following:

1. Turn the power switch on the tape drive to ON.

2. Remove the tape seal and any tape restraining materials.

3. Make sure that the end of the tape to be loaded is not twisted or folded. If this is the case, use your tape trimming tool to fix the end.

4. Insert the tape into the tape drive so that the clear part of the reel faces up and so that it fits solidly on the tape hub.

5. Close the front door of the tape drive and press the LOAD/REWIND button. When this begins to flash, press the ON LINE button, and this will begin to flash as well. When both lights stop flashing, the tape is ready for use. If all of the lights on the tape drive start to flash, there was a problem during loading and you must turn the tape drive off and on and try again.

6. Please note that if you intend to write on a tape there MUST be a write-ring in the back of it. Under NO circumstances should a write-ring be left in a SYSGEN, BOOTSTRAP, or any important archival tape.

5 LOADING THE TAPE DRIVE - MENTOR 3000

This section explains how to put a tape on the tape drive for a MENTOR Model 3000. The tape drive is used for performing backups and restores, archiving and retrieving data, communicating with other equipment, etc. To mount a tape on the tape drive, do the following:

1. Remove the tape cartridge from the plastic container box.

2. Insert the tape into the tape drive, with the face UP (metal backing down), and with the exposed part of the tape facing IN to the tape drive. Note that the tape drive is the horizontal slot on the upper left hand side of the front of the MENTOR.

3. Please note that if you intend to write on a tape the write-lock screw on the top of the cartridge must be set in the correct position. Under NO circumstances should a cartridge containing a SYSGEN, BOOTSTRAP, or any important archival tape be write-enabled!

6 LOADING THE TAPE DRIVE - MENTOR 2000

This section explains how to put a tape on the tape drive for a MENTOR Model 2000. The tape drive is used for performing backups and restores, archiving and retrieving data, communicating with other equipment, etc. To mount a tape on the tape drive, do the following:

1. Remove the tape cartridge from the plastic container box.

2. Open the swinging door on the front of the computer and insert the tape into the tape drive, with the face UP (metal backing down), and with the exposed part of the tape facing to the left as you face the system. Note that the tape drive is the horizontal slot on the upper left hand side of the front of the MENTOR, behind the swinging door.

3. Push the tape in as far as it will go, then move the locking lever which is just to the left of the tape, from the left to the right in order to secure the tape in place.

4. Please note that if you intend to write on a tape the write-lock screw on the top of the cartridge must be set in the correct position. Under NO circumstances should a cartridge containing a SYSGEN, BOOTSTRAP, or any important archival tape be write-enabled!

7 UNLOADING THE TAPE DRIVE - MENTOR 4000/5000

When you wish to remove a tape from the tape drive, you must follow these steps:

1. If the ON-LINE switch is lit, you must first press it to take the tape drive offline.

2. If you merely wish to rewind the tape, then press the LOAD/REWIND button at this point. This will return the tape to the "Load Point". Once this has been done, you may press the ON LINE button and the tape will again be available for use. If you wish to unload the tape, then press the UNLOAD button instead. This will cause the tape to be unloaded.

3. Once the tape has been unloaded, the front door of the tape drive will be unlocked. You may then open the door and remove the tape.

4. If you are finished with the tape drive, turn the power off.

8 UNLOADING THE TAPE DRIVE - MENTOR 3000

When you wish to remove a tape from the tape drive, you must follow these steps:

1. Make sure that no one is using the tape any more and that all tape operations have completed.

2. Remove the tape cartridge from the tape drive.

3. Replace the tape cartridge in the plastic container box.

9 UNLOADING THE TAPE DRIVE - MENTOR 2000

When you wish to remove a tape from the tape drive, you must follow these steps:

1. Make sure that no one is using the tape any more and that all tape operations have completed.

2. Open the swinging door on the upper left-hand side of the computer, and move the locking lever on the tape drive from the right to the left in order to release the tape.

3. Remove the tape cartridge from the tape drive.

4. Replace the tape cartridge in the plastic container box.

10 COLDSTARTING THE SYSTEM

When the system has not been operational for any reason (ie. maintenance, binary saves, etc.), but you have good reason to believe that your data on disc is still intact (this should generally be the case), then it is necessary to COLDSTART the system. This will cause the computer to load all the programs and routines necessary to allow day-to-day operations to proceed. To do this, follow these steps:

1. On all systems EXCEPT the MENTOR 2000, insert the key in the front panel and rotate it to the SERV position. Then press the INIT button. On the MENTOR 2000 only, press INIT and INTLK together, then release the INIT button, but hold down INTLK for about 5 seconds.

