

IDENTIFICATION

PRODUCT CODE: MAINDEC-08-DJKMA-B-D
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* THIS DIAGNOSTIC - MAINDEC-08-DJKMA-B - IS ONLY *
* VALID FOR THOSE PDP-8A OPTION BOARD #2'S , WHICH *
* HAVE THEIR "ROMS" LOCATED AT E82 AND E87 LABELED *
* 158A2 AND 159A2 RESPECTIVELY. *

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1.0 ABSTRACT

KMB-A OPTION TEST 2 IS DESIGNED TO TEST ALL LOGIC ON THE PDP-8A OPTION BOARD #2 MODULE (M8317) THAT IS TESTABLE BY PROGRAM INSTRUCTIONS. THE PROGRAM TESTS THE MEMORY EXTENSION LOGIC, TIMESHARE CONTROL LOGIC (ENABLED AND DISABLED), POWER FAIL AND AUTO-RESTART LOGIC, AND THE BOOTSTRAP LOGIC AND LOADERS.

THE PROGRAM WILL RUN WITH THE PDP-8A OPTION 1 & 2 TEST MODULE (G5041) IF AVAILABLE. THE PROGRAM USES THE OPTION 1 & 2 TEST MODULE TO TEST LOGIC WHICH THE PROGRAM NORMALLY CAN NOT TEST USING PROGRAM INSTRUCTIONS. THE PROGRAM USES THE OPTION 1 & 2 TEST MODULE, VIA PROGRAM CONTROL, TO CAUSE AND TEST AUTO-RESTARTS AND BOOTSTRAPS, TO TEST THE EMA LINES, TO TEST TIMESHARE ENABLED AND DISABLED, AND TO TEST THE AC LOW AND BATTERY EMPTY FLIP-FLOPS.

THE 4K VERSION OF THE PROGRAM ONLY, IS STRUCTURED SO THAT IT MAY BE RUN ON THE PDP-8A XOR TESTER. A OPTION 1 & 2 TEST MODULE IS REQUIRED FOR THE "KGM" AND "MUT" SIDE OF THE PDP-8A XOR TESTER.

THE PROGRAM IS STRUCTURED SO THAT IT MAY RUN ON OR OFF THE PDP-8A APT TEST LINE, WITH OR WITHOUT THE OPTION 1 & 2 TEST MODULE, OR ANY COMBINATION OF THE ABOVE WITH THE PDP-8A OPTION BOARD #2.

THE PROGRAM IS A 4K PROGRAM BUT IT IS ALSO SUPPLIED IN FOUR 1K SEGMENTS FOR USE ON COMPUTERS WITH LESS THAN 4K OF MEMORY.

2.0 REQUIREMENTS

2.1 HARDWARE

THE FOLLOWING HARDWARE IS REQUIRED FOR THE EXECUTION OF THIS PROGRAM.

PROCESSOR(S):

PDP-8A

MEMORY:

MINIMUM OF 4K OF MEMORY FOR THE COMPLETE PROGRAM
MINIMUM OF 1K OF MEMORY FOR THE SEGMENTED 1K VERSIONS OF THE PROGRAM.

OPTIONS:

IF OPTION BOARD #2 IS TO BE TESTED ALONE WITHOUT THE OPTION 1 & 2 TEST MODULE, THE FOLLOWING HARDWARE IS REQUIRED, OTHERWISE, SEE THE HARDWARE REQUIRED UNDER THE NEXT SECTION LABELED "SPECIAL".

1. PDP-8A OPTION BOARD #2 (M8317)
2. ONE QUAD EXTENDER MODULE

SPECIAL:

- A. THE FOLLOWING HARDWARE IS REQUIRED TO RUN THE PROGRAM WITH THE OPTION 1 & 2 TEST MODULE; (SEE STEP B FOR XOR HARDWARE)
1. PDP-8A OPTION BOARD #2 (M8317)
 2. OPTION 1 + 2 TEST MODULE (G5041)
 3. ONE QUAD EXTENDER MODULE
 4. TWO IC SOCKET CONNECTOR CABLES (PN=7008612)
- B. THE FOLLOWING HARDWARE IS REQUIRED TO RUN THE PROGRAM ON THE PDP-8A XOR TESTER;
1. TWO PDP-8A OPTION BOARD #2'S
 2. TWO PDP-8A OPTION 1 & 2 TEST MODULES (G5041'S)
 3. FIVE I.C. SOCKET CONNECTOR CABLES (PN=7008612)

2.2 STORAGE

THE 4K VERSION AND THE 1K VERSIONS OF THE KMB-A OPTION TEST 2 MUST RESIDE IN FIELD 0. THE 4K VERSION OF THE PROGRAM OCCUPIES LOCATIONS 0000 TO 5177 AND USES LOCATIONS 5200 TO 7777 AS A BUFFER AREA. THE 1K VERSIONS OF THE PROGRAM OCCUPIES FOR THE MOST PART LOCATIONS 0000 TO 1777, AND IT MUST RESIDE IN THE 1ST 1K.

2.3 PREREQUISITE SOFTWARE

PDP-8A CPU TEST
PDP-8A MEMORY TEST
IF 4K OF MEMORY - 2K TO 32K PDP-8A PROCESSOR EXERCISER
IF LESS THAN 4K - 1K TO 32K RANDOM MEMORY REFERENCE INSTRUCTION EXERCISER,

3.0 RESTRICTIONS

1. ONCE THE PROGRAM HAS BEEN STARTED, THE PROGRAM LOADER WILL BE DESTROYED IF USED.
2. ALL OPTIONS ASSOCIATED WITH THE BOOTSTRAP LOADERS MUST BE UNPLUGGED FROM THE COMPUTER.
3. IF THE PDP-8A OPTION BOARD #2 IS TO BE RUN WITH THE PDP-8A OPTION 1 & 2 TEST MODULE, THE OPTION BOARD #2 MUST BE PLUGGED INTO MODULE SLOTS 2 OR 3 OF THE PDP-8A.
4. THE 4K VERSION OF THE PROGRAM IS THE ONLY VERSION OF THE PROGRAM THAT WILL RUN ON THE PDP-8A XOR TESTER.
5. TO RUN THE PROGRAM ON THE PDP-8A XOR TESTER, A OPTION 1 & 2 TEST MODULE IS REQUIRED FOR BOTH THE "KGM" AND "MUT" SIDE OF THE TESTER.
6. THE SECTIONS OF LOGIC THAT CAN NOT BE TESTED OF THE PDP-8A XOR ARE THE AUTO-RESTART AND BOOTSTRAP LOGIC.

4.0 STANDARD TEST PROCEDURE

IF THE PROGRAM IS TO BE RUN ON THE PDP-8A XOR TESTER, GO TO PARAGRAPH 4.9 (PDP-8A XOR TESTING) FOR LOADING, INITIALIZING THE PROGRAM AND FOR THE TEST SETUP.

THE FOLLOWING PARAGRAPHS MUST BE FOLLOWED EXPLICITLY TO SETUP THE HARDWARE, LOAD THE PROGRAM, AND TO INITIALIZE THE PROGRAM.

- 4.2 HARDWARE SETUP
- 4.3 LOADING THE PROGRAM
- 4.4 PROGRAM INITIALIZATION

THE PROGRAM IS DIVIDED INTO FOUR SECTIONS AND EACH SECTION MUST BE RUN SEPARATELY UNLESS A OPTION 1 + 2 TEST MODULE IS UTILIZED WITH THE PROGRAM. IF THE OPTION 1 + 2 TEST MODULE IS USED, RUN MEMORY EXTENSION/TIME SHARE TEST, PARAGRAPH 4.5, WHICH WILL INCLUDE THE MEMORY EXTENSION/TIME SHARE TESTS ENABLED AND DISABLED, THE BOOTSTRAP TEST, AND AUTO RESTART TEST. IF THE OPTION 1 + 2 TEST MODULE IS NOT USED, DO THE FOLLOWING TEST:

- RUN MEMORY EXTENSION/TIME SHARE TEST = PARAGRAPH 4.5
- RUN TIME SHARE DISABLE TEST = PARAGRAPH 4.6
- RUN BOOTSTRAP/SIMULATOR TEST = PARAGRAPH 4.7
- RUN AUTO RESTART/POWER FAIL TEST = PARAGRAPH 4.8

4.1 CHANGING IOT CODES

NOT APPLICABLE

4.2 HARDWARE SETUP

BEFORE LOADING THE PROGRAM, THE FOLLOWING STEPS MUST BE DONE:

- A. POWER THE COMPUTER DOWN
- B. UNPLUG THE M8317 MODULE FROM THE COMPUTER
- C. PLUG THE QUAD EXTENDER INTO THE SLOT THE M8317 OCCUPIED
- D. PLUG THE M8317 MODULE INTO THE QUAD EXTENDER
- E. SET ALL THE SWITCHES ON THE M8317 MODULE TO THE OFF POSITION
- F. IF THE OPTION 1 + 2 TEST MODULE IS TO BE USED DO THE FOLLOWING, IF NOT GO TO STEP G IN THIS SECTION.
 - 1. TAKE ONE END OF THE IC SOCKET CONNECTOR CABLE AND PLUG IT INTO E93 ON THE M8317 MODULE (OBSERVING PIN 1 ORIENTATION).
 - 2. TAKE THE OTHER END OF THE CABLE AND PLUG IT INTO TS-2 (FIRST SOCKET ABOVE E70) ON THE G5041 MODULE.
 - 3. TAKE ONE END OF THE NEXT IC SOCKET CONNECTOR CABLE AND PLUG IT INTO E88 ON THE M8317 MODULE.
 - 4. TAKE THE OTHER END OF THE CABLE AND PLUG IT INTO TS-1 (SECOND SOCKET ABOVE E63) ON THE G5041 MODULE.
 - 5. PLUG THE OPTION 1 + 2 TEST MODULE (G5041) INTO THE COMPUTER.
- G. POWER THE COMPUTER BACK UP.
- H. GO TO PARAGRAPH 4.3, LOADING THE PROGRAM.

4.3 LOADING THE PROGRAM

COMPUTERS WITH 4K OF MEMORY WILL USE THE BINARY PAPER TAPE LABELED MAINDEC-08-DJKMA-B-PB1. COMPUTERS WITH LESS THAN 4K OF MEMORY WILL USE THE FOUR 1K SEGMENTED RIM PAPER TAPES WHICH ARE

LABELED AS FOLLOWS:

1. MAINDEC-08-DJKMA-B-PM1 - 1K PART 1
2. MAINDEC-08-DJKMA-B-PM2 - 1K PART 2
3. MAINDEC-08-DJKMA-B-PM3 - 1K PART 3
4. MAINDEC-08-DJKMA-B-PM4 - 1K PART 4

- A. IF THE COMPUTER CONTAINS 4K OF MEMORY OR MORE, DO STEP B, OTHERWISE, DO STEP C BELOW FOR COMPUTERS WITH LESS THAN 4K OF MEMORY.
- B. LOAD THE BINARY TAPE MENTIONED ABOVE USING THE STANDARD BINARY LOADER TECHNIQUE, AFTER THE TAPE HAS BEEN SUCCESSFULLY LOADED GO TO PARAGRAPH 4.4, PROGRAM INITIALIZATION.
- C. TO LOAD THE 1K SEGMENTED RIM PAPER TAPES MENTIONED ABOVE, DEPOSIT INTO LOCATIONS LISTED BELOW THE APPROPRIATE RIM LOADER FOR THE LOADING DEVICE TO BE USED.

