FOONLY OPERATOR'S MANUAL

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I. The Tape Drive and Loading Tapes

A. After a crash

1. If the tape begins to spin immediately after pushing the ON-LINE button, start re-booting procedures and then put tape ON-LINE.

2. If the tape moves just a little bit when rebooting, start the reboot again without moving the tape to the bottom.

B. The protective plastic ring

1. When loading a tape without a protective plastic ring, either close the door or hold the door botton down. (If the botton is cut, the machine thinks you're loading a small reel.) Also, you can put your finger by the slot where the tape enters the machine to guide the tape in.

C. Small reels

1. Small reel tapes must be loaded manually. Just thread the tape and start the machine. The door hinge should be out (the door should be open). You may also need to put your finger near the bottom in order to get the ape to catch.

D. Problems loading

1. If the tape won't catch after several tries, the beginning of the tape is probably wrinkled, so cut the end of the tape into a smooth curve. (There should be sissors in the desk.)

E. Note:

1. All tapes should be 800 BPPI

II. System Errors

A. Symptom: No response on any TTY or the console. The fconly is hung.

1. If someone unplugs his TTY upstairs, the system might become hung. A clue to this problem is octal 14 in the LEV ADR registar. Try unplugging and replugging the lines in the patch panel until the problem stops, i.e. you get a response from a TTY.

2. If the first step isn't appropriate:

   a. record LEV ADR in log book

   b. push CONSOLE STOP

   c. record LEV ADR, MEM ADR and DATA in the log book

   d. turn off CONSOLE STOP

   e. put octal 100 in MEM ADR (as if to re-boot)

   f. push CONSOLE START on and then off.

   g. You should now be in DDT. Go to the console and print out the stack and record it in the log book (type these letters on the console and record the answer):

      i. P/ (to see contents of stack pointer)

      ii. <TAB> (to get to stack) (<ctrl>I on the CTY)

      iii. lots of up-arrow's (this goes up thru the stack. Every 6 of these, type PPC/ and FPC/ to see the stack variables.)

      iv. 20/ 100 000,,0 <CR>

      v. Give the MEM ADR you recorded before.

      vi. <esc>G

   h. If, after all of this, you get no response, reload the system.

B. Symptom: Error on CTY is '.... BUGCHK ...'

1. Record error in log book

2. Type <esc>P to continue system.

3. If this doesn't work, re-boot system.

C. Symptom: Error on CTY is '.... BUGHLT ...'

1. Record error in log book

2. Re-boot system from current TENEX. System cannot be continued.

D. Symptoms: MI STOP, MI PAR ERR, or MEM PAR ERR lights on

1. MI PAR ERR
   a. record MEM ADR, DATA etc. in log book
   b. try to reboot system by
      i. turning off MI PAR
      ii. hit MICRO PROCESSOR CONT
   c. if this does work, crash system gracefully right away
2. MEM PAR ERR
   a. record MEM ADR lights
   b. turn off MEM PAR STOP
   c. hit MICRO PROCESSOR CONT
   d. after 1 sec, hit MICRO PROCESSOR STOP
   e. record DATA in log book
   f. There has been a non-recoverable parity error. Sometimes this error can be recovered. Use your discretion.

III. System Maintenence (How To Avoid Problems)

A. Every few days, check the DATA registers.

1. hit SEE CELS to 6 DATA registers
2. go back again in 20 min to see what's in DATA
3. record:
   a. bit 14 (error bit)
   b. bits 8-13 (2 octal number - called the syndrome bits)
   c. bits 17-18 (2 bit number - called the memory)
   d. bits 19-21 (row number)
4. With this record, the hardware people can replace any chips that are worn.
5. **Note:** If syndrome bits are octal 76, Poole needs to be notified.
6. **Note:** Bit 14 tells if there is a recoverable data error.

IV. Re-booting

A. **NOTE:** Usually you will only need to re-boot starting with TENEX (step C. on this page). Re-booting from the MICRO-CODE is a drastic step.

B. Re-booting from MICRO CODE

1. Execute bootstrap procedure (below) with current MICRO CODE tape (labelled 'use me') and starting address 700 octal.
2. Execute bootstrap procedure (below) with current TENEX tape (labelled 'use me' and CURRENT TENEX) and starting address 5000 octal.
3. Enter 100 octal into address switches. Hit macroprocessor (PDP-10) start twice. This starts DDT. Turn on MI PAR STOP and MEM PAR STOP switches (These are WHITE switches).
4. Type SYSGO1<esc>G to the CTY. After a while, the start up procedure will ask for the current date and time. (The phone number for time is POP-CORN.) This should start up TENEX, ending with an at-sign.

C. Re-booting from TENEX

1. Execute bootstrap procedure (below) with current TENEX tape (labelled 'use me' and CURRENT TENEX) and starting address 5000 octal.
2. Enter 100 octal into address switches. Hit macroprocessor (PDP-10) start twice. This starts DDT. Turn on MI PAR STOP and MEM PAR STOP switches (These are WHITE switches).
3. Type SYSGO1<esc>G to the CTY. After a while, the start up procedure will ask for the current date and time. (The phone number for time is POP-CORN.) This should start up TENEX, ending with an at-sign.

