

Memorandum M-2133

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Digital Computer Laboratory
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SUBJECT: MTC TESTS ON MAGNETIC MEMORY - AUTOMATIC MEMORY DISPLAY

To: MTC Engineers

From: Harlan E. Anderson

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Abstract: This is the first of a series of M-notes describing procedures, programs, and results of MTC tests on the magnetic memory. Automatic memory display is a simple test procedure for reading, rewriting, and displaying the contents of every magnetic memory address.

What Automatic Memory Display Does

Automatic memory display uses MTC, not as a general purpose computer, but as a special purpose piece of test equipment. It will start with any magnetic memory register X and read the contents of this into the arithmetic element, perform a parity check on the word and rewrite the word in register X. If an odd number of errors has occurred in the 17 digit word, a parity alarm will occur and the computer will stop. If no errors or an even number of errors have occurred in the 17 digit word, the computer will repeat this procedure on magnetic memory register X+1. As part of this test, a person must select to examine the contents of one digit of every magnetic memory register. The contents of the selected digit will appear in a 32 x 32 array on the memory display scope. A "one" will be represented by a spot and a "zero" by the absence of a spot. After register 2047 has been examined, the computer will examine register 1024 (the first magnetic memory register).

How to Operate the Computer in Automatic Memory Display

During normal computer operation, the memory should be loaded with the desired pattern. Programs are available for simple patterns such as all "one's", all "zero's", checkerboard, worst pattern, etc. Programs for more complicated patterns will be made available to meet the need.

Next the following "one" instruction program should be placed in toggle switch register 2 (tp 1024).

The startover button should now be pushed. This program will automatically give a programmed alarm and stop the computer. The only purpose of it is to be sure that the Automatic Memory Display starts off in a magnetic memory address (namely, 1024 decimal).

Next the Suppress Operation Timing Switch should be placed in the up position.

The clear alarm button should be pushed next to remove the programmed alarm created above.

Next the digit to be viewed on the scope should be selected. This is temporarily being done on the back of the main frame with alligator clip leads. Two leads are necessary and they are in existence on panel no. 24. One end of each lead is permanently fastened to a cathode follower. The other ends should be connected to the AR 1 bus and the AR 0 bus of the digit to be viewed. When the computer is to be operated in a normal mode these two clip leads must be connected to a source of bias voltage, either -15 volts or -30 volts.

Next the restart button on the console should be pushed.

The following is a summary of the above:

1. Load desired pattern into the memory.
2. Perform tp 1024 in register 2.
3. Place the Suppress Operation Timing Switch in the up position.
4. Clear alarms.
5. Select the digit to be viewed on the scope.
6. Push the restart button.

To stop this test either the half instruction switch can be placed up momentarily or the stop pushbutton can be pushed.

After this has been done the test can again be started by pushing restart.

To return the computer to normal operation, the following must be done:

1. Place Suppress Operation Timing Switch in the down position.
2. Remove digit selection clip leads and fasten to a source of -15 volts or -30 volts.

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To view a different digit than the one originally selected the procedure is:

1. Stop the test
2. Change the digit selection clip leads to the new digit.
3. Push restart.

Signed Harlan E. Anderson
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