HIGH SPEED READER

ADDRESS	CONTENT
0156	6014
0157	6011
0160	5357
0161	6016
0162	7106
0163	7006
0164	7510
0165	5374
0166	7006
0167	6011
0170	5367
0171	6016
0172	7420
0173	3776
0174	3376
0175	5357

LOW SPEED READER

ADDRESS	CONTENT
0156	6032
0157	6031
0160	5357
0161	6036
0162	7106
0163	7006
0164	7510
0165	5357
0166	7006
0167	6031
0170	5367
0171	6034
0172	7420
0173	3776
0174	3376
0175	5356

- D. PLACE THE APPROPRIATE 1K SEGMENT INTO THE READER, "LOAD ADDRESS" TO 0156, PRESS "INIT" AND THEN "RUN",
- E. WHEN THE TAPE HAS BEEN LOADED, STOP THE COMPUTER, GO TO PARAGRAPH 4.4, PROGRAM INITIALIZATION,

4.4 PROGRAM INITIALIZATION

THE PROGRAM WHEN LOADED IS INITIALIZED TO RUN WITHOUT THE HARDWARE FRONT PANEL SWITCH REGISTER, WITHOUT OPTION 1 + 2 TEST MODULE, AND THE AMOUNT OF MEMORY REQUIRED TO RUN THE PROGRAM (4K FOR THE COMPLETE PROGRAM AND 1K FOR THE SEGMENTED 1K VERSIONS OF THE PROGRAM). IF IT IS DESIRED TO CHANGE THE HARDWARE CONFIGURATION, LOAD ADDRESS TO 0021 AND DEPOSIT INTO THIS LOCATION THE APPROPRIATE HARDWARE CONFIGURATION FOR THE BITS LISTED BELOW:

NOTE: IF MEMORY SIZE IS LARGER OR SMALLER THAN LISTED ABOVE, IT SHOULD BE CHANGED IN LOCATION 0021,

BIT 0 = 0 THE PROGRAM WILL USE LOCATION 0020 AS A PSEUDO SWITCH REGISTER
BIT 0 = 1 THE PROGRAM WILL USE THE HARDWARE FRONT PANEL SWITCH REGISTER

BIT 2 = 1 HAS A M8317 OPTION 2 MODULE

BIT 4 = 0 THE PROGRAM WILL NOT USE THE OPTION 1 + 2 TEST MODULE TO TEST THE M8317,
BIT 4 = 1 THE PROGRAM WILL USE THE OPTION 1 + 2 TEST MODULE TO TEST THE M8317,

BIT 5 = 0 NOT RUNNING ON THE PDP-8A XOR TESTER
BIT 5 = 1 RUNNING ON PDP-8A XOR TESTER - BIT 4 MUST BE SET TO A 1 AND THE OPTION 1 & 2 TEST MODULES MUST BE USED,

BITS 7-11 SPECIFIES THE PDP-8A'S MEMORY SIZE, ALL ZEROES INDICATES 1K OF MEMORY, AN ADDITION OF 1 TO THE NUMBER IN BITS 7-11 INCREASES MEMORY SIZE BY 1K,

GO TO PARAGRAPH 4.5, MEMORY EXTENSION/TIME SHARE TEST,

4.5 RUN MEMORY EXTENSION/TIME SHARE TEST.

THE TAPE(S) TO BE USED TO RUN THIS TEST ARE AS FOLLOWS:

COMPUTERS WITH AT LEAST 4K OF MEMORY

MAINDEC-08-DJKMA-B-PB1

COMPUTERS WITH LESS THAN 4K OF MEMORY

MAINDEC-08-DJKMA-B-PM1
MAINDEC-28-DJKMA-B-PM2

NOTE: IF OPTION 1 + 2 TEST MODULE IS SELECTED AND THE COMPUTER CONTAINS 4K OF MEMORY OR MORE, THIS TEST IS THE ONLY TEST REQUIRED TO BE RUN WITH THE 4K PROGRAM LISTED ABOVE,

- A. LOAD ADDRESS TO ONE OF THE FOLLOWING ADDRESSES FOR THE TAPE(S) TO BE RUN:
- ADDRESS 0200 (RESTART 0201 IF OPTION 1 + 2 TEST MODULE IS USED) =MAINDEC-08-DJKMA-B-PB1
 ADDRESS 0200 =MAINDEC-08-DJKMA-B-PM1
 ADDRESS 0200 =MAINDEC-08-DJKMA-B-PM2
- B. SET THE SWITCH REGISTER OR PSEUDO SWITCH REGISTER, WHICHEVER WAS SELECTED, TO 0000.
- C. PRESS "INIT" AND THEN "RUN".
- D. SETTING THE SWITCH REGISTER OR PSEUDO SWITCH REGISTER, WHICHEVER WAS SELECTED, TO 0400 WILL CAUSE THE COMPUTER TO HALT AT THE END OF A PROGRAM PASS. THE LOCATION AT WHICH IT WILL HALT, WILL BE ONE OF THE FOLLOWING FOR THE TAPE THAT IS BEING RUN:
- LOCATION 1463 = MAINDEC-08-DJKMA-B-PB1
 LOCATION 1634 = MAINDEC-08-DJKMA-B-PM1
 LOCATION 1634 = MAINDEC-08-DJKMA-B-PM2
- E. THE PROGRAM WILL NOW RUN UNTIL AN ERROR IS ENCOUNTERED OR THE PROGRAM IS STOPPED BY THE OPERATOR OR SR3=1.
- F. AN ERROR MAY RESULT IN AN ERROR HALT OR A JMP SELF.

4.6

RUN TIME SHARE DISABLE TEST

THE TAPE(S) TO BE USED TO RUN THIS TEST ARE AS FOLLOWS:

COMPUTERS WITH AT LEAST 4K OF MEMORY

MAINDEC-08-DJKMA-B-PB1

COMPUTERS WITH LESS THAN 4K OF MEMORY

MAINDEC-08-DJKMA-B-PM3

- A. ON THE M8317 MODULE, SET SWITCH 1 TO THE ON POSITION ON THE SWITCH PACKAGE WHICH LIES ABOVE I.C. E87. SETTING OF THIS SWITCH WILL DISABLE THE TIME SHARE LOGIC.
- B. LOAD ADDRESS TO ONE OF THE FOLLOWING ADDRESSES FOR THE TAPE TO BE RUN:
- ADDRESS 4260 = MAINDEC-08-DJKMA-B-PB1
 ADDRESS 1260 = MAINDEC-08-DJKMA-B-PM3
- C. SET SWITCH REGISTER OR PSEUDO SWITCH REGISTER, WHICHEVER WAS SELECTED, TO 0000, PRESS "INIT" AND THEN "RUN".
- D. THE PROGRAM SHOULD HALT ON A SUCCESSFULL PASS AT LOCATION 4300 FOR MAINDEC-08-DJKMA-B-PB1 AND AT LOCATION 1300 FOR MAINDEC-08-DJKMA-B-PM3
- E. SET THE SWITCH THAT WAS SET IN STEP A ABOVE TO THE OFF POSITION.
- F. GO TO PARAGRAPH 4.7, RUN BOOTSTRAP/SIMULATOR TEST.

4.7. RUN BOOTSTRAP/SIMULATOR TEST

IF A OPTION 1 + 2 TEST MODULE IS NOT USED WITH THE PROGRAM, GO TO PARAGRAPH 4.7.2, RUN BOOTSTRAP TEST.

IF A OPTION 1 + 2 TEST MODULE IS USED WITH THE PROGRAM AND THE COMPUTER CONTAINS LESS THAN 4K OF MEMORY, GO TO PARAGRAPH 4.7.1, RUN SIMULATOR TEST.

4.7.1. RUN SIMULATOR TEST

THE TAPE TO BE USED WITH THIS TEST IS MAINDEC=08=DJKMA=B=PM3.

THIS TEST USES THE OPTION 1 + 2 TEST MODULE TO CHECK THE EMA LINES, TIME SHARE DISABLE, AC LOW AND BATTERY EMPTY FLIP-FLOPS.

- A. LOAD ADDRESS TO 0201
- B. SET THE SWITCH REGISTER OR THE PSEUDO SWITCH REGISTER, WHICHEVER WAS SELECTED, TO 0000.
- C. PRESS "INIT" , AND THEN "RUN" .
- D. THE PROGRAM WILL NOW RUN UNTILL AN ERROR IS ENCOUNTERED, STOPPED BY THE OPERATOR, OR SWITCH REGISTER 3 SET TO A 1.
- E. SETTING SWITCH REGISTER 3 TO A 1 WILL CAUSE THE COMPUTER TO HALT AT LOCATION 1640.
- F. WHILE RUNNING THIS PROGRAM THE RUN LIGHT WILL BE BLINKING ON AND OFF.

4.7.2 RUN BOOTSTRAP TEST

THE TAPE(S) TO BE USED TO RUN THIS TEST ARE AS FOLLOWS:

COMPUTERS WITH AT LEAST 4K OF MEMORY

MAINDEC=08=DJKMA=B=PB1

COMPUTERS WITH LESS THAN 4K OF MEMORY

MAINDEC=08=DJKMA=B=PM3

NOTE: DISABLE OR UPLUG FROM THE COMPUTER ANY DEVICES ASSOCIATED WITH THE BOOTSTRAPS.

- A. SET ALL THE SWITCHES ON THE M8317 MODULE TO THE OFF POSITION.
- B. SET THE SWITCHES S1=6, S1=7, S1=8 ON THE SWITCH PACKAGE WHICH LIES ABOVE I.C. E79 ON THE M8317 MODULE TO THE ON POSITION.
- C. SET THE SWITCHES ON THE M8317 MODULE TO THE BOOTSTRAP TO BE TESTED FROM THE TABLE BELOW:

NOTE: ONLY THE RK8E AND RX8E BOOTSTRAPS CAN BE TESTED ON 1K COMPUTERS.

WHEN REFERENCING SWITCHES IN THE TABLE BELOW, S2 IS THE SWITCH PACKAGE LOCATED ABOVE I.C, E87, AND S1 IS LOCATED ABOVE I.C, E79.