2. The message: ADDS MENTOR Diagmon Release 2.x or something similar will appear on the console terminal (LINE 0). At this point type "E D" (Execute from Disc) and the system may respond by printing the message: Execute (Y/N): If it does, then type: Y, but do not press RETURN. The system will now respond with the message: OPTIONS [X,F,NX]=. Type: X, but do not press RETURN after this. You will then see a display of the system configuration, and the system will follow this with the messages SPOOLER STARTED and LINKING WORKSPACE FOR PROCESS 0.

3. The system will wait for a short while, then it will print: THIS IS THE COLD-START PROCEDURE, followed by the message: DO YOU WISH TO CLEAR THE LINKED WORKSPACE CHAIN? If the system is being coldstarted after a crash or failure, you should respond with 'Y', otherwise type in 'N'.

4. The system will then ask for the current time by typing: TIME=. At this point you should enter the current time in 24-hour format, eg. 14:27.

5. The system will now ask for the current date by typing: DATE=. You should now enter the current date in the following format: 21APR84.

6. The system will then print a number of messages indicating the status of the COLDSTART procedure. When it is complete, the message LOGON PLEASE: will be displayed on the terminal.

11 PERFORMING A FORMATTED FILE-RESTORE - METHOD 1

When it is necessary to restore all the data from a previous formatted backup, either because of system problems, or just to compress the data, the following steps should be taken:

1. Make sure all other users are logged off the system, then sign on to the SYSPROG account on Line 0.

2. Load the backup tape from which you wish to restore on the tape drive. When the tape has been loaded, type: ":FILELOAD". This will cause the computer to begin loading the data files.

3. When all the files have been loaded, the system will coldstart and will print: THIS IS THE COLD-START PROCEDURE, followed by the message: DO YOU WISH TO CLEAR THE LINKED WORKSPACE CHAIN? Respond to this question by typing in 'N'.

4. The system will then ask for the current time by typing: TIME=. At this point you should enter the current time in 24-hour format, eg. 14:27.

5. The system will now ask for the current date by typing: DATE=. You should now enter the current date in the following format: 21APR84.

6. The system will then print a number of messages indicating the status of the File-Restore procedure. When it is complete, the message LOGON PLEASE: will be displayed on the terminal.

12 PERFORMING A FORMATTED FILE-RESTORE - METHOD 2

Under certain circumstances, it may be impossible to perform a file restore using Method 1. Typically, this is the case when there is no SYSPROG account to sign on to. This might happen after a system crash or similar occurrence. In order to perform a file restore under these circumstances, follow these steps:

1. Load the file-save tape from which you wish to restore on the tape drive (see the section on loading the tape drive). Please remove the write ring or disable the write status before doing this.

2. On all systems EXCEPT the MENTOR 2000, insert the key in the front panel and rotate it to the SERV position. Then press the INIT button. On the MENTOR 2000, press INIT and INTLK together, then release the INIT button, but hold down INTLK for about 5 seconds.

3. The message: ADDS MENTOR Diagmon Release 2.x or something similar, will appear on the console terminal (LINE 0). At this point type "E D" (Execute from Disc). The system may now respond by printing the message: Execute (Y/N): If it does, then type: Y, but do not press RETURN. The system will now respond with the message: OPTIONS [X,F,NX]=. Type: F, but do not press RETURN after this. You will then see a display of the system configuration, and the system will follow this with the messages SPOOLER STARTED and MOUNT DATA TAPE AND PRESS RETURN.

4. Following this, simply press the RETURN key and the system will commence loading the files.

5. When all the files have been loaded, the system will coldstart and will print: THIS IS THE COLD-START PROCEDURE, followed by the message: DO YOU WISH TO CLEAR THE LINKED WORKSPACE CHAIN? Respond to this question by typing in 'N'.

6. The system will then ask for the current time by typing: TIME=. At this point you should enter the current time in 24-hour format, eg. 14:27.

7. The system will now ask for the current date by typing: DATE=. You should now enter the current date in the following format: 21APR84.

8. The system will then print a number of messages indicating the status of the File-Restore procedure. When it is complete, the message LOGON PLEASE: will be displayed on the terminal.

SYSPROG BLE

CLEAR - FILE DATA SYSTEM - LABELS.

13 SIGNING ON TO THE COMPUTER

When you wish to do work with the computer, it is necessary to "sign on". To do this you must first know a valid user "account name" as well as a password if the account has been set up to ask for one. Then do the following:

1. Go to a terminal and press the RETURN button. The LOGON PLEASE: message should appear.

2. Type in your account name, for example, SYSPROG. If this is not a valid name the computer will print the message USER-ID? If this happens you should verify that you have the right name.

