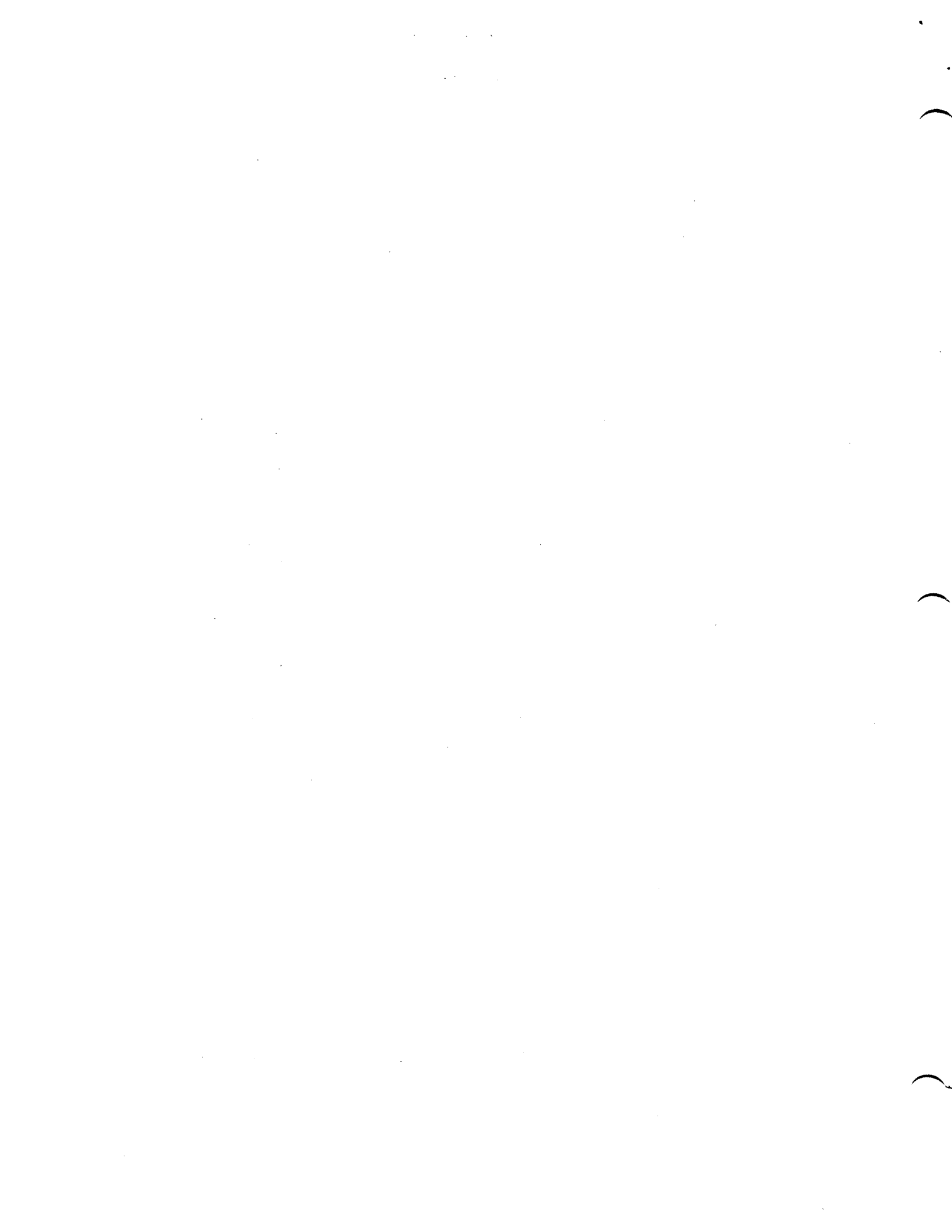


IDENTIFICATION  
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PRODUCT CODE: MAINDEC-6E-DBJC-D  
PRODUCT NAME: RANDOM JMP-JMS TEST  
DATE CREATED: JUNE 11, 1971  
MAINTAINER: DIAGNOSTIC GROUP  
AUTHOR: BRUCE HANSEN

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1. ABSTRACT  
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THIS IS A DIAGNOSTIC PROGRAM TO TEST THE JMS INSTRUCTION OF THE PDP-8E. RANDOM FROM AND TO ADDRESSES ARE SELECTED FOR EACH TEST. THE JMP INSTRUCTION IS TESTED IN THAT EACH TEST REQUIRES A JMP TO REACH THE JMS.

2. REQUIREMENTS  
.....

2.1 EQUIPMENT  
.....

PDP-8E EQUIPPED WITH TELETYPE.

2.2 STORAGE  
.....

LOCATIONS 0000-0574

THE BINARY LOADER MUST BE STORED IN THE LAST MEMORY PAGE.

2.3 PRELIMINARY PROGRAMS  
.....

IT IS ASSUMED THAT MAINDEC-8E-00A(N), AND MAINDEC-8E-00B(N) HAVE BEEN RUN SUCCESSFULLY.