BOOTSTRAP -----	S2 SWITCHES -----				S1 SWITCHES -----		
	S2-5	S2-6	S2-7	S2-8	S1-1	S1-2	S1-3
HI=LO PT RDR	ON	ON	ON	OFF	ON	ON	ON
RK8E	ON	OFF	ON	OFF	ON	OFF	ON
RX8E	ON	OFF	OFF	ON	OFF	ON	ON
RF08/DF32D	OFF	ON	OFF	ON	OFF	ON	OFF
TABE	OFF	ON	OFF	OFF	OFF	ON	OFF

D. LOAD ADDRESS TO ONE OF THE FOLLOWING ADDRESSES FOR THE TAPE THAT IS TO BE RUN:

ADDRESS 4465 = MAINDEC=08=DJKMA=B=PB1
ADDRESS 1465 = MAINDEC=08=DJKMA=B=PM3

E. PRESS "INIT" AND THEN "RUN, THIS WILL CLEAR THE BOOTSTRAP LOCATIONS IN MEMORY THAT THE BOOTSTRAPS WILL LOAD INTO,

F. THE PROGRAM WILL HALT AT LOCATION 4515 FOR MAINDEC=08=DJKMA=B=PB1 OR 1515 FOR MAINDEC=08=DJKMA=B=PM3,

G. TOGGLE THE BOOT SWITCH OR BOOT KEY, THE MODULE SHOULD DO A BOOTSTRAP AND THE COMPUTER SHOULD BE RUNNING.

H. HALT THE COMPUTER AND LOAD ADDRESS TO ONE OF THE FOLLOWING ADDRESSES FOR THE TAPE THAT IS BEING RUN:

ADDRESS 4400 = MAINDEC=08=DJKMA=B=PB1
ADDRESS 1400 = MAINDEC=08=DJKMA=B=PM3

I. THE PROGRAM WILL HALT AT ADDRESS 4400 FOR MAINDEC=08=DJKMA=B=PB1 OR 1400 FOR MAINDEC=08=DJKMA=B=PM3,

J. SET THE SWITCH REGISTER OR THE PSEUDO SWITCH REGISTER, WHICHEVER WAS SELECTED, TO THE BOOTSTRAP TO BE COMPARED FROM THE TABLE BELOW:

BOOTSTRAP -----	S.R. SETTINGS -----
HI=LO PT RDR	0000
RF08/DF32D	0001
TABE	0002
RX8E	0003
RK8E	0004

K. PRESS "INIT" AND THEN "RUN" .

L. THE PROGRAM SHOULD HALT AT LOCATION 4461 FOR MAINDEC=08=DJKMA=B=PB1 OR 1461 FOR MAINDEC=08=DJKMA=B=PM3 IF THE BOOTSTRAP COMPARED OK.

M. DO STEPS A THROUGH L FOR EACH BOOTSTRAP

N. GO TO PARAGRAPH 4.8, RUN AUTO RESTART/POWER FAIL TEST.

RUN AUTO RESTART/POWER FAIL TEST

THE TAPE(S) TO BE USED TO RUN THIS TEST ARE AS FOLLOWS:

COMPUTERS WITH AT LEAST 4K OF MEMORY

MAINDEC-08-DJKMA-B-PB1

COMPUTERS WITH LESS THAN 4K OF MEMORY

MAINDEC-08-DJKMA-B-PM4

THE BATTERY SUPPLY SHOULD BE FULLY CHARGED TO RUN THIS TEST

- A. SET ALL SWITCHES TO THE OFF POSITION ON THE M8317 MODULE.
- B. SET SWITCHES 1, 3, 6, 7, AND 8 TO THE ON POSITION ON THE SWITCH PACKAGE WHICH IS LOCATED ABOVE E79 ON THE M8317 MODULE.
- C. SET SWITCHES 5 AND 7 TO THE ON POSITION ON THE SWITCH PACKAGE WHICH IS LOCATED ABOVE E87 ON THE M8317 MODULE.
- D. SET THE SWITCHES ON THE M8317 MODULE TO THE AUTO RESTART TO BE TESTED FROM THE TABLE BELOW.

NOTE: ON 1K COMPUTERS THE ONLY RESTARTS THAT CAN BE TESTED ARE AT 0000 AND 0200.

AUTO RESTART -----	S2 SWITCHES (ABOVE E87) -----		
	S2=2	S2=3	S2=4
0000	OFF	OFF	OFF
0200	OFF	ON	OFF
2000	ON	OFF	OFF
4200	ON	ON	OFF

- F. LOAD ADDRESS TO 4600 FOR MAINDEC-08-DJKMA-B-PB1 OR TO 0201 FOR MAINDEC-08-DJKMA-B-PM4.
- G. PRESS "INIT" AND THEN "RUN" .
- H. THE PROGRAM WILL NOW FILL A BUFFER AREA WITH A COMPLEMENTING 5252 DATA PATTERN, AND THEN HALT AT LOCATION 4640 FOR MAINDEC-08-DJKMA-B-PB1 OR AT 0227 FOR MAINDEC-08-DJKMA-B-PM4.
- I. NOW SET THE SWITCH REGISTER OR THE PSEUDO SWITCH REGISTER, WHICHEVER WAS SELECTED, TO THE AUTO RESTART TO BE TESTED FROM THE TABLE BELOW.

AUTO RESTART -----	S.R. SETTINGS -----
0000	0003
0200	0002
2000	0001
4200	0000

- J. PRESS "INIT" AND THEN "RUN" .
- K. THE PROGRAM NOW STARTS COMPARING THE DATA THAT WAS PUT IN THE BUFFER AREA.
- L. THE OPERATOR AT THIS TIME MUST UNPLUG THE AC LINE CORD, WHEN THE LINE CORD HAS BEEN UNPLUGGED, THE PROGRAM SHOULD HALT AT LOCATION 4763 FOR MAINDEC-08-DJKMA-B-PB1, OR AT LOCATION 0352 FOR MAINDEC-08-DJKMA-B-PM4.
- M. WITH A MINIMAL AMOUNT OF DELAY, THE OPERATOR MUST PLUG THE AC LINE CORD BACK IN, AT THIS TIME THE M8317 SHOULD DO A AUTO RESTART TO THE AUTO RESTART SELECTED. THE PROGRAM THEN CHECKS FOR THE CORRECT AUTO RESTART AND THEN GOES BACK TO COMPARING DATA.
- N. STEPS L AND M SHOULD BE REPEATED SEVERAL TIMES FOR EACH OF THE AUTO RESTARTS.

4.9

PDP-8A XOR TESTING

DO THE FOLLOWING STEPS TO LOAD AND INITIALIZE THE PROGRAM, TO SETUP THE HARDWARE, AND TO START THE TEST:

- A. LOAD THE BINARY PAPER TAPE, MAINDEC-08-DJKMA-B-PB1, USING THE STANDARD BINARY LOADER TECHNIQUE.
- B. POWER THE PDP-8A XOR TESTER DOWN AND DO THE FOLLOWING:
 1. PLUG A PDP-8A OPTION 1 & 2 TEST MODULE INTO THE "KGM" AND "MUT" SIDES OF THE XOR TESTER.
 2. PLUG A BUSS LOADS BOARD UNDER EACH OPTION 1 & 2 TEST MODULE.
 3. TAKE ONE END OF AN I.C. SOCKET CONNECTOR CABLE AND PLUG IT INTO TS-1, SECOND SOCKET ABOVE E63, ON THE OPTION 1 & 2 TEST MODULE ON THE "KGM" SIDE. NOW DO THE SAME FOR THE MODULE ON THE "MUT" SIDE.
 4. TAKE ANOTHER I.C. SOCKET CONNECTOR CABLE AND PLUG ONE END OF IT INTO TS-2, FIRST SOCKET ABOVE E70, ON THE OPTION 1 & 2 TEST MODULE ON THE "KGM" SIDE. NOW DO THE SAME FOR THE MODULE ON THE "MUT" SIDE.
 5. NOW TAKE THE OTHER I.C. SOCKET CONNECTOR CABLE AND PLUG ONE END INTO TS-4, FIRST SOCKET ABOVE E2, ON THE OPTION 1 & 2 TEST MODULE ON THE "KGM" SIDE, NOW TAKE THE OTHER END OF THIS CABLE AND PLUG IT INTO TS-5, FIRST SOCKET ABOVE E69, ON THE OPTION 1 & 2 TEST MODULE ON THE "MUT" SIDE.
 6. SET ALL THE SWITCHES ON THE PDP-8A OPTION BOARD #2'S TO THE OFF POSITION, AND PLUG THE "COW OPTION BOARD #2" INTO THE "KGM" SIDE, AND THE MODULE TO BE TESTED INTO THE "MUT" SIDE.
 7. TAKE THE OTHER END OF THE I.C. SOCKET CONNECTOR CABLE THAT WAS PLUGGED IN IN STEP 3 ABOVE, AND PLUG IT INTO E88 ON THE

OPTION BOARD #2 ON THE "KGM" SIDE, NOW DO THE SAME FOR THE OPTION BOARD #2 ON THE "MUT" SIDE,

8. TAKE THE OTHER END OF THE CABLE THAT WAS PLUGGED IN IN STEP 4 ABOVE, AND PLUG IT INTO E93 ON THE OPTION BOARD #2 ON THE "KGM" SIDE, DO THE SAME FOR THE "MUT" SIDE,
 9. POWER THE PDP-8A XOR TESTER BACK UP AND LOAD ADDRESS TO LOCATION 0021 IN FIELD 0, NOW DEPOSIT INTO THIS LOCATION 5303,
 10. ON THE PDP-8A XOR TESTER, SET THE TIME OUT SWITCH TO THE FIRST POSITION, SET THE DEVICE CODE TO 88, AND THE BOARD SELECT TO OTHERS,
 11. LOAD ADDRESS TO 0200 AND PRESS "CLEAR" , THEN "CONTINUE".
- C. THE PROGRAM SHOULD NOW RUN UNTIL AN XOR ERROR IS ENCOUNTERED, IF A ERROR IS DETECTED THE PROGRAM WILL LOOP ON THE TEST THAT THE ERROR WAS DETECTED IN,
- D. THE PROGRAM CAN NOT TEST THE AUTO-RESTART AND BOOTSTRAP LOGIC UNDER XOR TESTING, THEREFORE, IT WOULD BE ADVISABLE TO RUN THE "MODULE UNDER TEST" ALONG WITH A OPTION 1 & 2 TEST MODULE ON ANOTHER STATION TO VERIFY THAT SECTION OF THE LOGIC,

5.0 ERRORS

5.1 MEMORY EXTENSION/TIME SHARE TEST ERRORS

ALL ERRORS DETECTED UNDER THIS TEST WILL RESULT IN A HALT, AN ERROR HALT OR A JMP SELF FOR THE TAPES LISTED BELOW:

MAINDEC-08-DJKMA-B-PB1
MAINDEC-08-DJKMA-B-PM1
MAINDEC-08-DJKMA-B-PM2

REFER TO THE APPROPRIATE LISTING FOR THE ERROR, THE TEST BEING EXERCISED AND FOR THE TEST SEQUENCE BEING EXECUTED.