3. If you had the right name, the computer may ask for a password, if the account you selected has password protection. This will be in the form of a message reading: PASSWORD: At this point you must type in your password or you will not be allowed to sign on to the password. REMEMBER: you must always press RETURN in response to all prompts when you are signing on or using the computer.

4. If you entered the account name and optional password correctly, you will now be signed on to the computer. Please note that the computer always prints a ">" when it is ready for a command to be entered.

14 SIGNING OFF THE COMPUTER

When you are finished using the computer, you should always "sign off", that is, tell the computer that you are finished. This may be accomplished by doing the following:

1. Make sure that you are at the > prompt. This indicates that the computer is ready for a command.

2. Type: OFF; the computer will now sign you off.

15 PERFORMING A FORMATTED FILE-SAVE

At the end of each day of processing, it is important to save the day's work on a tape in case the system should fail, or the information should be needed at a later date. To do this, follow these steps:

1. Mount a backup tape on the tape drive.

2. Sign on to the FILE-SAVE account (see SIGNING ON TO THE COMPUTER).

3. The system will then run some tests for about 2 or 3 minutes. Finally, it will ask four questions. These are:

Question	Answer
CONSOLE LISTING TO PRINTER	N
PRINT FILE STATISTICS REPORT	Y
DO YOU WISH TO DISPLAY FILE NAMES	Y
TIME TO START	RETURN or start time

4. The system will now perform a backup. If the end of a tape is reached before the end of backup, you will be asked to load the next tape and to type 'C', to continue when this has been done.

5. When the backup is complete, the system will print a file statistics report which details everything that was saved. This report should be filed for reference. The terminal will then automatically sign off.

16 PERFORMING A BINARY FILE-SAVE

In addition to the Formatted File-Save described above, the MENTOR is also capable of performing a Binary File-Save. This differs from the Formatted File-Save in several ways. First, the Binary save is an exact image copy of the contents of the disc drive. If you restore from a Formatted save, your disc space will be compressed. This is not the case with the Binary save. In addition, it is not possible to selectively restore information from a Binary save whereas this can be done with the Formatted one. Finally, the Formatted save may be run with other users on the computer while the Binary save may not. On the other hand, the Binary save will save and verify a 30MB disc in approximately seven (7) minutes, whereas the Formatted save can take up to an hour to complete a similar run.. To run a Binary save, do the following:

1. Make sure that everyone has signed off the computer but leave the terminal connected to Line 0 switched on at 9600 Baud.

2. Make sure that a good tape WITH a write-ring (or without the SAFE position set) has been mounted on the tape drive and that the tape drive is ON LINE (MENTOR 4000/5000 only).

3. Wait approximately two minutes, then insert the key in the front panel (MENTOR 2000 excepted), rotate it to the SERV position and press the INIT button, (on the MENTOR 2000, press INIT and INTLK together, then release the INIT button, but hold down INTLK for about 5 seconds). This will start up the Diagnostic Assurance Monitor.

4. When you see the prompt for the diagnostics monitor, type 'F'. This will start the binary save routines. The system may then respond with: Execute (Y/N): At this point you should type 'Y' without pressing the RETURN key.

5. You will now be asked to enter the current date in the format: MMDDYY. This is for tape labelling purposes.

6. Finally you will be asked to input a free format description of the contents of the tape.

7. The system will now run the save. It will first print the message "Saving Disk." which indicates that the save process has begun. Next it will print the message "Verifying." which indicates that it is rewinding the tape and verifying its contents at the same time. If the system has more than 30MB of disc, you will have to use more than one tape for the save. In this case, the system will unload each tape at the end of the save and ask for the next one. Loading the next tape will cause the system to automatically continue. Please be certain that each tape is write-allowed.

8. Upon completion of the utility, the system will exit back to the diagnostic assurance monitor. At this point you should enter "E D" to re-initialise the system. See the section marked COLDSTARTING THE SYSTEM for further instructions.

17 PERFORMING A BINARY FILE-RESTORE

When you wish to restore a system from a previously created Binary File-Save tape, you must follow these instructions:

1. Make sure that everyone has signed off the computer but leave the terminal connected to Line 0 switched on at 9600 Baud.

2. Make sure that the first tape of a good Binary save tape WITHOUT a write status has been loaded on the tape drive and that the tape drive is ON LINE (where appropriate).

3. Wait approximately one minute, then insert the key in the front panel (MENTOR 2000 only), rotate it to the SERV position and press the INIT button (on the MENTOR 2000, press INIT and INTLK together, then release the INIT button, but hold down INTLK for about 5 seconds.) This will start up the Diagnostic Assurance Monitor.