D. Bootstrap procedure

1. Mount appropriate magtape. Be sure it is rewound (at the bottom, the bottom light will be on. The tape drive should be on-line and set at 800 BPI. Also, check that there is a write ring in the tape.

2. Turn off two parity switches.
3. Turn on microprocessor stop and MIPC from SW switches.
4. Enter appropriate starting address into address switches.
5. Hit microprocessor clear, then microprocessor continue.
6. Turn off mircoprocessor stop and MIPC from SW switches.
7. Hit microprccessor continue.

V. How to Crash the System Gracefully

A. login as a wheel (jessica)

B. enable yourself

1. At this level

a. **<ctrl>E PROHIBIT <esc>** disables logins.

b. **<ctrl>E PERMIT <esc>** allows logins.

C. type **<ctrl>E HALT** (gives 5 min notice, 1 min notice, logs them out)

1. Or you can run NOTIFY to give the users more notice, when it asks for TTYs, type '-1', end message with <ctrl>N.

D. Type QUIT and reply to question with <CR>.

E. Now you are in '.' mode, so type 'H' (to halt TENEX) ar confirm with '.'

F. The system is now halted. To bring system up from this state, type <esc>P then (after the dot '.') type E to get back to exec. If you continue the system in this way, you must type <ctrl>E PERMIT <esc> to let people log in.

G. NOTE: If you accidently prohibit logins and then log off at the CTY, all is not lost. You can always log back in at the CTY. Log in as a wheel, enable, and type <ctrl>E PERMI <esc>.

VI. Dumper

A. Problems

1. If dumper contiuously runs off the end of a tape without telling you, get into DDT and check location 4035 c typing 4035[. If the number is not 170,,0 then replace it with this number.

B. Full dumps

1. log in as a wheel
2. enable yourself
3. type DUMPER
4. in response to questions:

DUMP, LOAD, CHECK, OR SINGLE: D

DUMP WHOLE DISC: Y

TYPE IDENT INFO: full dump by <initals>

TYPE MAG TAPE UNIT NUMBER: 0

5. dumper will tell you when to load a new tape.
6. WARNING: make sure the tape has a WRITE RING. After the tape is loaded, the file protect light will NOT be on. All tapes should be 800 BPI.
7. make a DLUSER tape when you are all done. Type following:

a. ENABLE

b. CD SYSTEM

c. DLUSER (this will run for 1 to 5 minutes.)

d. DDT

e. WRITELP+12/ (DDT will now type "haltf")

f. 104000,,240 <CR>

g. <ctrl>G (this calls the system)

h. SAV<esc><esc><esc>DLUSER.LOD (now mount a small tape with a write ring.)

i. MTLOAD (system will ask for tape unit number, type mta0:)

j. thefile names to give are DLUSER.LOD and DUMPER.LOD

K. give several <CR>s

6. put the tapes in the tape stand by door of the foonly room. Make sure they are labelled. Put the dumper print out (from the CTY) with the tapes.

C. Incremental dumps:

1. follow the steps for a Full Dump, except, in response to the questions:

DUMP, LOAD, CHECK, OR SINGLE: D
DUMP WHOLE DISC: N
INCREMENTAL DUMP: Y
TYPE IDENT. INFO: incremental dump by <initals>

TYPE MAG TAPE UNIT NUMBER: 0

D. Single dumps (individuals):

1. log in as yourself (if you only want to dump several files and not your entire directory, move your files to temporary directory and log in to the temporary directory.)

2. run dumper as above, but in answer to questions:

DUMP, LOAD, CHECK, OR SINGLE: D
DUMP WHOLE DISC: N
SPECIFIC USERS: Y
USERS: the directory you are logged in to
INCREMENTAL DUMP: Y
TYPE IDENT. INFO: incremental dump by <initals>

TYPE MAG TAPE UNIT NUMBER: 0

VII. Re-loading Files

A. Refreshing entire system after a crash:

1. load TENEX as usual but, instead of SYSGO, type SYSLOD.
2. answer Y to the question
3. load the latest DLUSER tape
4. you will be in '.' mode
5. respond with: ('...' means the CTY is responding)

```
L .... MTA6: <CR>
...1  (will respond with LOADED)
S (confirm with '.')
L .... MTA6: <CR>
...2 (this loads MINIDUMPER)
S
```

6. now mount tape 1 of latest full dump and away you go with DUMPER
7. in dumper:

```
DUMP, LOAD, CHECK, OR SINGLE: L
SPECIFIC USERS: N
INTO SAME DIRECORIES: Y
MAG TAPE NUMBER: 0
```

8. Then, after the full dump is loaded, go through all the incrementals, in order.
9. Finally, reload TENEX.

B. Restoring a few files

1. don't enable yourself and get on a temporary directory. You'll want to restore the files on the temporary and later copy them to the correct directory.
2. run dumper and answer questions:

```
DUMP, LOAD, CHECK, OR SINGLE: L
SPECIFIC USERS: Y
INTO SAME DIRECTORIES: N
WHERE: <where you want the files>
MAG TAPE NUMBER: 0
```