5.1.1 MEMORY EXTENSION/TIME SHARE TEST ERROR RECOVERY

REFER TO THE APPROPRIATE SECTION BELOW FOR THE ACTION TO BE TAKEN:

ERROR HALT ERRORS

A ERROR HALT IS WHEN THE COMPUTER HALTS AT LOCATION 5132 FOR PAPER TAPE MAINDEC-08-DJKMA-B-PB1 OR AT LOCATION 1717 FOR PAPER TAPES MAINDEC-08-DJKMA-B-PM1 AND -PM2, THE CONTENTS OF THE ACCUMULATOR FOR THIS ERROR HALT WILL CONTAIN THE LOCATION AT WHICH THE ERROR WAS DETECTED BY THE PROGRAM, REFER TO THE APPROPRIATE PROGRAM LISTING FOR THE CAUSE OF THE ERROR, SET THE SWITCH REGISTER TO 7000 AND PRESS "INIT" AND THEN "RUN", THERE MAY BE 1 OR MORE ERROR HALTS, IF THE ERROR WAS A DATA ERROR, OR THE OPTION 1 + 2 TEST MODULE WAS BEING USED, THE PROGRAM IS NOW IN A SCOPE LOOP,

HALT/JMP SELF ERRORS

ANY ERROR ENCOUNTERED DURING A TEST SEQUENCE WHICH RESULTS IN A HALT OR A JMP SELF, REPLACE THE HALT OR JMP SELF WITH A JMP TEST(X) (X=TEST BEING EXECUTED I.E, JMP TEST1, JMP TEST2, ETC.),

5.2 TIME SHARE DISABLE TEST ERRORS

ANY ERRORS DETECTED BY THIS TEST WILL RESULT IN A HALT AT LOCATION 5132 FOR TAPE MAINDEC-08-DJKMA-B-PB1, OR AT LOCATION 1733 FOR TAPE MAINDEC-08-DJKMA-B-PM3, THE CONTENTS OF THE AC WILL CONTAIN THE ADDRESS WHERE THE ERROR WAS DETECTED BY THE PROGRAM.

5.2.1 TIME SHARE DISABLE TEST ERROR RECOVERY

SET THE SWITCH REGISTER OR PSEUDO SWITCH REGISTER WHICHEVER WAS SELECTED AT PROGRAM INITIALIZATION TO 7000 AND PRESS "INIT" AND "RUN", THE PROGRAM IS NOW IN A SCOPE LOOP.

5.3 BOOTSTRAP TEST ERRORS

BOOTSTRAP ERRORS WILL BE GENERALLY OF TWO TYPES, WHICH ARE:
1) FAILED TO DO A BOOTSTRAP; 2) BOOTSTRAP FAILED TO COMPARE,
ANY ERRORS DUE TO 2 ABOVE WILL RESULT IN A ERROR HALT AT LOCATION 5132 FOR MAINDEC-08-DJKMA-B-PB1 OR AT LOCATION 1733 FOR MAINDEC-08-DJKMA-B-PM3, THE CONTENTS OF THE AC WILL CONTAIN THE ADDRESS WHERE THE ERROR WAS DETECTED BY THE PROGRAM.

5.3.1 BOOTSTRAP TEST ERROR RECOVERY

FOR FAILURE TYPE 1 ABOVE, CHECK FOR CORRECT SWITCH SETTINGS ON THE M8317 MODULE AND TRY AGAIN, IF THIS STILL DOES NOT PRODUCE A BOOTSTRAP, USE A SCOPE AND THE LOGIC PRINTS TO TROUBLE SHOOT THE ERROR.

FOR FAILURE TYPE 2 ABOVE, PRESSING CONTINUE 3 MORE TIMES WILL RESULT IN 3 MORE HALTS, WHICH WILL GIVE THE ADDRESS WHICH DIDN'T COMPARE, THE EXPECTED CONTENT OF THAT ADDRESS AND THE ACTUAL CONTENT OF THAT ADDRESS, IF THE OPTION 1 + 2 TEST MODULE WAS UTILIZED WITH THE PROGRAM, SET THE SWITCH REGISTER OR PSEUDO SWITCH REGISTER WHICH EVER WAS SELECTED TO 7000 AND PRESS "INIT" AND THEN "RUN", THE PROGRAM MAY HALT ONE MORE TIME AND THEN REPEAT THE SEQUENCE, THE PROGRAM IS NOW IN A SCOPE LOOP DOING THE BOOTSTRAPS, IF THE TEST MODULE WAS NOT USED, REPEAT THE BOOTSTRAP SEQUENCE SEVERAL TIMES, USING THE SCOPE AND LOGIC PRINTS TO TROUBLE SHOOT WITH,

5.4 AUTO RESTART/POWER FAIL TEST ERRORS

ANY ERRORS ENCOUNTERED DURING THIS TEST MAY BE DO TO THE BATTERY BEING DISCHARGED, IMPROPER MODULE SWITCH SETUP, FAILURE TO DO A AUTO RESTART, A AUTO RESTART TO THE WRONG ADDRESS, OR A DATA COMPARE ERROR.

5.4.1 AUTO RESTART/POWER FAIL TEST ERROR RECOVERY

AFTER ASSURING THE MODULE TO BE SETUP CORRECTLY AND RETRYING THE TEST, USE A SCOPE AND THE LOGIC PRINTS TO TROUBLE SHOOT THE PROBLEM.

6.0 SWITCH REGISTER SETTINGS

6.1 NORMAL OPERATING SWITCHES

SR3=1 (0400) HALT PROGRAM AT COMPLETION OF A PROGRAM PASS,

6.2 ERROR RELATED SWITCHES

SR0=1 (4000) INHIBIT ERROR HALT
SR1=1 (2000) LOOP ON ERROR
SR2=1 (1000) LOOP ON TEST SUCH AS TEST1, TEST2, ETC.,

7.0 REVISIONS

SUPERCEDES MAINDEC-08-DJKMA-A

8.0 PROGRAM DESCRIPTION

TEST 1 - CHECKS THE CDF AND RDF INSTRUCTIONS TO LOAD AND READ THE DATA FIELD REGISTER, A RIF INSTRUCTION IS ISSUED AFTER EACH DATA FIELD CHANGE TO CHECK THAT THE INSTRUCTION FIELD REMAINS A ZERO, THE INCLUSIVE OR FUNCTION OF THE DATA FIELD AND THE AC IS CHECKED WITH THE RDF INSTRUCTION,

TEST 2 - CHECKS THAT USER MODE CAN BE ENTERED AND EXITED BY DOING A ION-SUF-JMP-HLT, THE USER INTERRUPT IS CHECKED TO BE SET BY SINT AND CLEARED BY CINT, GTF AND RIB INSTRUCTIONS ARE ISSUED TO CHECK THAT THE SAVE FIELD REGISTERS GOT LOADED AND THAT THE INSTRUCTIONS CAN READ THE SAVE FIELD REGISTERS,

TEST 3 - CHECKS THAT OSR WILL TRAP IN USER MODE AND THAT IT WILL NOT AFTER A USER INTERRUPT, RIB, GTF, RIF AND RDF INSTRUCTIONS ARE ISSUED TO CHECK THAT THEY READ THE APPROPRIATE REGISTERS,

TEST 4 - CHECKS THAT AN IOT WILL TRAP IN USER MODE AND THAT IT WILL NOT AFTER A USER INTERRUPT, THE USER INTERRUPT IS CHECKED TO BE CLEARED BY CAF, RIB AND GTF INSTRUCTIONS ARE ALSO ISSUED AND CHECKED,
TEST 5 - CHECKS THAT THE CUF INSTRUCTION WILL CLEAR THE USER MODE FLIP-FLOP BY DOING A SUF-CUF-JMP-IOT, THE IOT INSTRUCTION SHOULD NOT TRAP, RIB AND GTF INSTRUCTIONS ARE ISSUED AND CHECKED,

TEST 6 - CHECKS THAT USER MODE IS NOT ENTERED UNTIL A JMS INSTRUCTION IS ISSUED BY DOING A ION-SUF-IOT-OSR-LAS-JMS-HLT, INTERRUPT REQUEST AND LINK ARE CHECKED WITH THE GTF INSTRUCTION,

TEST 7 - CHECKS THAT THE USER FLAG IN THE SAVE FIELD REGISTER CAN BE CLEARED, THIS IS DONE BY LEAVING THE USER INTERRUPT F/F

SET AFTER A TRAP AND THEN TURNING THE INTERRUPT BACK ON.

TEST 8 - CHECKS THAT THE RTF INSTRUCTION WILL RESET THE USER MODE AFTER A INTERRUPT,

TEST 9 - CHECKS THAT THE RMF INSTRUCTION WILL RESET THE USER MODE AFTER A INTERRUPT,

TEST 10 - CHECKS THAT USER MODE, LINK, AND ION CAN BE SET BY THE AC AND THE RTF INSTRUCTION AND THAT IT CAN BE CLEARED BY RTF.

TEST 11 - USING THE USER INTERRUPT F/F AND INTERRUPT ENABLE, THE INSTRUCTION FIELD REGISTER CAN BE INDIRECTLY CHECKED TO HAVE SET BY CHECKING THE SAVE FIELD REGISTER AFTER A INTERRUPT, THE INSTRUCTION FIELD REGISTER IS CHECKED NOT TO CHANGE UNTIL A JMP OR JMS INSTRUCTION IS ISSUED, THE INTERRUPT INHIBIT F/F IS CHECKED NOT TO CLEAR BEFORE A JMP OR JMS IS ISSUED,

TEST 12 - USES THE USER INTERRUPT F/F TO CAUSE INTERRUPTS TO CHECK THAT THE CIF AND CDF INSTRUCTIONS WILL LOAD THE APPROPRIATE SAVE FIELD REGISTERS, A DCA INDIRECT IS CHECKED NOT TO CHANGE A LOCATION IN FIELD ZERO WHEN THE DATA FIELD IS NON ZERO, A JMS INDIRECT IS CHECKED NOT TO CHANGE A LOCATION IN FIELD ZERO WHEN THE INSTRUCTION FIELD IS NON ZERO,

TEST 13 - CHECKS THE MICRO PROGRAM INSTRUCTIONS CDPCIF (62X3), A DCA INDIRECT AND A JMS INSTRUCTION ARE ALSO ISSUED TO CHECK THAT THESE INSTRUCTIONS DO NOT DESTROY LOCATIONS IN FIELD ZERO, THE USER INTERRUPT F/F IS USED TO CAUSE INTERRUPTS,

TEST 14 - CHECKS THAT THE RTF INSTRUCTION CAN LOAD THE INSTRUCTION FIELD AND DATA FIELD, AND THAT THE RMF INSTRUCTION CAN RELOAD IT, THE USER INTERRUPT F/F IS USED TO CAUSE INTERRUPTS,

TEST 15 - SETS THE USER BUFFER F/F, THE IF AND DF ARE SET TO FIELD 6, THE PROGRAM THEN ISSUES A DCA, TAD, AND, AND ISZ INDIRECTS TO CHECK THAT THE PROGRAM DOESN'T INTERRUPT UNTIL A JMP INSTRUCTION IS ISSUED,

TEST 16 - REQUIRES MORE THAN 4K OF MEMORY TO BE RUN, THIS TEST IS A SIMPLE DATA TEST TO CHECK THAT THE DATA CAN BE DEPOSITED INTO EACH SELECTED EXTENDED FIELD, DATA IS DEPOSITED INTO THE LAST ADDRESS OF EACH 1K MEMORY SEGMENT IN THE EXTENDED MEMORY FIELD, THE USER INTERRUPT IS SET FOR THIS TEST, THE PROGRAM CHANGES THE DATA FIELD TO A EXTENDED FIELD, CHECKS THE DF, THEN TURNS THE INTERRUPT ON AND DOES A DCA INDIRECT TO THE LAST ADDRESS IN A 1K MEMORY SEGMENT OF THAT FIELD, THE PROGRAM THEN DOES THE SAME AS ABOVE ONLY DOING A TAD INDIRECT TO THE LAST ADDRESS OF A 1K MEMORY SEGMENT, THE DATA THAT IS PUT INTO THE LAST ADDRESS OF EACH EXTENDED 1K MEMORY SEGMENT CONTAINS THE FIELD IN BITS 6-8 AND THE NUMBER OF THE 1K SEGMENT IN BITS 9-11,

TEST 17 - REQUIRES MORE THAN 4K OF MEMORY TO BE RUN, THIS TEST CHECKS THE RIF INSTRUCTION TO READ THE INSTRUCTION FIELD REGISTER, THE PROGRAM DEPOSITS THE FOLLOWING CODE INTO LOCATIONS 0000 TO 0003 OF EACH SELECTED EXTENDED FIELD; RIF=ION=JMP I 3=717RET-1, THE PROGRAM USES THE USER INTERRUPT F/F TO RETURN TO THE PROGRAM,

TEST 18 - IS ONLY EXECUTED IF THE OPTION 1 + 2 TEST MODULE IS SELECTED. THIS TEST CHECKS THAT THE CORRECT EMA LINE IS LOADED ONTO THE BUS DURING A DCA INDIRECT FOLLOWING A CDF 10, CDF 20 AND A CDF 40. THE TEST MODULE IS USED TO CAUSE A INTERRUPT FOLLOWING A EMA CHANGE ON THE BUS. THE TEST MODULE STORES THE EMA INTO A EMA CATCHER REGISTER AND THEN THE PROGRAM READS AND COMPARES IT.

