IDENTIFICATION

Product Code: MAINDEC-08-D1HA-D

Product Name: PDP-8, 8/I, Extended Memory
                 Address Test

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Maintainer: Diagnostic Group

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1.   ABSTRACT

The PDP-8, 8/I Extended Memory Address Test tests all of memory not occupied by the program to make sure that each location can be uniquely addressed. This is performed by a series of four tests. The first two tests write the address and complement address of each memory location into itself, and then checks the contents of each location to make sure each is correct. The third test first sets all of memory not occupied by the program to all ones, and then writes a word of all zeroes, except for one bit, into each location and checks for error. The fourth test is similar except that a word of all ones, except for one bit, is written into each location and checks for error.

2.   REQUIREMENTS

2.1   Equipment

A standard PDP-8 or 8/I with a minimum of 8K words of core memory.

2.2   Storage

The program requires locations 0010 to 2534 octal.

2.3   Preliminary Programs

The Binary loader must be in locations 7756-7776 octal. Also, all diagnostics for a basic PDP-8 or 8/I must have previously been run successfully.

3.   LOADING PROCEDURE

3.1   Method

a.   Turn off the Teletype reader.
b.   Set the SR to 7777.
c.   Press LOAD ADDRESS, and then START.
d.   Place the Binary tape in the Teletype reader and turn on the reader.
e.   When the program has been loaded, stop the computer, turn off the reader, and remove the tape.

4.   STARTING PROCEDURE

4.1   Starting Address

Start from address 200 to specify the amount of core memory to test, SR settings, and to receive a header print-out.

4.2   Restarting Address

Start from address 211 to change the test limits, SR settings, and to inhibit the header print-out.

4.3   Operator Action

Immediately after starting from address 200 or 207, the program will print "TEST LIMITS". The operator must then specify, via the Teletype keyboard, the amount of core memory to test, followed by a carriage return.

The following rules govern the amount of memory to test:

a.   Type two octal numbers, separating the numbers with a comma. The first number signifies the lowest order 4K stack to test; the second signifies the highest order.

b.   The program expects the 4K stacks to be numbered sequentially starting with stack 0.

c.   If the highest order stack to test is typed as the first stack, the program will interchange the two values so as to make the second value the first to test.

d.   After typing the second octal number, press the carriage return key to terminate the line.

e.   The program will test the lowest and highest order 4K stack specified, plus every stack between, starting with the lowest specified.

f.   Any single stack, or two or more sequential stacks may be specified.

g.   The stack containing the program may be included when specifying two or more stacks. The stack containing the program will be tested after automatic program relocation takes place (see section 5.3.1).

h.   If a typing error is made, press the RUB-OUT key. "TEST LIMITS" will be printed again. All previous input is disregarded.

For the following examples assume the program to be located in stack 0, and the program has been started from address 200 or 207. The amount of core memory available is 32K.

Example A: TEST LIMITS
              0,7 ↲   (↲ denotes carriage return)

              Example A indicates stacks 0, 1, 2, 3, 4, 5, 6, and 7 will be tested.

Example B: TEST LIMITS
              7,0 ↲

              The program will perform exactly as Example A.

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Example C: TEST LIMITS
4,5↙.

Only stacks 4 and 5 will be tested.

Example D: TEST LIMITS
3,3↙

Stack 3 alone will be tested.

Example E: TEST LIMITS
0,0 PROGRAM IS LOCATED IN FIELD 0

TEST LIMITS
0,1↙

Example E shows the message printed by the program when a single stack is selected which currently contains the program. "TEST LIMITS" is printed again, and the operator must then correct the test limits.

Operation of the program is unpredictable if the amount of memory selected for testing exceeds the actual amount available, i.e., selecting 32K for testing on a PDP-8 or 8/I equipped with a maximum of 28K.

4.3.1   Setup SR – After the test limits is specified, the program will print "SETUP SR". For normal program operation, the SR must be set to equal $0000_{(8)}$. Press the carriage return key after setting the SR to 0000. The program will then run until stopped by the operator. Normal program operation is defined as performing all four checkerboard patterns on all of available memory from every memory stack.

5.   OPERATING PROCEDURE

5.1   Program and Operator Action

a.   Load the program into stack 0 using the procedure described in section 3.

b.   Set the SR to 200; press LOAD ADDRESS, and then start.

c.   The message "TEST LIMITS" will be printed. Specify the limits, via keyboard, as described in section 4.3.

d.   The message "SETUP SR" will be printed. Set the SR to $0000_{(8)}$, and press the carriage return key.

e.   The program will perform all four tests on all of core memory specified, after which, automatic program relocation takes place.

5.2   Operational Switch Settings

Normal operation of the program requires the SR set to $0000_{(8)}$. Refer to section 8.2, applications, for switch settings provided for trouble-shooting.

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