4. Type: E T (Execute from Tape) and press RETURN. The system may then respond with the message EXECUTE? (Y/N). Reply by entering 'Y' without pressing the RETURN key. At this point you will see the Binary Save/Restore options.

5. Enter: "R" WITHOUT PRESSING THE RETURN KEY in order to run a restore.

6. The system will now read the tape and indicate the contents. Press RETURN to indicate that you wish to commence the restore.

7. The system will first print the message "Restoring Disk." which indicates that the restore process has begun. It will then print the message "Verifying." which indicates that it is rewinding the tape and verifying its contents at the same time. If the binary save was more than one tape long, you will be asked to mount each subsequent tape and to press RETURN.

8. Upon completion, the utility will exit back to the diagnostic monitor. If the key is in the ON position then all of the diagnostics, as described before, will be run and the OPTIONS message will automatically re-appear. If the key is in the SERV position, you will go back back to the Diagnostic Assurance Monitor. At this point you should enter "E D" to re-initialize the system. See the section marked COLDSTARTING THE SYSTEM for further instructions.

18 BACKUP PROCEDURES

In order to be able to adequately recover in the event of a system failure, data loss, or disaster, it is imperative that you maintain a sufficient and regular level of system backup. We recommend a rotating system of backups on a rotating daily, weekly, monthly and annual basis. "Rotating" means that each set is rotated on a regular basis, for example, the weekly set is rotated once a week, thus the Monday tape is re-used every Monday and so forth. The scheme works as follows:

1. One rotating set for Monday through Thursday.

2. One rotating set for each Friday in the month (except for the last one).

3. One rotating set for January through November (used at month-end).

4. One NON-rotating tape for the end of each year.

By following the above method, you will assure yourself of an adequate level of backup in just about any case. It is also highly recommended that one backup set be rotated off-site at least once a week. Typically we recommend the rotation of the weekend set on the Tuesday following. This assures that, in the event of a natural disaster, you will be no more than one week out of date, and still able to recover. These tapes could be taken home by a management person, stored in a bank vault or stored by a special data storage facility.

Under O/S Release 2.0, it is no longer necessary to perform binary file saves unless you need to backup your system in a hurry. However, it is still extremely important to keep at least <u>two</u> up-to-date sys-gen tapes at all times. The method for creating such tapes may be found in the section: CREATING A SYS-GEN TAPE.

19 TERMINAL, MODEM AND PRINTER CABLES - MENTOR 3000/4000/5000

Your MENTOR system may be connected to a variety of peripheral devices, allowing you a great deal of flexibility in communications and data access. In order to connect to these devices, however, it is necessary to run a cable to them from a port on the back of your computer system. These cables have 25 pin, EIA RS232C male connectors attached to both ends. In this section are the cabling connection instructions for three types of devices. In all cases, you should use 4-wire shielded cable.

CRT Wiring:

MENTOR Pin #	CRT Pin #
1	1
2	2
3	3
7	7

PRINTER Wiring (Using DTR protocol):

MENTOR Pin #	PRINTER Pin #
1	1 (Shield)
2	2
3	3
7	7
20	20

MODEM wiring (VA-212):

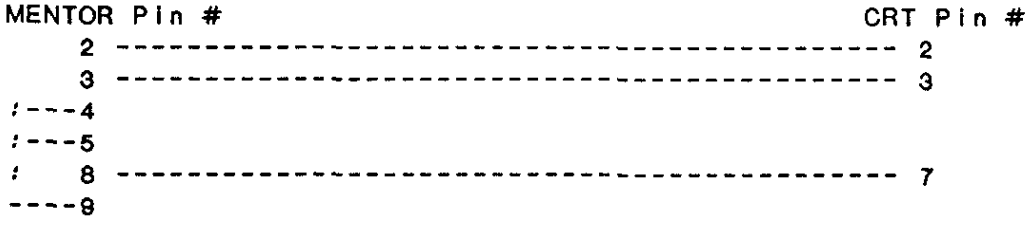
MENTOR Pin #	MODEM Pin #
1	1
2	3
3	2
7	7
	9 ----
	:
	20 ----

Note that for printers on which you intend to use DTR handshaking, it is necessary to sign on to the SYSPROG account and input the command MODEM-ON n, where "n" is the number of the port connected to the printer. If you wish to use X-ON/X-OFF handshaking, then follow the same procedure with the X-ON command.