TEST 19 - IS ONLY EXECUTED IF THE OPTION 1 + 2 TEST MODULE IS SELECTED. THIS TEST IS THE SAME AS TEST 18, ONLY IT CHECKS THAT THE CIF INSTRUCTION LOADS THE APPROPRIATE EMA LINES.

TEST 20 - IS ONLY EXECUTED IF THE OPTION 1 + 2 TEST MODULE IS SELECTED. THIS TEST CHECKS THAT THE TIME SHARE LOGIC CAN BE DISABLED. THIS IS DONE WITH THE TEST MODULE BY PULLING KMTS TIME SHARE DISABLE L LOW. THE PROGRAM THEN ISSUES A IOT, LAS, OSR AND CHECKS THAT THE PROGRAM DIDN'T INTERRUPT.

TEST 21 - USES THE OPTION 1 + 2 TEST MODULE TO CAUSE THE M8317 MODULE TO DO A BOOTSTRAP. AFTER EACH BOOTSTRAP, THE PROGRAM CHECKS THE BOOTSTRAPS TO COMPARE CORRECTLY.

TEST 22 - USES THE OPTION 1 + 2 TEST MODULE TO CAUSE A AUTO RESTART ON THE M8317 MODULE. AFTER EACH AUTO RESTART, THE PROGRAM CHECKS THAT THE AUTO RESTART OCCURED AT THE APPROPRIATE LOCATION.

TEST 23 - USES THE OPTION 1 + 2 TEST MODULE TO TEST THAT THE AC LOW AND BATTERY EMPTY F/F'S CAN BE SET, CAUSE A INTERRUPT, AND THAT THEY CAN BE CLEARED.

TIMDIS - IS A OPERATOR INTERVENTION TEST TO CHECK THAT THE TIME SHARE LOGIC CAN BE DISABLED.

BOOTCMP - IS A OPERATOR INTERVENTION TEST TO CHECK THAT THE BOOTSTRAPS GOT LOADED CORRECTLY.

AUTO - IS A OPERATOR INTERVENTION TEST TO CHECK AUTO RESTARTS AND POWER FAIL.

9.0

FLOWCHARTS

NOT APPLICABLE

10.0

LISTING

ATTACHED

/KMB=A OPTION TEST 2 MAINDEC=08=DJKMA=B=L 4K
/COPYRIGHT (C) 1974, 1975 DIGITAL EQUIPMENT CORPORATION
/PROGRAMMER: BRUCE HANSEN

////////////////////////////////////
/THE FOLLOWING LISTING WILL CORRESPOND TO THE PAPER TAPE LABELED MAINDEC=08=DJKMA=B-PB1.
/THIS PAPER TAPE AND LISTING WILL BE USED WITH COMPUTERS WITH 4K OF MEMORY OR MORE.
/THERE ARE FOUR 1K SEGMENTED LISTINGS ATTACHED TO THE END OF THIS LISTING FOR
/COMPUTERS WITH LESS THAN 4K OF MEMORY. REFER TO THE APPROPRIATE 1K LISTING.
/FOR ANY ERRORS WHICH MAY HAVE OCCURED WHILE RUNNING THE 1K SEGMENTED PROGRAMS,
////////////////////////////////////

/KMB=A OPTION TEST 2 MAINDEC=08=DJKMA=B=L 4K
/COPYRIGHT 1974, 1975 DIGITAL EQUIPMENT CORP., MAYNARD, MASS., 01754
/PDP-8A OPTION TEST 2 TESTS THE MEMORY EXTENTION/TIME SHARE CONTROL,
/POWER FAIL/AUTO RESTART, AND BOOTSTRAP LOADERS

6000 SKON=6000
6007 CAF=6007
7402 HLT=7402

/SWITCH REGISTER SETTINGS

/SR0=1 INHIBIT ERROR HALT
/SR1=1 LOOP ON ERROR
/SR2=1 LOOP ON TEST
/SR3=1 HALT AT COMPLETION OF A PROGRAM PASS

/MEMORY EXTENTION/TIME SHARE INSTRUCTIONS

6004 GTF=6004 /GET FLAGS. READS THE FOLLOWING MACHINE STATES
/INTO THE INDICATED BITS OF THE AC1
/AC0 LINE
/AC2 INTERRUPT REQUEST
/AC4 INTERRUPT ENABLE F/F
/AC5 USER FLAG
/AC6=11 SAVE FIELD REGISTER

6005 RTF=6005 /RESTORE THE FLAGS, RTF LOADS THE LINK FROM AC0,
/LOADS THE USER BUFFER F/F, INSTRUCTION BUFFER AND
/DATA FIELD WITH AC5, AC6=8, AC 9=11 AND INHIBITS
/PROCESSOR INTERRUPTS UNTIL NEXT JMP OR JMS INSTRUCTION,
/AT THE END OF THE JMP OR JMS, THE CONTENTS OF THE U.B. + I.B.
/ARE LOADED INTO USER FIELD F/F, AND THE I.F., INTERRUPT ENABLE
/IS SET AND INTERRUPT INHIBIT AS CLEARED

6234 RIB=6234 /READ THE INTERRUPT BUFFER

6244 RMF=6244 /RESTORES MEMORY FLAGS

6234 CINT=6204 /CLEAR USER INTERRUPT FLIP=FLOP

6254 SINT=6254 /SKIP ON USER INTERRUPT FLIP=FLOP

6264 CUF=6264 /CLEAR USER BUFFER FLIP=FLOP

6274 SUP=6274 /SET USER BUFFER FLIP=FLOP (ENTER TIME SAME MODE)AND
/INHIBITS PROCESSOR INTERRUPTS UNTIL THE NEXT JMP OR
/JMS INSTRUCTION, AT THE END OF THE JMP OR JMS
/INSTRUCTION, THE USER BUFER IS LOADED INTO THE USER
/FIELD F/F,

6201 CDF=6201 /CHANGE DATA FIELD

```

6202 CIF=6202 /CHANGE INSTRUCTION FIELD
6214 RDF=6214 /READ THE DATA FIELD INTO AC BITS 6-8
6224 RIF=6224 /READ THE INSTRUCTION FIELD INTO AC BITS 6-8
6203 CIFCDF=6203 /PERFORMS THE CIF AND CDF FUNCTIONS

/POWER FAIL INSTRUCTIONS

6102 SPL=6102 /SKIP ON AC LOW FLIP-FLOP
6103 CAL=6103 /CLEAR AC LOW FLIP-FLOP
6101 SBE=6101 /SKIP ON BATTERY EMPTY FLIP-FLOP

/OPTION BOARD 2 SIMULATOR IOT'S

6150 CLRSIM=6150 /CLEAR CONTROL REGISTERS
6152 LDRG2=6152 /LOAD CONTROL REGISTER 2
6153 LDRG3=6153 /LOAD CONTROL REGISTER 3
6154 CLREMA=6154 /CLEAR EMA CATCHER LOGIC
6155 REDEMA=6155 /READ EMA CATCHER REGISTER
6160 CLRMOD=6160 /CLEAR TEST MODULE LOGIC
6164 EXECUT=6164 /EXECUT AND CONTROL WORD 3 BIT 7 =1 ISSUE A POWER ON PULSE
/EXECUT AND CONTROL WORD 3 BIT 7 =0 ISSUE A SWITCH SW PULSE
6166 SKPEMA=6166 /SKPEMA AND CONTROL WORD 3 BIT 3 =1 EMA INTERRUPT AND SKIP ENABLE
/SKPEMA AND CONTROL WORD 3 BIT 3 =0 EMA INTERRUPT AND SKIP DISABLE

/OPTION BOARD2 SIMULATOR CONTROL WORD 2 BIT ASSIGNMENTS
/
/BITS 0 = 1 NOT USED
/BITS 2 = 8 BOOT STRAP PROGRAM SELECT
/BITS 9 = 11 AUTO-RESTART ADDRESS SELECT

/OPTION BOARD 2 SIMULATOR CONTROL WORD 3 BIT ASSIGNMENTS
/
/BIT 0 TIME SHARE 0=ENABLED 1=DISABLED
/BIT 1 BATT EMPTY 1=BATT EMPTY PULLED LOW 2=FREE STATE
/BIT 2 AC LOW (L) 1=PULLED LOW 0=FREE STATE
/BIT 3 1=EMA INTERRUPT/SKIP ENABLE 0=EMA INTERRUPT SKIP DISABLE
/BITS 4 = 6 NOT USED
/BIT 7 1=POWER ON PULSE WITH EXECUT 0=SWITCH SW PULSE WITH EXECUT
/BIT 8 1=DISABLES BOOTSTRAP WHILE RUNNING 2=ENABLES BOOTSTRAP WHILE RUNNING
/BIT 9 = 11 AUTO-RESTART/BOOT STRAP ENABLE CODE

/PDP-8A XOR IOT'S

6170 XRON=6170
6171 SKXR=6171 /SKIP IF XOR ERROR 1 FLOP SET
6172 XRCI=6172 /CLEAR XOR INTERRUPT ENABLE
6173 STIP=6173 /SKIP IF MUT POWER ON AND 1ST XRON IOT
6174 XRSI=6174 /SET XOR INTERRUPT ENABLE
6175 XRCO=6175 /SKIP IF ERROR 2 AND CLEAR IT
6176 XRTD=6176 /SET TIME OUT DELAY

