TSS Display Driver
(Revision A - 7-6-70)

~~ammends~~:

Operators Manual:
ammends: sections II, III, IV, V
add: section VI

PROGRAMMING MANUAL:
ammends: sections III
rename: section ~~III~~ IV as V
replace section IV
append to (new) section V

II A

DATE AND TIME

/DATE, MM/DD/YY ↵

/TIME, HH.MM.SS ↵

note that there is no period following the seconds field in a time command!

note also: 1) the delimitors '/' and '.' are interchangeable. Thus /DATE, MM.DD/YY ↵ will be accepted.

2) each of the fields (MM; DD; YY; SS: MM; HH) is considered to be a string ~~of digits~~ from 0 to 2 ~~chars~~ digits. Thus:

/DATE, ↵ 1/5/70 gives 01/05/70

/TIME, 5.. gives 05:00:00

3) No zero fields are allowed in the date command. Other than that, no checking for validity is done on either command.

II B (insert)
addition of a regular command
(system does not need to be
unprotected)

/RESTORE ⏎ replaces the
'restore' key discussed in
section III.

(insert)

II[c] More 'system unprotected' commands

Channael manipulating commands

basic format

/CCCnn[[mmmmm]]

where CCC is command
nn is channel number (octal)
mmmmm is octal output value
nn and mmmmm are translated and used right justified, 0 filled
(eg, n = 5 = 05 mmmmm = 15 = 0015)

the following commands are provided

/ACN nn - activate channel nn
/DCN nn - disconnect channel nn
/FAN nn, mmmmm function mmmmm on channel nn
/OAN nn, mmmmm output mmmmm on channel nn

conditions are checked and these commands refused with an error message NOT SAFE if the channel status precludes their execution. In order to use these commands, screen M must

be currently displayed on ~~the one or the other~~ at least one screen. If not, an error message is issued, 'NEED SCREEN M'.

NOTE: CURRENTLY THE DISPLAY MAY CRASH IF THESE COMMANDS ARE USED ON THE DISPLAY CHANNEL (10B).

III The 'restore' key is not implemented. a restore command is provided instead.

IV Screen Headers

The right screen contains the header title TSS, the 'system unprotected' flag, the P-counter and the right screen name. The left screen header contains, in the left corner, the channel statuses, and, directly under these, the system state flags.

V Addition to the M display.

The M display also contains the current time and date (or the time and date both (starting at 0) from deadstart if never entered by the operator)

VII Disasters: This section is intended to ~~allow the~~ convey what the operator may and may not do till the doctor comes, and to tell the doctor how not to kill the patient.

Within the display driver, there is a section of program whose sole job is to check for system disasters. When one occurs, this part of the program re-initializes the other programs in the display driver, puts the M display on the right screen, clears the left screen and commits suicide. The M display then flashes disaster.

When this occurs, the system is dead. The display driver is therefore very frail, as it ~~cannot~~ does not depend ~~seek~~ on the system to

do anything for it. Thus any display driver action requiring the systems help may (or in fact, quite likely will) hang up the display driver program segment requesting it.

Thus the following conditions exist: ① the disaster check routine ~~has~~ has committed suicide ② The clocked event channel driver dies within ~~one~~ ¼ 100 m sec by trying to make clocked event channels tick.

These two things are expected and are not serious. The Keyboard accepts commands normally. Thus CM may be examined and modified. Three possibilities now exist

1. a. no-one does anything or the dead-start button is pushed. reperc utions- none.

   b. some one uses the display carefully- ~~reperc~~ results he ~~tions~~. may find whats wrong!

8.

2. someone ~~display~~ types a command for which the display driver requires help from the system.
result- display driver Keyboard interpreter may hang, leaving the Keyboard dead. This may be considered Fatal, as the display driver is not much use anymore.

3. someone may try to display ECS. This probably will hang the display updater. This is not serious.

Now: to avoid situation 2.
Simple: do not use any of the following commands:
<u>Sending messages to logical Keyboards</u>
DATE or TIME
LOCK or UNLOCK
ECS store
note: RESTORE does strange things; it re-encarnates the disaster detectors, which does its thing.

now: case 3 is trivial:
Suppose: someone bring up a Core/ECS display which tries to display ECS. The updator hangs. However, the keyboard still works. Set the screen to contain only CM. Then type /RESTORE. Then bring the screen up again.

eg /A ↵ (contains ECS)
/A,0 ↵
/RESTORE ↵
/A (desired results!)

Programming

III The Keyboard space bar maps to a 00B character in the message, not 56B (blank) Again Beware: The bytes following (cr) (60B) in the message are not zeroed.

addition Section IV

IV Timed event channels.

There are now event channels on which an event will be sent for each process hung on every clock tick. Each channel has a different clock rate. Each clock ticks on an even interval of the real time clock as entered by the operator. Channels are provided for the following intervals:

Tenth second	minute
second	ten minutes
TEN seconds	hour.

The event sent contains the value of the master (micro-second) clock at the time of the tick.

II - append These event channels are the device following the display at in Howards funny file and are created from fasta. to slow intervals.

NEW ECS action. returns ~~tim~~ operator time and date in ASCII, ~~ta~~ right justified as follows

X6 =	HH:MM:SS	(time)
X7 =	MM/DD/YY	(date)