IDENTIFICATION

PRODUCT CODE:	MAINDEC-08-D1AA-D
PRODUCT NAME:	PDP-8 Memory Power On/Off Test
DATE CREATED:	December 2, 1965
MAINTAINER:	Diagnostic Group
AUTHOR:	R. Green M. Horovitz
PREVIOUS CODE:	MAINDEC 829

1. ABSTRACT

This program is a Memory Data Validity Test to be used after a simulated power failure.

2. REQUIREMENTS

Storage

Memory locations 0020_8--7677_8

Subprogram and/or Subroutines

High RIM

High Binary Loader

Equipment

PDP-8 Processor, keyboard reader, and Teleprinter

3. USAGE

3.1 Loading

Normal binary tape loading procedures are to be used with this program.

3.2 Start up and/or Entry

Load address 0020 and press START.

The program should then halt at 0043_8.

Load address 0001 and press START.

The program should now loop between 0044_8 and 0065_8.

3.3 Errors in Usage

Errors detected by the program cause the program to halt at memory address 0056_8. The contents of memory addresses 0011_8 and 0012_8 indicate the addresses of the data that failed to check-sum. Memory addresses 0007_8 and 0010_8 contain the data words that failed to check-sum.

Lower Address = $(0011_8) = 100_8 - 3677_8$

Upper Address = $(0012_8) = 3700_8 - 7677_8$

Lower Error Word = $(0007_8) = 2525_8$

Upper Error Word = (0010_8) 5252_8

3.4 Error Recovery

Press CONTINUE to test for other error words in memory.

Reload address 0020_8 to restart the entire program.

4. DESCRIPTION

4.1 Discussion

This program tests memory for bit drop out and pick up after a simulated power failure has occurred.

By starting the program at memory address 0020_8, data words consisting of 2525_8 are written into memory locations 0100_8--3677_8, and the data words consisting of 5252_8 are written into memory locations 3700_8--7677_8 after which the program halts at memory address 0043_8. Load address 0001 and restart the program; the program will 2's add the contents of memory location 0100_8 with 3700_8. If the result equals 7777_8, the program will 2's add the contents of memory locations 0101_8 with 3701_8, etc. until the memory addresses of 3677_8 and 7677_8 are tested. The program stays in the 2's add compare loop until an error occurs. Concurrently cycle the power to the PDP-8 off and on. After the power has been reapplied to the PDP-8, load address 0001_8 and press START. If an error occurred during the power cycling, the program halts at location 0056_8. The program may be restarted at memory address 0001_8 as many times as desired.

4.2 Examples and/or Applications

A HALT occurs at memory address 0056_8.

Address	0007_8	=	2505_8	(Data Word)
Address	0010_8	=	5252	(Data Word)
Address	0011_8	=	0101	(Address Word)
Address	0012_8	=	3701	(Address Word)

Bit 7 was dropped at memory address 0101_8.

5. EXECUTION TIME

1 msec/loop

6. PROGRAM LISTING

```
/MEMORY POWER ON OFF TEST

*0020

0020  4022  START,      JMS SETUP              /START INITIAL
0021  5031      JMP WRKON
0022  0000  SETUP,      0
0023  7200      CLA
0024  1002      TAD K0077
0025  3011      DCA 11
0026  1003      TAD K3677
0027  3012      DCA 12
0030  5422      JMP I SETUP
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```
0031  1005  WRKON,      TAD UPREG
0032  3411        DCA I 11
0033  1006        TAD LOREG
0034  3412        DCA I 12
0035  1011        TAD 11
0036  7040        CMA
0037  1003        TAD K3677
0040  7040        CMA
0041  7640        CLA SZA
0042  5031        JMP WRKON

0043  7402  STEND,      HLT                 /TURN POWER OFF AND ON

0044  4022  COMPAR,     JMS SETUP
0045  7200        CLA
0046  1411        TAD I 11                  /11=UPPER ADDRESS 100-3700
0047  3007        DCA UPPER
0050  1412        TAD I 12                  /12=LOWER ADDRESS 3701-7700
0051  3010        DCA LOWER
0052  1007        TAD UPPER
0053  1010        TAD LOWER
0054  7040        CMA
0055  7440        SZA

0056  7402  F1,  HLT       /ERROR , NO COMPARE
0057  1011        TAD 11
0060  7040        CMA
0061  1003        TAD K3677
```

```
0062  7040        CMA
0063  7440        SZA
0064  5045        JMP COMPAR+1
0065  5044        JMP COMPAR
            *0000
0000  0044        COMPAR
0001  5400        JMP I 0           /START AFTER POWER UP
0002  0077  K0077,      0077
0003  3677  K3677,      3677
0004  7700  K7700,      7700
0005  2525  UPREG,      2525
0006  5252  LOREG,      5252
0007  0000  UPPER,      0           /ERROR WORD (2525)
0010  0000  LOWER,      0           /ERROR WORD (5252)

COMPAR   0044
F1       0056
K0077    0002
K3677    0003
K7700    0004
LOREG    0006
LOWER    0010
```

```
SETUP   0022
START   0020
STEND   0043
UPPER   0007
UPREG   0005
WRKON   0031
COMPAR  0044
F1      0056
K0077   0002
K3677   0003
K7700   0004
LOREG   0006
LOWER   0010
SETUP   0022
START   0020
STEND   0043
UPPER   0007
UPREG   0005
WRKON   0031
```