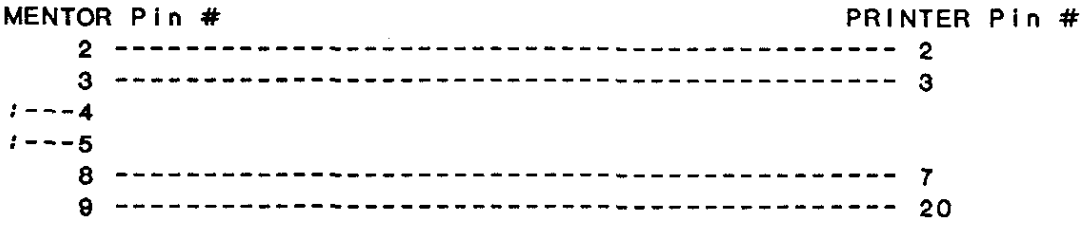
20 TERMINAL, MODEM AND PRINTER CABLES - MENTOR 2000

Your MENTOR system may be connected to a variety of peripheral devices, allowing you a great deal of flexibility in communications and data access. In order to connect to these devices, however, it is necessary to run a cable to them from a port on the back of your computer system. These cables have 25 pin, EIA RS232C male connectors attached to the device end and a 9-pin "D"-type male connector at the computer end. In this section are the cabling connection instructions for three types of devices. In all cases, you should use 4-wire shielded cable.

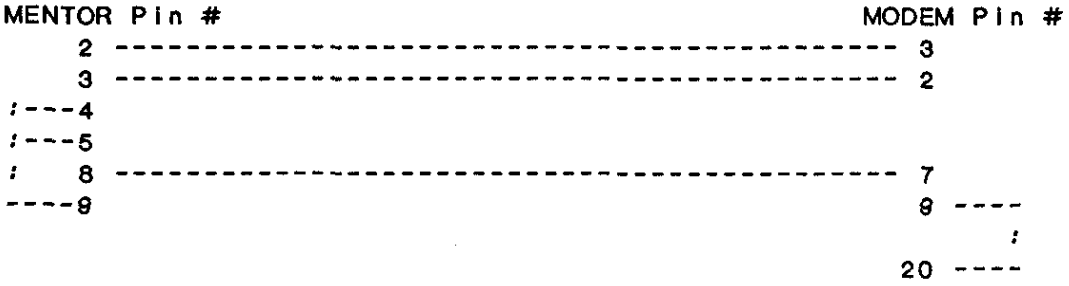
CRT Wiring:



PRINTER Wiring (Using DTR protocol):



MODEM wiring (VA-212):



Note that for printers on which you intend to use DTR handshaking, it is necessary to sign on to the SYSPROG account and input the command MODEM-ON n, where "n" is the number of the port connected to the printer. If you wish to use X-ON/X-OFF handshaking, then follow the same procedure with the X-ON command.

21 OPERATING THE VIEWPOINT CRT TERMINAL

The following are some general hints for operating your Viewpoint CRT terminals:

1. To connect the terminal to the computer, plug the RS232C connector (the computer plug) into the socket on the back marked EIA.

2. For 9600 Baud operation, make sure that only switches 3 and 5 on the back are up. For 19,200 Baud, only switch 5 should be up. Please note that if you change the position of the switches, it is necessary to turn the terminal off and back on again.

3. To turn the terminal on or off, there is a large white switch located on the back of the CRT terminal on the lower right hand side (as you face the back).

4. In order to change the Baud rate on the terminal, you must also change the Baud rate on the system. This may be accomplished by signing on to the SYSPROG account and typing the command: BAUD n,m where "n" is the port number being changed, and "m" is the new Baud rate.

5. If your terminal seems to "hang", ie. it refuses to respond to input, try the following:

   (a) Verify that the terminal is firmly connected to the computer and that it is still switched on. If this is the case, then:

   (b) Holding down the CTRL button, press the letter 'Q'. If the system still fails to respond then:

   (c) Holding down the CTRL button, press the BREAK key. If the system responds with ! or *, then simply type 'G', and press RETURN. If, in either case, nothing happens at this point then:

   (d) Turn the terminal off and on again. If this still fails to get a reaction, then call your system manager or system support group.

22 RE-LOADING ABS

On the odd occasion, the system may fail to verify (ie. when you run a File-Save or Cold-Start, the system may print a message that says "SYSTEM DOES NOT VERIFY". In this case, something has happened to the ABS area (ie. the operating system). In order to correct this situation, it may be necessary to perform the following:

1. Before the message "SYSTEM DOES NOT VERIFY", the computer will print one or more sets of three numbers (triplets). Write down the first number of each triplet.

2. Sign on to the SYSPROG account and type: MLOAD SM xxx [yyy zzz ...], where "xxx", "yyy", etc. are the number or numbers which were written down.

3. Now type: VERIFY-SYSTEM

If the system now verifies, then the problem has been solved. If it does not, then you should contact the KTS Support Desk.

