

TO: Distribution
FROM: R. B. Snyder
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SUBJECT: Instructions for operating the DATANET 355

This MOSN applies to Multics system operation on the Multics Series Model 6180.

This document provides the information necessary to run the DATANET 355. Information is presented in two sections, switch settings and operational data.

SWITCH SETTINGS

There are three places where switches must be set to enable the 355 to run correctly.

The switches must be set is on the all the LSLA(s). There is an area on the LSLA maintenance panel labeled "CONFIGURATION SECTION". Here, the TEST/NORMAL switch should be set to NORMAL, the LOW/HIGH switch should be set to HIGH, and the SHORT/LONG switch should be set to LONG.

Attached to the DATANET 355 is a console which should be powered up and in the online mode.

Next, the Central System DCW mailbox address must be set in the switches to 600 octal and the emergency interrupt cell must be set to 4, and the terminate interrupt cell to zero (0). The DATANET 355 DCW mailbox address must be set to 454 octal. The 355 channel number must be set to 04. The 355 special interrupt level must be set to 3, and the terminate interrupt level, to 2. The followings now is a list of remaining switches and their settings:

TIMER	OFF
WRITE ENABLE	ON
ADDRESS BOUND	OFF
BOOT ENABLE	ON
MEMORY PROTECT	OFF
DISABLE POWER FAULTS	ENABLE
TIMER FREQ	DOWN (1)
8K OFFSET	OFF
ELAPSED TIMER	ENABLE
ALARM	ENABLE
TEST	DOWN

The FAULT CONTROL switches should be in the NORMAL position and the two PROCESSOR CONTROL switches should be in the NORMAL position.

OPERATION OF THE 355

When it is desired to bring up Multics, the 355 must be loaded first. This is done by running a BOS command called "LD355". This must be done before typing the boot command. The LD355 command will initialize and load the 355. If there are no problems with the load, the message "BOOT SUCCESSFUL" will be typed out on the BOS console. If there are problems, there are several messages which might be typed out on the BOS console. If the message

"NO RESPONSE FROM 355"

is typed out, check the console which is attached directly to the 355. If it is powered off make sure it is powered up and in the online mode and try again. If it is powered up, and a check of the configuration information specified above finds no error, a member of the Multics staff should be notified. If the message

"355 REPORTS ERROR IN READING 355 CORE IMAGE"

is printed, try the LD355 command two more times. If this message continues to print out, check the configuration and if it is ok, notify FED that the 355 has an apparent DC/DIA problem. If the message

"CONFIGURATION ERROR REPORTED BY 355 BOOTLOADER"

prints out you have made an error in the configuration setup. If the message

"CONFIGURATION ERROR REPORTED BY 355 INITIALIZATION"

is printed, go to the 355 console and there should be a description of what the problem is printed on the console. If the message

"D355 CONFIGURATION CARD NOT FOUND"

is printed, check the configuration deck for the presence of the D355 card. If the message

"BAD PORT NUMBER ON D355 CONFIGURATION CARD" or
"BAD CELL NUMBER ON D355 CONFIGURATION CARD"

is printed, check the contents of the port and interrupt cell fields on the D355 configuration card for correctness. Finally, if the message

"EMERGENCY INTERRUPT FROM 355 # n

is printed, check the 355 console for a configuration error message and check the configuration check list described above for correctness. If everything appears to be ok, try again and if the problems persists, contact a member of the Multics staff.

After the 355 is loaded successfully, Multics may be bootloaded and operations will proceed as normal. If there are any other configuration conflicts, appropriate self-explanatory messages will be printed on the BOS console. If for some reason the 355 should die, the message

"EMERGENCY INTERRUPT FROM 355"

should be printed on the BOS console before Multics returns to BOS. In this case, the 355 should be dumped using the BOS command "DMP355". This command will dump the contents of 355 memory on the printer. In addition, the contents of the segment "tty_buf" should be dumped to allow Multics staff personnel to determine why the crash occurred (this in addition to whatever segments are normally dumped after a crash). If for some reason the 355 appears to be down, although no message has been printed, this may be determined by going to the any configured LSLA configuration panel and examining the two lights labeled "SYN SRH" and "RCV OFF". If these lights are on solidly, the 355 is down and should be dumped as described above.