3. LOADING PROCEDURE  
.....

3.1 METHOD  
.....

USE THE STANDARD BINARY LOADER

4. STARTING PROCEDURE  
.....

4.1 CONTROL SWITCH SETTINGS  
.....

SR0(0) HALT ON ERROR.  
SR2(1) HOLD THE FROM ADDRESS CONSTANT  
SR2(0) SELECT RANDOM FROM ADDRESSES  
SR3(1) HOLD THE TO ADDRESS CONSTANT  
SR3(0) SELECT RANDOM TO ADDRESSES

4.2 STARTING ADDRESS  
.....

0200

RESTART ADDRESS = 0215

6.2 OPERATOR ACTION  
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- A. SET SR TO 0200 AND PRESS LOAD ADDRESS;
- B. IF IT IS DESIRED TO SET EITHER SR2 OR SR3, THE FROM OR TO ADDRESS MAY BE SPECIFIED BY ENTERING THE ADDRESS INTO THE LOCATIONS SHOWN BELOW

FROM = LOCATION 133  
TO = LOCATION 134

IF SR2 OR SR3 IS SET AFTER THE PROGRAM HAS BEEN STARTED, THE LAST ADDRESS TAKEN FROM THE RANDOM NUMBER GENERATOR IS USED REPEATEDLY.

C. PRESS CLEAR, AND THEN CONT;

5. OPERATING PROCEDURE  
-----

SAME AS SECTION 4.

6. ERRORS  
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6.1 ERROR HALTS  
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ALL UNUSED MEMORY LOCATIONS ARE LOADED WITH HLT INSTRUCTIONS. IF THE PROGRAM EXECUTES ONE OF THESE BACKGROUND HALTS, IT IS PROBABLE THAT THE INTERRUPT FAILED TO OCCUR FOLLOWING THE JMS INSTRUCTION. THE FROM AND TO ADDRESS MAY BE CHECKED AT ANY TIME TO LOCATE THE TEST JMS INSTRUCTIONS.

6.2 ERROR PRINTOUTS  
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F XXXX TO YYYY

(TO) = MHHM

(NNNN) = RRRR

6.2.1 EXPLANATION  
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(FROM) F XXXX; XXXX = ADDRESS OF JMS INSTRUCTION BEING TESTED;

(TO) TO YYYY; YYYY = ADDRESS THAT THE JMS INSTRUCTION IS GOING TO.

(TO) = MHHM; MHHM = THE CONTENTS OF THE ADDRESS TO; THIS SHOULD EQUAL XXXX + 1.

(NNNN) = RRRR; NNNN IS THE ADDRESS MINUS ONE THAT WAS STORED IN LOCATION 0000 DURING THE INTERRUPT. RRRR IS THE CONTENT OF ADDRESS NNNN.

6.2.2 EXAMPLES  
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A. THE FOLLOWING IS A FORCED ERROR PRINTOUT WHERE NO ERROR OCCURRED.

F 5236 TO 6354

(TO) = 5237

(6354) = 5237

THE TEST JMS INSTRUCTION WAS IN LOCATION 5236. THE JMS WAS TRYING TO JUMP TO LOCATION 6354. THE CONTENTS OF TO (LOCATION 6354) WAS 5237. THIS IS CORRECT SINCE THE PC IS STORED ON A JMS INSTRUCTION.

TO GAIN ANY KNOWLEDGE FROM THE THIRD LINE OF THE PRINTOUT, THE USER MUST UNDERSTAND THE SEQUENCE OF EVENTS WHEN A JMS INSTRUCTION IS FOLLOWED BY AN INTERRUPT. AS AN END RESULT OF THIS SEQUENCE, THE ADDRESS OF THE LOCATION FOLLOWING THE CELL WHERE THE PC IS STORED IS PLACED INTO CELL 0. TO DERIVE THIS THIRD LINE OF THE PRINTOUT, THE ADDRESS IN CELL 0 IS DECREMENTED BY ONE AND PRINTED ON THE TELETYPE! THEN THE CONTENTS OF THAT ADDRESS ARE PRINTED.

B. THE FOLLOWING IS A TYPICAL ERROR PRINTOUT.

F 5236 TO 6354

(TO) = 7402

(4354) = 5237

LINE 1 IS AGAIN SIMPLY A STATEMENT OF THE PROBLEM. LINE 2 SAYS THAT THE CONTENTS OF LOCATION 6354 ARE NOT 5237 AS THEY SHOULD BE, BUT ARE 7402 INSTEAD. 7402 IS A HLT INSTRUCTION. SINCE MEMORY IS FILLED WITH A BACKGROUND OF HLT ORDERS, IT IS EVIDENT THAT THE PC WAS NOT STORED IN LOCATION 6354 DURING THE JMS.

LINE 3 OF THE PRINTOUT REVEALS WHERE THE PC WAS STORED. SINCE ON THE INTERRUPT 4355 WAS STORED IN LOCATION ZERO AND (4354) CONTAINS THE CORRECTLY STORED PC, 5237, IT IS APPARENT THAT A JUMP ERROR OCCURRED. THE JMS INSTRUCTION SHOULD HAVE JUMPED TO 6354, BUT IT ACTUALLY JUMPED TO 4354. BIT 1 WAS LOST.