```

```

0000 *0
0002 0000 INTSER, 2 /JMS I ATRST PLACED HERE FOR SIMULATOR AUTO RESTART
0001 3064 DCA DATREC
0002 6102 SPL /SKIP ON AC LOW
0003 7410 SKP
0004 5506 JMP I XPWFL /POWER GOING DOWN
0005 6101 SBE /SKIP ON BATTERY EMPTY
0006 7410 SKP
0007 5507 JMP I XBAT /GO HALT THE COMPUTER ,ITS ALL OVER
0010 6224 RIF /READ THE INSTRUCTION FIELD
0011 7640 SZA CLA
0012 4503 ERROR /I.F, IS NOT 0 AFTER A INTERRUPT
0013 6214 RDF /READ THE DATA FIELD
0014 7640 SZA CLA
0015 4503 ERROR /D.F, IS NOT 0 AFTER A INTERRUPT
0016 2000 ISZ INTSER /ADD 1 TO THE INTERRUPTED PC
0017 5400 JMP I INTSER /RETURN TO THE PROGRAM

0020 *20
0022 0000 SWITCH, 3 /PSEUDO SWITCH REGISTER IF BIT 0=0 OF OP1SEL
0021 1003 OP1SEL, 1003
/
/BIT 0=0 USE LOC 20 AS A PSEUDO S,R,
/BIT 0=1 USE HARDWARE FRONT PANEL S,R,
/BIT 1=1 HAS 8A OPTION 1
/BIT 2=1 HAS 8A OPTION 2
/BIT 3=1 HAS 8A CPU SIMULATOR
/BIT 4=1 HAS 8A OPTION 1 + 2 TEST MODULE
/BIT 5=1 PROGRAM ON 8A XOR
/BIT 6=1 HAS PDP-8E TYPE CPU
/BITS 7-11 MEMORY SIZE = 0'S = 1K, 37=32K,
/MEMORY SIZE CAN BE INCREASED IN 1K INCREMENTS
/BY ADDING A 1 TO THE NUMBER IN BITS 7-11,

0022 0000 OP2SEL, 0
/8A BOOT STRAP WILL LOAD INTO THE FOLLOWING LOCATIONS

0023 7432 BK8E, HLT /2200
0024 7402 BK8E, HLT /6745
0025 7422 HLT /0023
0026 7432 HLT /7640
0027 7402 HLT /5024
0030 7402 HLT /6733
0031 7432 HLT /5031
0032 7422 HLT /TERMINATOR

0062 *62
0062 0000 CDFCHK, 0

```

```

0063 0062 CHKCDF, CDFCHK
0064 0000 DATREC, 0
0065 0000 SAVESE, 0
0066 0000 FLDLIM, 0
0067 0000 UPERLM, 0
0070 0000 WRKFLD, 0
0071 0000 DATPAT, 0
0072 0000 WRKADD, 0
0073 0000 WGHLM, 0
0074 6201 K6201, 6201
0075 0000 SAVWFD, 0
0076 0000 ADDCNT, 0
0077 6520 BADPAS, 6520
0100 6500 GOODPS, 6500
0101 5052 AJTRST, PRGRST
0102 0000 TEST, 0
    
```

/SCOPE LOOP AND TEST LOOP ADDRESS

```

0103 4503 ERROR= JMS I
0103 5107 ERRORX
0104 4524 LOOP= JMS I
0104 5151 YSTLOP
0105 4505 SCOPLP= JMS I
0105 5057 TESTAD

0106 5042 XPWRFL, POWFAL
0107 5066 XBAT, BATEMT
0110 5017 PASEND, ENDPAS
    
```

/CONSTANTS USED BY THE PROGRAM

```

0111 7777 M1, -1
0112 7776 M2, -2
0113 7774 M4, -4
0114 7773 M5, -5
0115 7771 M7, -7
0116 7770 M10, -10
0117 7767 M11, -11
0120 7760 M20, -20
0121 7753 M25, -25
0122 7745 M33, -33
0123 7735 M43, -43
0124 7734 M44, -44
0125 7730 M50, -50
0126 7723 M55, -55
0127 7720 M60, -60
0130 7712 M66, -66
0131 7710 M70, -70
0132 7701 M77, -77
0133 7700 M100, -100
0134 7653 M125, -125
0135 7626 M152, -152
0136 6700 M1100, -1100
0137 2700 M5100, -5100
    
```

```

0140 0007 K7, 7
0141 0010 K10, 10
0142 0070 K70, 70
0143 0077 K77, 77
0144 0200 K200, 200
0145 0400 K400, 400
0146 7774 K7774, 7774
0147 4100 K4100, 4100

0200 0200
    
```

 /TEST 1 - CHECKS THE CDF AND RDF INSTRUCTIONS TO LOAD AND READ
 /THE DATA FIELD, A RIF IS ISSUED AFTER EACH DATA FIELD CHANGE
 /TO CHECK THAT THE INSTRUCTION FIELD REMAINS A ZERO,
 /THE INCLUSIVE OR OF THE D,F, WITH THE AC IS CHECKED WITH THE RDF INSTRUCTION,
 /SET TIME SHARE ENABLE SWITCH TO TIME SHARE ENABLE POSITION

```

0202 7000 NOP/JMS I AJTRST /IF SIMULATOR SELECTED THIS LOCATION WILL CHANGE TO JMS I AJTRST
0201 6160 TEST1, CLRMOD /CLEAR SIMULATOR TEST LOGIC
0202 4505 SCOPLP /SETUP SCOPE AND TEST LOOPING ADDRESS
0203 6007 CAF /CLEAR ALL FLAGS
0204 6264 CUF /CLEAR USER FLAG
0205 7410 SKP
0206 4503 ERROR /CUF SKIPPED
0207 6254 SINT /SKIP IF USER INTERRUPT FLIP-FLOP SET
0210 7410 SKP
0211 4503 ERROR /SINT SKIPPED OR CAF FAILED TO 0 USER INTERRUPT
0212 6001 ION /TURN THE INTERRUPT ON
0213 6201 CDF 00 /CHANGE DATA FIELD TO FIELD 0
0214 7410 SKP
0215 4503 ERROR /CDF SKIPPED
0216 6214 RDF /READ THE DATA FIELD
0217 7410 SKP
0220 4503 ERROR /RDF SKIPPED
0221 7640 SZA CLA /WAS IF FIELD 0?
0222 4503 ERROR /RDF READ BACK SOMETHING OTHER THAN D,F, 0
0223 6224 RIF /READ THE INSTRUCTION FIELD
0224 7410 SKP
0225 4503 ERROR /RIF SKIPPED
0226 7640 SZA CLA /WAS THE I,F, 0?
0227 4503 ERROR /RIF READ BACK SOMETHING OTHER THAN I,F, 0
0230 6271 CDF 70 /CHANGE DATA FIELD TO FIELD 7
0231 6214 RDF /READ THE DATA FIELD
0232 1131 TAD M70 /CHECK THAT DATA FIELD 7 WAS READ BACK
0233 7640 SZA CLA /INTO AC BITS 6,7 + 8,
0234 4503 ERROR /CDF OR RDF TO FIELD 7 FAILED
0235 1375 TAD C7707 /CHECK THE INCLUSIVE OR FUNCTION OF RDF
0236 6214 RDF /READ THE DATA FIELD
0237 7040 CMA
0240 7640 SZA CLA
0241 4503 ERROR /THE INCLUSIVE OR OF THE DF WITH AC FAILED
    
```

```

0242 6224 RIF /READ THE INSTRUCTION FIELD
0243 7640 SZA CLA /IS IT STILL 0?
0244 4503 ERROR /THE INSTRUCTION FIELD CHANGED
0245 6221 CDF 20 /CHANGE TO DATA FIELD 2
0246 6214 RDF /READ THE DATA FIELD
0247 1120 TAD M20 /CHECK TO SEE IF DF 2 WAS READ BACK
0250 7640 SZA CLA /WAS IT DATA FIELD 2?
0251 4503 ERROR /NO, CDF 20 OR RDF FAILED
0252 1372 TAD K7757 /CHECK THE INCLUSIVE OR OF THE DF WITH THE AC
0253 6214 RDF /READ THE DATA FIELD
0254 7640 CMA
0255 7640 SZA CLA
0256 4503 ERROR /THE INCLUSIVE OR OF DF WITH AC FAILED
0257 6224 RIF /READ THE INSTRUCTION FIELD
0260 7640 SZA CLA /IS THE I,F, STILL 0?
0261 4503 ERROR /THE INSTRUCTION FIELD CHANGED
0262 6251 CDF 50 /CHANGE TO DATA FIELD 5
0263 6214 RDF /READ THE DATA FIELD
0264 1125 TAD M50
0265 7640 SZA CLA /WAS IT DATA FIELD 5?
0266 4503 ERROR /NO, CDF 50 OR RDF FAILED
0267 6224 RIF /READ THE INSTRUCTION FIELD
0270 7640 SZA CLA /IS THE I,F, STILL 0
0271 4503 ERROR /NO, THE INSTRUCTION FIELD CHANGED
0272 6231 CDF 30 /CHANGE THE DATA FIELD TO 3
0273 6214 RDF /READ THE DATA FIELD
0274 1373 TAD N30
0275 7640 SZA CLA /
0276 4503 ERROR /IS IT EQUAL TO FIELD 3
0277 6224 RIF /NO, CDF 30 OR RDF FAILED
0300 7640 SZA CLA /READ THE INSTRUCTION FIELD
0301 4503 ERROR /IS THE I,F, STILL EQUAL TO 0?
0302 6241 CDF 40 /NO, THE I,F, CHANGED
0303 6214 RDF /CHANGE THE DATA FIELD TO FIELD 4
0304 1374 TAD N40 /READ THE DATA FIELD
0305 7640 SZA CLA
0306 4503 ERROR /IS IT EQUAL TO D,F, 4
0307 6224 RIF /NO, CDF 40 OR RDF FAILED
0310 7640 SZA CLA /READ THE INSTRUCTION FIELD
0311 4503 ERROR /IS IT STILL EQUAL TO 0
0312 6211 CDF 10 /NO, THE I,F, CHANGED
0313 6214 RDF /CHANGE THE DATA FIELD TO FIELD 1
0314 1116 TAD M10 /READ THE DATA FIELD
0315 7640 SZA CLA
0316 4503 ERROR /IS IT EQUAL TO DATA FIELD 1
0317 6224 RIF /NO, CDF 10 OR RDF FAILED
0320 7640 SZA CLA /READ THE INSTRUCTION FIELD
0321 4503 ERROR /IS IT STILL EQUAL TO 0
0322 6261 CDF 60 /NO, THE I,F, CHANGED
0323 6214 RDF /CHANGE DATA FIELD TO FIELD 6
0324 1127 TAD M60 /READ THE DATA FIELD
0325 7640 SZA CLA
0326 4503 ERROR /IS THE D,F, EQUAL TO 6?
0327 6224 RIF /NO, CDF 60 OR RDF FAILED
0330 7640 SZA CLA /READ THE INSTRUCTION FIELD
/IS IT STILL EQUAL TO ZERO?