23 CREATING A SYS-GEN TAPE

When your system is delivered to you, it will come with a sys-gen tape for the then current release of the MENTOR Operating System. This tape contains all of the diagnostic, "native" and absolute (ABS) programs which make up the operating system along with the requisite data files and related programs. If, for whatever reasons, it becomes necessary to re-load all or part of your operating system, it is imperative that you have such a tape present and available. Furthermore, it is equally important that you have more than one such tape (since tapes can deteriorate over time), and that you make new tapes each time you receive a new operating system release. The following is the procedure for making such tapes:

1. Mount a scratch tape on the tape drive, WITH A WRITE RING INSERTED, where appropriate.

2. Sign on to the SYSPROG account.

3. Type: SYS-GEN and press the RETURN key.

4. The computer will now ask if you wish to generate a regular sys-gen, or a KTS version. Press the RETURN key to indicate that you wish to create a KTS version.

5. The computer will now proceed to dump all of the required files to tape. When it is complete, it will print a message indicating this fact, and return to the command (TCL) prompt (>). At this point you are done and may repeat the operation, if desired, or continue with normal processing.

24 RE-LOADING THE NATIVE OPERATING SYSTEM

On very rare occasions, the "native" operating system (ie. the memory resident portion of the operating system) may be disrupted. If this occurs only in main memory, then it can be solved by simply performing a cold-start which will re-load memory from the fixed image on disc. If however, the disc-resident copy is destroyed it is necessary to re-load this data from tape. Only a Sys-gen tape is adequate for this purpose. For this reason, it is imperative that you keep at least two current sys-gen tapes at all times! In order to re-load the "native code" perform the following steps:

1. If the system is still up, get everyone off the machine and wait approximately two minutes.

2. On all systems EXCEPT the MENTOR 2000, place the key in the front panel, turn it to the SERV position and then press the TRAP button. On the MENTOR 2000, press TRAP and INTLK together. Wait about two seconds and press the INIT button, or on the MENTOR 2000, press INTLK and INIT, release INIT and pause about 5 seconds before releasing INTLK.

3. Place a good Sys-gen save tape on the tape drive.

4. Go to line 0 (ie. the console terminal), and type: E T

5. If the system responds with EXECUTE? (Y/N), input 'Y' WITHOUT PRESSING THE RETURN KEY.

6. The system will now display a set of options (ie. a menu). Respond by inputing the letter 'D', without pressing the RETURN key, and you will see the cursor move to the right. This is a request to re-load the diagnostic code.

7. Next, input the letter 'N', without pressing the RETURN key, and you will see the cursor move to the right again. This is a request to re-load the "native" code.

8. Finally, input the letter 'P', without pressing the RETURN key, and you will again see the cursor move to the right. This is a request to partially re-load the "ABS" code.

9. At this point, you may press the RETURN key and the system will proceed to re-load the specified portions of the operating system from your sys-gen tape. When the computer asks you for a list of ABS frames to EXCLUDE, (ie. from re-loading) input the number '127' followed by RETURN, then the number '590', and then press the RETURN key twice. At this point the computer will re-display the frame

numbers that you just typed in and ask if you are sure. Simply answer by typing in 'Y', without pressing RETURN.

10. When the restore finishes, the system will exit back to the Diagnostic Monitor. At this point, follow the instructions for Coldstarting the System.

11. When you go through the coldstart procedure after re-loading the system, you will probably see that several mis-matches will appear when the system verification takes place. Do not be concerned, this is normal and is due to the fact that certain system utilities (user modes) do not get loaded during the re-load process. To re-load these utilities, simply wait until the coldstart has completed, sign on to the SYSPROG account, and type: INSTALL . Do not allow other users to sign on until you have completed this step.

25 SETTING THE CONFIGURATION CONTROL BLOCK - M3000/4000/5000

Every MENTOR has stored on its disc drive a configuration control block which tells the computer the exact configuration of the machine. This allows for correct handling of disc space, power failure recovery, tape handling, and so forth. Upon occasion, this control block (the CCB) may become corrupted. When this happens, it is necessary to reset it. A program exists within the MENTOR's diagnostics which allows the CCB to be initialized, modified or just verified. In order to use this program follow these steps:

1. Make sure that everyone has signed off the system. Insert the key in the front of the MENTOR and turn it to the SERV position. Allow a few seconds to pass and then press the TRAP button. Wait for a second or two then press the INIT button.

2. On the console port (Line 0), you will see the "Command 0>" prompt appear. At this point type: H <cr>

3. The computer will now ask you to input a password. Respond by typing: SERVICE <cr>

4. You should now be in the high level diagnostic monitor which will be identifiable by the "Command" prompt changing. At this point type: I <cr> in order to bring up the menu for the Transient Diagnostics.