DATANET 355 DUMPER/PATCHER

There now exists a stand alone program for the DATANET 355 called the DATANET 355 dumper/patcher. This program was written for use primarily while checking out the Model 6180. It is intended to be an interim dumping and patching facility while the equivalent facilities in BOS are being debugged. This program can also be used to dump and patch the Model 6180 of course and specifically, it can be used to dump BOS if BOS dies while dumping Multics (this situation previously required one to either dump BOS to see why it died thereby losing the Multics dump or retry the Multics dump thereby losing the reason for the BOS failure).

This program is used as a self-bootloading card deck which is loaded into the 355. a DTANET 355 with a card reader, console attached to a DATANET 355 console adaptor, and an inter computer adaptor or direct interface adaptor to an IOM is required. In addition, if dumping is to be done, a printer is required. Standard channel assignments are used (see 355/GERTS assignments).

OPERATION:

Place the card deck in the card reader and then ready the reader. Go to the 355, make sure that the Series 6000 write protect switches on the DATANET 355 panel are not on, press initialize and bootload. The deck will be read in. Go now to the DATANET 355 console where the letters "COMMAND:" should be typed out. You may now type one of two commands. These are "DUMP" and "PATCH".

If you type "DUMP", the DATANET 355 will print "*" which is an invitation to type in a dump request. A dump request is of the following form:

```
loc nlocs
```

where "loc" is the Model 6180 location to start dumping from and "nlocs" is the number of words to dump. All numbers are octal. If you do not type "nlocs", only 1 word will be dumped. You may dump only the low 256K of the Model 6180. When the dump has been completed, another "*" will be printed out. You may type another dump request or you may type "QUIT". If you do this, you will return to command level where "COMMAND:" will be printed and you may type "DUMP" or "PATCH" again.

If you type "PATCH", the DATANET 355 will print "*" which is an invitation to type in a patch request. A patch request may be any of the following:

```
PEEK loc nlocs  
SET loc cont1 cont2 ...contn  
QUIET  
LOUD  
CARD  
QUIT
```

Typing "PEEK" will print the contents of Model 6180 memory on the console. Printing will start from location "loc" and will print "nlocs" values. If "nlocs" is not supplied, only one location will be typed.

Typing "SET" will fill cont1 into location "loc" in the Model 6180, cont2 into location "loc+1" in the Model 6180 etc. If you type less than 12 octal digits for a field, the value you do type will be right justified. For example, Typing "SET 100 776" will put the value 000000000776 into location 100 in the Model 6180. If you type more than 12 characters, the leftmost characters beyond the limit of 12 will be lost. As each location in the Model 6180 is modified, a message of the form

```
"LOC x CHANGED FROM n TO m"
```

will be typed out.

Typing "QUIET" will inhibit the printing of the loc changed messages.

Typing "LOUD" will enable the printing of the loc changed messages. This is the default.

Typing "CARD" will cause patch commands to be read from the card reader until it exhausts at which time commands will be read from the console again. The idea here is that if you have a large number of changes which you must continually make to the same locations, you may type the appropriate "SET" commands on cards and then type "CARD" on the console at which time the set commands will all be processed just as if they were typed in on the console. You can include a "QUIET" card as the first card to inhibit the printing of each change message to speed up the changing process. The last card in the deck might be a "LOUD" card to reenale the printing.

Typing "QUIT" will revert to command level as described above for the dumper.

At any time you may push the quit/interrupt/break button on the console. Doing this will cause control to revert to command level where

"COMMAND:"

will be typed out.

If you make a mistake while typing a field, typing any letter will kill that field. For example, typing the command

"SET 100 123 345 456K444 345"

will put 123 into 100, 345 into 101, 444 into 102 etc. Typing the "K" caused the 456 to be thrown away.

If any processor or lom faults occur, the DATANET 355 dumper/patcher will halt at a DIS instruction. The processor will stop at a DIS with address field 52 octal after an lom fault and DIS 77 octal after a processor fault.

The card deck for the DATANET 355 dumper/patcher may be obtained from Dave Jordan or Dick Snyder.