```

```

0331 4503 ERROR /NO, INSTRUCTION FIELD CHANGED
0332 6201 CDF 00 /CHANGE DATA FIELD TO FIELD 0
0333 6214 RDF /READ THE DATA FIELD
0334 7640 SZA CLA /IS IT EQUAL TO FIELD 2
0335 4503 ERROR /NO, CDF 00 OR RDF FAILED
0336 6224 RIF /READ THE INSTRUCTION FIELD
0337 7640 SZA CLA /IS IT STILL EQUAL TO ZERO
0340 4503 ERROR /NO, INSTRUCTION FIELD CHANGED.
0341 4504 LOOP /LOOP ON TEST IF SR = 1000

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/*****
 /TEST 2 - CHECKS THAT USER MODE CAN BE ENTERED AND EXITED BY DOING A
 /ION=SUF=JMP=HLT, THE USER INTERRUPT IS CHECKED TO BE SET BY SINT AND
 /CLEARED BY CINT, GTF AND RIB ARE ISSUED TO CHECK THAT THE SAVE FIELD
 /GOT LOADED AND THAT THE INSTRUCTIONS CAN READ THE SAVE FIELD.
 /*****

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0342 4505 TEST2, SCOPLP /SETUP SCOPE AND TEST LOOPING ADDRESS
0343 6007 CAF /CLEAR ALL FLAGS
0344 6264 CUF /CLEAR USER BUFFER F/F
0345 7410 SKP
0346 4503 ERROR /CUF SKIPPED
0347 6204 CINT /CLEAR USER INTERRUPT FLIP=FLOP
0350 7410 SKP
0351 4503 ERROR /CINT SKIPPED
0352 6254 SINT /SKIP ON USER INTERRUPT FLIP=FLOP
0353 7410 SKP
0354 4503 ERROR /SINT SKIPPED OR USER INTERRUPT F/F SET
0355 6001 ION /TURN THE INTERRUPT ON
0356 6274 SUF /SET USER BUFFER F/F, SET INT INHIBIT AT TP3
0357 5361 JMP ,+2 /LOAD UB INTO I,F, REGISTER, CLEAR INT INHIBIT F/F
0360 5362 HLT /SUF SKIPPED OR TRAPPED,
0361 7402 HLT /USER INTERRUPT FAILED TO SET OR HALT FAILED TO TRAP
0362 5362 JMP /HLT FAILED TO TRAP
0363 6254 SINT /SKIP ON USER INTERRUPT FLIP=FLOP
0364 5364 JMP /USER INTERRUPT NOT SET OR SINT FAILED TO SKIP,
0365 6204 CINT /CLEAR USER INTERRUPT FLIP=FLOP
0366 6254 SINT /SKIP ON USER INTERRUPT FLIP=FLOP
0367 7410 SKP
0370 5370 JMP
0371 5777 JMP TST2CN /CINT FAILED TO 0 USER INTERRUPT FLIP=FLOP
0372 7757 K7757, 7757 /CONTINUE THE TEST
0373 7750 N30, =30
0374 7740 N40, =40
0375 7707 C7707, 7707

0377 404 PAGE
0400 3400

0400 5601 JMP I ,+1 /SIMULATOR RETURNS HERE AFTER A BOOTSTRAP
0401 3677 BOTRT1 /THIS LOCATION WILL CHANGE TO BOTRT1,BOTRT2,BOTRT3
0402 7677 K7677, 7677
0403 7500 N30, =30
0404 6004 TST2CN, GTF /GET THE FLAGS
0405 7410 SKP

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0406 5206 JMP , /GTF SKIPPED
0407 1133 TAD M100 /CHECK USER FLAG TO BE SET
0410 7640 SZA CLA /WAS THE CORRECT IF, D,F, AND USER FIELD FLIP=FLOP LOADED?
0411 5211 JMP , /NO, USER FIELD F/F NOT LOADED OR OTHER BITS SET
0412 7300 CLA CLL /OR GTF FAILED,
0413 6234 RIB /READ THE INTERRUPT BUFFER
0414 7410 SKP
0415 5215 JMP , /RIB SKIPPED
0416 1133 TAD M100 /CHECK FOR USER FLAG
0417 7640 SZA CLA
0420 5220 JMP , /RIB FAILED OR SAVE FIELDS CLEARED
0421 1202 TAD K7677 /CHECK THE INCLUSIVE OR OF SF WITH AC
0422 6234 RIB /READ THE INTERRUPT BUFFER
0423 7040 CMA
0424 7640 SZA CLA
0425 5225 JMP , /INCLUSIVE OR OF SAVE FIELD WITH AC FAILED
0426 7340 CLA CLL CMA /SET THE AC TO ALL ONES
0427 6004 GTF /GET THE FLAGS
0430 1133 TAD M100
0431 7640 SZA CLA
0432 5232 JMP , /GTF FAILED TO DO A JAM TRANSFER TO AC
/OR SAVE FIELDS CLEARED,
/LOOP ON TEST IF SR = 1000
0433 4504 LOOP

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/*****
/TEST 3= CHECKS THAT OSR WILL TRAP IN USER MODE AND THAT
/IT WILL NOT AFTER A INTERRUPT, RIB, GTF, RIF, RDF ARE CHECKED TO
/READ THE SAVE FIELDS AND I,F, AND D,F.
/*****

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0434 4505 TEST3, SCOPLP /SETUP SCOPE AND TEST LOOPING ADDRESS
0435 6007 CAF /CLEAR ALL FLAGS
0436 6001 ION /TURN THE INTERRUPT ON
0437 6274 SUF /SET USER BUFFER F/F, SET INT INH AT TP3
0440 5241 JMP ,+1 /ENTER USER MODE
0441 7404 OSR /OSR SHOULD SET USER INTERRUPT F/F + CAUSE A TRAP
0442 5242 JMP , /OSR FAILED TO TRAP
0443 6254 SINT /SKIP ON USER INTERRUPT F/F
0444 5244 JMP , /USER INTERRUPT F/F NOT SET
0445 6204 CINT /CLEAR USER INTERRUPT F/F
0446 6254 SINT /SKIP ON USER INTERRUPT F/F
0447 7410 SKP
0450 5250 JMP , /CINT FAILED TO CLEAR USER INTERRUPT F/F
0451 6001 ION /TURN THE INTERRUPT ON,
0452 5253 JMP ,+1 /CHECK THAT THE INTERRUPT HAD CLEARED THE USER FIELD F/F
0453 7404 OSR /OSR SHOULD NOT TRAP
0454 7610 SKP CLA
0455 5255 JMP , /OSR TRAPPED AFTER A INTERRUPT OCCURED ABOVE
/CHECK THE USER BUFFER AND I,F.,
/READ THE INTERRUPT BUFFER
0456 6234 RIB /CHECK THE SAVE FIELD FOR USER FLAG
0457 1133 TAD M100
0460 7640 SZA CLA
0461 4503 ERROR /USER FLAG NOT SET OR OTHER BITS SET
0462 7340 CLA CLL CMA /SET THE AC TO ALL ONES
0463 6004 GTF /GET THE FLAGS
0464 1203 TAD M300 /CHECK FOR INT ENA, AND USER FLAG

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0465 7640 SZA CLA
0466 4503 ERROR /USER FLAG AND INT ENA NOT SET OR OTHER BITS SET
0467 6224 RIF /READ THE INSTRUCTION FIELD
0470 7640 SZA CLA
0471 4503 ERROR /THE INSTRUCTION FIELD IS NON ZERO
0472 6214 RDF
0473 7640 SZA CLA
0474 4503 ERROR /THE DATA FIELD IS NON ZERO,
0475 4504 LOOP /LOOP ON TEST IF SR = 1000

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/*****
/TEST 4= CHECKS THAT AN IOT WILL TRAP OUT IN USER MODE AND NOT
/AFTER A USER INTERRUPT, THE USER INTERRUPT IS CHECKED TO BE
/CLEARED BY CAF, RIB AND GTF ARE ISSUED AND CHECKED.
/*****

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0476 4505 TEST4, SCOPLP /SETUP SCOPE AND TEST LOOPING ADDRESS
0477 6007 CAF /CLEAR ALL FLAGS
0500 6001 ION /TURN THE INTERRUPT ON
0501 6274 SUF /SET THE USER BUFFER FLIP=FLOP
0502 5303 JMP ,+1 /TRANSFER USER BUFFER TO THE USER FIELD F/F
0503 6001 ION /SHOULD TRAP HERE
0504 5304 JMP , /THE IOT FAILED TO TRAP,
0505 6254 SINT /SKIP ON USER INTERRUPT FLIP=FLOP,
0506 5306 JMP , /USER INTERRUPT F/F FAILED TO SET ON SINT FAILED
0507 6007 CAF /CLEAR USER INTERRUPT WITH INITIAIZE
0510 6254 SINT /SKIP ON USER INTERRUPT
0511 7410 SKP
0512 5312 JMP , /CAF FAILED TO CLEAR USER INTERRUPT,
0513 6001 ION /TURN THE INTERRUPT ON
0514 5315 JMP ,+1 /CHECK THAT THE INTERRUPT CLEARED UP F/F
0515 6001 ION /IOT SHOULD NOT TRAP HERE
0516 7410 SKP
0517 5317 JMP , /ION TRAPPED,
0520 6234 RIB /READ THE INTERRUPT BUFFER
0521 1133 TAD M100
0522 7640 SZA CLA
0523 4503 ERROR /USER FLAG NOT SET OR OTHER BITS SET
0524 7340 CLA CLL CMA /SET THE AC TO ALL ONES
0525 6004 GTF /GET THE FLAGS
0526 1203 TAD M300
0527 7640 SZA CLA
0530 4503 ERROR /USER FLAG AND INT ENA NOT SET OR GTF FAILED
0531 4504 LOOP /LOOP ON TEST IF SR = 1000

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/*****
/TEST 5= CHECKS THAT CUF WILL CLEAR THE USER MODE BY DOING ION, SUF,
/ION, JMP, IOT, THE IOT, SHOULD NOT TRAP, RIB AND GTF ARE
/ISSUED AND CHECKED.
/*****

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0532 4505 TEST5, SCOPLP /SETUP SCOPE AND TEST LOOPING ADDRESS
0533 6007 CAF /CLEAR ALL FLAGS
0534 6001 ION /TURN THE INTERRUPT ON
0535 6274 SUF /SET THE USER BUFFER F/F

```


0676	6204	GTF		/GET THE FLAGS
0677	1233	TAD	M1000	/CHECK FOR INTERRUPT REQUEST
0700	7640	SZA	CLA	
0701	4503	ERROR		/SHOULD ONLY BE INTERRUPT REQUEST SET
0702	6204	CINT		/CLEAR USER INTERRUPT REQUEST
0703	6254	SINT		/SKIP ON USER INTERRUPT FLIP=FLOP
0704	7410	SKP		
0705	4503	ERROR		/CINT FAILED TO CLEAR USER INT F/F
0706	7340	CLA CLL CMA		
0707	6204	GTF		
0710	7640	SZA	CLA	
0711	4503	ERROR		/INTERRUPT REQUEST FAILED TO CLEAR
0712	4504	LOOP		/LOOP ON TEST IF SR = 1000

 /TEST8= CHECKS THAT RTF WILL RESET THE USER MODE AFTER A
 /USER INTERRUPT.