5. A menu will be displayed on the screen. Type in "R" in order to RUN a program, but do not press the RETURN key.

6. A list of programs which you may run will be displayed on the screen and you will be asked to select one. Type in: CRECCB <cr>

7. Another menu will appear on the screen. This is the menu for the actual CRECCB utility. You will be presented with three options. If you select the 'I' (Initialize) option, you will be prompted for entry of each relevant field in the CCB. If you select the 'D' (Display) option, the computer will display all of the current values in the CCB and allow you to revise any of them. For instructions on the revision process, please read Step 8. The following are the fields which are input by the CRECCB utility. Where a RETURN is required after input, this will be signified below:

    1. System Serial Number - Input the serial number from the sticker on the back of the machine.

    2. Number of MTC cards present - Input the number of 8-way cards present on the system. For every 8 ports on the computer, add a one (eg. 8 ports = 1, 16 ports = 2, etc.) NO

RETURN.

3. Number of RAM cards present - Input the number of memory cards present on the system. For each 128KB of main memory, add a one (eg. 128KB = 1, 256KB = 2, etc.) NO RETURN.

4. Tape Flag Data (HEX) - Input RETURN for a regular 1/2 inch tape drive (MENTOR 4000/5000), or "1" for a 1/4 inch tape drive (MENTOR 3000).

5. Number of disks present - Input "1" for a single disk drive system, or "2" for a dual drive system.

6. Disk Model Number (3350, 6650, 15450, 3450, 7050, 300MB, M2311, M2312) - Input 3350=30MB disk drive, 6650=60MB, 15450=50MB, 3450=30MB drive on M3000, 300MB=300 MB standalone drive. Other values are currently not used.

7. System Clock Speed (MHz) - Input the speed of the system processor. If you have a MENTOR 5000 or a newer 4000, enter "6", otherwise press RETURN.

8. Number of ABS frames (HEX) - Input the number of ABS frames to be allocated on the system. Normally, you should input 300 followed by a RETURN.

When you have completed inputing these fields, the utility will allow you to revise any of them according to the method outlined in the following Step 8.

8. When you are in revision mode, the computer will ask you for the field number that you wish to revise. If you press the RETURN key, you will go back to the main menu selector for this utility. If you wish to revise a field, input the number or letter which appears beside that field on the display, WITHOUT PRESSING THE RETURN KEY. The computer will then ask you to re-input the value for that field, according to the rules defined above. When you have done so, the entire CCB will be re-displayed and you may change another field or exit the utility.

9. When you go back to the menu, input "E" to end and the computer will either go back to the main Transient selector menu, or the bootstrap menu, depending upon how you got to CRECCB in the first place.

The CRECCB utility may also be run by selecting option "B" when you "boot" the computer from a SYS-GEN tape. If you are running CRECCB in this way, please start reading the above from step number 7.

26 SETTING THE CONFIGURATION CONTROL BLOCK - M2000

Every MENTOR has stored on its disc drive a configuration control block which tells the computer the exact configuration of the machine. This allows for correct handling of disc space, power failure recovery, tape handling, and so forth. Upon occasion, this control block (the CCB) may become corrupted. When this happens, it is necessary to reset it. A program exists within the MENTOR's diagnostics which allows the CCB to be initialized, modified or just verified. In order to use this program follow these steps:

1. Make sure that everyone has signed off the system. Insert the key in the front of the MENTOR and turn it to the SERV position. Allow a few seconds to pass and then press the TRAP and INTLK buttons together. Wait for a second or two then press the INIT and INTLK buttons together, then release the INIT button, but hold down INTLK for about 5 seconds.

2. On the console port (Line 0), you will see the "Command 0>" prompt appear. At this point type: H <cr>

3. The computer will now ask you to input a password. Respond by typing: SERVICE <cr>

4. You should now be in the high level diagnostic monitor which will be identifiable by the "Command" prompt changing. At this point type: I <cr> in order to bring up the menu for the Transient Diagnostics.

5. A menu will be displayed on the screen. Type in "R" in order to RUN a program, but do not press the RETURN key.

6. A list of programs which you may run will be displayed on the screen and you will be asked to select one. Type in: CRECCB <cr>

7. Another menu will appear on the screen. This is the menu for the actual CRECCB utility. You will be presented with three options. If you select the 'I' (Initialize) option, you will be prompted for entry of each relevant field in the CCB. If you select the 'D' (Display) option, the computer will display all of the current values in the CCB and allow you to revise any of them. For instructions on the revision process, please read Step 8. The following are the fields which are input by the CRECCB utility. Where a RETURN is required after input, this will be signified below:

    1. System Serial Number - Input the serial number from the sticker on the back of the machine.

    2. Number of PATSI ports - Input the number of ports present

on the system in hexadecimal (base 16) (eg. 8 ports = 8, 16 ports = 10, etc.) Then press RETURN.

3. Number of RAM banks - Input the number of banks of main memory which are available on the system. For each 64KB of main memory, add a one (256KB = 4, 512KB = 8, 768KB = C, 1024KB = 10). Then press RETURN.

4. Tape Flag Data (HEX) - Input "1" for a 1/4 inch tape drive.

5. Number of disks present - Input "1" for a single disk drive system, or "2" for a dual drive system, but do not press RETURN.

6. Disk Model Number (IMI5018, ATAS3033, QUANT530, DSK511-3, CMI6640, VERT130, VERT150, MICR1304, DSK511-5) - IMI5018 = Mentor 2000 drive, ATAS3033, or VERT130=drive on M2500 (check label on disk drive to determine which). Other values are currently not used.

7. System Clock Speed (MHz) - Input "8".

8. Number of ABS frames (HEX) - Input the number of ABS frames to be allocated on the system. Normally, you should input 300 followed by a RETURN.

9. Battery Backup Flag - Input a "1" if there is a battery present (M2500 systems), or press RETURN if there is no battery present (M2000's).

When you have completed inputing these fields, the utility will allow you to revise any of them according to the method outlined in the following Step 8.

8. When you are in revision mode, the computer will ask you for the field number that you wish to revise. If you press the RETURN key, you will go back to the main menu selector for this utility. If you wish to revise a field, input the number or letter which appears beside that field on the display, WITHOUT PRESSING THE RETURN KEY. The computer will then ask you to re-input the value for that field, according to the rules defined above. When you have done so, the entire CCB will be re-displayed and you may change another field or exit the utility.

9. When you go back to the menu, input "E" to end and the computer will either go back to the main Transient selector menu, or the bootstrap menu, depending upon how you got to CRECCB in the first place.

The CRECCB utility may also be run by selecting option "B" when you "boot" the computer from a SYS-GEN tape. If you are running CRECCB in this way, please start reading the above from step number 7.

27 PREVENTIVE MAINTENANCE

Because most of the components in your MENTOR are "sealed" they do not require the traditional kind of preventive maintenance to be performed by a field service representative. However, in order to keep your MENTOR running cleanly and effectively, it is important that you perform certain housekeeping operations on a regular basis. Please note that if you are going to use a vacuum cleaner near your MENTOR, you should first perform a file-save and then shut your machine down. The following are the preventive maintenance operations that you should perform:

1. On a Monthly basis, clean the rear fans on the computer.

2. On a Monthly basis, clean the front filters on the computer (located in the door panels on a 4000/5000, inside the front door on a 3000, and on the rear of a 2000).

3. On a weekly basis, clean the tape path in the tape drive (4000 and 5000 only).

4. At all times, keep the area around the computer clean and free of dust. Most important, on a regular basis, keep any printers which are close to the machine clean and free of paper debris, etc.

28 SYSTEM ENVIRONMENT AND WIRING

Your MENTOR is a very valuable and important asset to your business. As such, you should make an effort to see that its environment and wiring are as amenable as possible to continued clean operation. While it is possible to run your computer in a normal office environment, we do make the following recommendations:

1. Try to see to it that the MENTOR is plugged into a private power line. This is to prevent problems which might arise from people plugging other appliances and devices into the same circuit.

2. Your office temperature and humidity should remain in the normal "comfortable" range. Few things are worse for computers than excesses of temperature or humidity. For the sake of simplicity, your office temperature should be in the general range of 65 to 75 degrees Fahrenheit (18 to 24 degrees Celsius) and 30 to 60 percent relative humidity, with no condensation. If you anticipate that the temperature or humidity may become unreasonable for a period of time (for example, over the weekend), then please be sure to perform a file-save and shut the computer down for this period.

3. Although it is not necessary to put the computer in a special room, you should be aware that the fans on the back of the MENTOR do make some noise and that system printers typically tend to be fairly loud. You may therefore, decide to put the computer and its main printer in a separate room. If you do decide to do this, remember that there is less air circulation in smaller rooms and that this may mean that you will have to pay special attention to the air-conditioning requirements for a computer to be placed in such a room.

4. If your MENTOR has a system (ie. parallel) printer connected, you should run a heavy-gauge wire from any bolt on the back panel of your printer to a chassis bolt on the back of the MENTOR. This is to prevent static charges from discharging into the MENTOR CPU.