0713	4505	TEST8,	SCOPLP	/SETUP SCOPE AND TEST LOOPING ADDRESS
0714	6007	CAF		/CLEAR ALL FLAGS
0715	6001	ION		/TURN THE INTERRUPT ON
0716	6274	SUF		/SET USER BUFFER FLIP=FLOP
0717	5320	JMP	.+1	
0720	7402	HLT		/HALT FAILED TO TRAP OR USER FIELD FAILED TO SET
0721	5321	JMP	.	/HALT FAILED TO TRAP
0722	6254	SINT		/SKIP ON USER INTERRUPT F/F
0723	4503	ERROR		/USER INTERRUPT FAILED TO SET
0724	6204	CINT		/CLEAR USER INTERRUPT FLIP=FLOP
0725	6254	SINT		
0726	7410	SKP		
0727	4503	ERROR		/CINT FAILED TO CLEAR USER INTERRUPT
0730	6234	RIB		/READ THE INTERRUPT BUFFER
0731	1133	TAD	M100	/CHECK FOR USER FLAG
0732	7640	SZA	CLA	
0733	4503	ERROR		/USER FLAG NOT SET OR PICKED UP BITS
0734	7100	CLL		
0735	1147	TAD	K4100	/SET AC0 +5 TO A 1 TO SET LINK + USER BUFFER
0736	6005	RTF		/RESTORE THE FLAGS - SET USER BUFFER F/F
0737	7610	SKP	CLA	
0740	5340	JMP	.	/RTF SKIPPED
0741	6224	RIF		/READ THE INSTRUCTION FIELD
0742	7640	SZA	CLA	/IS IT NON ZERO
0743	5343	JMP	.	/RIF TRAPPED WITH OUT USER INT OR I.F, NON ZERO
0744	6214	RDF		/READ THE DATA FIELD
0745	7640	SZA	CLA	
0746	5346	JMP	.	/RDF TRAPPED WITH OUT USER INT OR D.F, IS NON=ZERO
0747	5350	JMP	.+1	/SET USER FIELD F/F, USER MODE, AND TURN INT ENA ON
0750	7402	HLT		/RTF FAILED TO SET USER BUFFER F/F OR ION NOT SET
0751	5351	JMP	.	/HLT FAILED TO TRAP
0752	6254	SINT		/SKIP ON USER INTERRUPT F/F
0753	4503	ERROR		/USER INTERRUPT NOT SET
0754	6004	GTF		/GET THE FLAGS
0755	1137	TAD	M5100	/CHECK FOR LINK, INTERRUPT REQUEST AND USER FLAG
0756	7640	SZA	CLA	

0757	4503	ERROR		/THE LINK, OR INTERRUPT REQUEST OR USER FLAG NOT SET
0760	7100	CLL		/CLEAR THE LINK BUT LEAVE INTERRUPT REQUEST UP
0761	6001	ION		/TURN THE INTERRUPT ON
0762	5363	JMP	.+1	/SHOULD INTERRUPT AT TP4
0763	4503	ERROR		/PROGRAM FAILED TO INTERRUPT WITH INT REQUEST SET
0764	6004	GTF		/GET THE FLAGS
0765	1203	TAD	M1000	/CHECK FOR INTERRUPT REQUEST
0766	7640	SZA	CLA	/IS IT THE ONLY BIT SET
0767	4503	ERROR		/NO, OTHER BITS SET BESIDES INT REG OR INT REQ NOT SET
0770	6254	SINT		/SKIP ON USER INTERRUPT F/F
0771	4503	ERROR		/USER INTERRUPT NOT SET
0772	6204	CINT		/CLEAR USER INTERRUPT F/F
0773	6254	SINT		
0774	7610	SKP	CLA	
0775	4503	ERROR		/CINT FAILED TO CLEAR USER INTERRUPT F/F
0776	7340	CLA CLL CMA		/SET THE AC TO ALL ONES
0777	6004	GTF		/GET THE FLAGS
1007	7640	SZA	CLA	/SHOULD BE ALL ZEROS
1001	4503	ERROR		/THE SAVE FIELD OR STATUS IS NON=ZERO
1002	4504	LOOP		/LOOP ON TEST IF SR = 1000

 /TEST9= CHECKS THAT RMF WILL RESET THE USER MODE AFTER A USER
 /INTERRUPT

1003	4505	TEST9,	SCOPLP	/SETUP SCOPE AND TEST LOOPING ADDRESS
1004	7000	NOP		////////////////////////////////////
1005	6007	CAF		/CLEAR ALL FLAGS
1006	6001	ION		/TURN THE INTERRUPT ON
1007	6274	SUF		/SET USER BUFFER FLIP=FLOP
1010	5211	JMP	.+1	/GO INTO USER MODE
1011	7402	HLT		/HLT FAILED TO TRAP OR NOT IN USER MODE
1012	5212	JMP	.	/HLT FAILED TO TRAP
1013	6254	SINT		/SKIP ON USER INTERRUPT
1014	4503	ERROR		/SINT FAILED OR USER INTERRUPT NOT SET
1015	6204	CINT		/CLEAR USER INTERRUPT FLIP=FLOP
1016	6254	SINT		/SKIP ON USER INTERRUPT
1017	7410	SKP		
1020	4503	ERROR		/CINT FAILED TO CLEAR USER INTERRUPT
1021	6234	RIB		/READ THE INTERRUPT BUFFER
1022	1133	TAD	M100	
1023	7640	SZA	CLA	
1024	4503	ERROR		/USER FLAG NOT SET OR OTHER BITS SET
1025	6001	ION		/TURN THE INTERRUPT ON
1026	6244	RMF		/RESTORE IR, DF AND JB
1027	7610	SKP	CLA	
1030	5230	JMP	.	/RMF SKIPPED
1031	5232	JMP	.+1	/ENTER USER MODE
1032	7402	HLT		/RMF + JMP FAILED TO SET USER FIELD OR RMF FAILED
1033	5233	JMP	.	/HLT FAILED TO TRAP
1034	6254	SINT		/SKIP ON USER INTERRUPT
1035	4503	ERROR		/USER INTERRUPT NOT SET
1036	7100	CLL		
1037	6004	GTF		/GET THE FLAGS

1042	1136	TAD	M1100	/CHECK FOR INTERRUPT REQUEST AND USER FLAG
1041	7640	SZA	CLA	/WHERE THEY SET
1042	4503	ERROR		/NO, INT REQUEST OR USER FLAG NOT SET OR RMF
1043	6001	ION		/SET OTHER BITS IN THE IF AND OF
1044	9245	JMP	.+1	/TURN THE INTERRUPT BACK ON
1045	4503	ERROR		/INTERRUPT WITH INTERRUPT REQUEST SET
1046	6234	RIB		/PROGRAM FAILED TO INTERRUPT
1047	7640	SZA	CLA	/READ THE INTERRUPT BUFFER
1053	4503	ERROR		/USER FLAG NOT CLEARED ON INTERRUPT
1051	6254	SINT		/CHECK USER INTERRUPT TO BE SET
1052	4503	ERROR		/USED INTERRUPT GOT CLEARED
1053	6204	CINT		/CLEAR USER INTERRUPT
1054	6254	SINT		/SKIP ON USER INTERRUPT
1055	7410	SKP		
1056	4503	ERROR		/USER INTERRUPT SET
1057	4504	LOOP		/LOOP ON TEST IF SR = 1000

 /TEST 10= CHECKS THAT USER MODE AND LINK AND ION CAN BE SET BY THE AC AND
 /THE RTF INSTRUCTION AND THAT IT CAN BE CLEAR BY RTF.

1060	4505	TEST10,	SCOPLP	/SETUP SCOPE AND TEST LOOPING ADDRESS
1061	6007	CAF		/CLEAR ALL FLAGS
1062	1147	TAD	K4100	/SET THE LINK AND USER BIT INTO THE AC
1063	6005	RTF		/RESTORE THE FLAGS
1064	7620	SNL	CLA	/CHECK THE LINK
1065	7402	HLT		/LINK NOT SET BY RTF
1066	6000	SKON		/SKIP IF INTERRUPT ON AND TURN OFF
1067	7402	HLT		/RTF FAILED TO SET INTERRUPT ENABLE
1070	6000	SKON		/SKIP IF INTERRUPT ON AND TURN OFF
1071	7410	SKP		
1072	7402	HLT		/SKON FAILED TO CLEAR INTERRUPT ENABLE
1073	6001	ION		/TURN THE INTERRUPT ON
1074	5275	JMP	.+1	/ENTER USER MODE
1075	7402	HLT		/RTF FAILED TO SET U,B OR JMP FAILED TO LOAD I,F.
1076	5276	JMP	.	/HLT FAILED TO TRAP
1077	6254	SINT		/SKIP ON USER INTERRUPT
1100	4503	ERROR		/USER INTERRUPT NOT SET
1101	6004	GTF		/GET THE FLAGS
1102	1137	TAD	M5100	/CHECK LINK, INTERRUPT REQUEST AND USER FLAG
1103	7640	SZA	CLA	
1104	4503	ERROR		/LINK, INT REQ OR USER FLAG NOT SET
1105	7300	CLA	CLL	/LEAVE INTERRUPT REQUEST SET
1106	6005	RTF		/RESTORE THE FLAGS TO ?
1107	5310	JMP	.+1	/SHOULD INTERRUPT
1113	4503	ERROR		/FAILED TO INTERRUPT
1111	6254	SINT		/SKIP ON USER INTERRUPT
1112	4503	ERROR		/USER INTERRUPT GOT CLEARED
1113	6204	CINT		/CLEAR USER INTERRUPT
1114	6234	RIB		/READ THE INTERRUPT BUFFER
1115	7640	SZA	CLA	
1116	4503	ERROR		/THE SAVE FIELDS ARE NON ZERO
1117	6004	GTF		/GET THE FLAGS

1123	7640	SZA	CLA	
1121	4503	ERROR		/THE SAVE FIELDS ARE NON ZERO
1122	4504	LOOP		/LOOP ON TEST IF SR = 1000

 /TEST 11 = USING THE USER INTERRUPT FLIP-FLOP AND INTERRUPT ENABLE
 /THE IF REGISTER CAN BE INDIRECTLY CHECKED TO SET BY CHECKING THE
 /SAVE FIELD REGISTER AFTER A INTERRUPT, THE I,F IS CHECKED NOT TO CHANGE
 /UNTIL A JMP OR JMS IS ISSUED, THE INT INHIBIT F/F IS CHECKED NOT
 /TO CLEAR BEFORE A JMP OR JMS IS ISSUED,

1123	4525	TEST11,	SCOPLP	/SETUP SCOPE AND TEST LOOPING ADDRESS
1124	6007	CAF		/CLEAR ALL FLAGS
1125	6001	ION		/TURN THE INTERRUPT ON
1126	6274	SUF		/SET USER BUFFER F/F
1127	5330	JMP	.+1	/ENTER USER MODE
1130	7402	HLT		/FAILED TO ENTER USER MODE
1131	5331	JMP	.	/HLT FAILED TO TRAP IN USER MODE
1132	6254	SINT		/SKIP ON USER INTERRUPT
1133	4503	ERROR		/USER INTERRUPT FLIP-FLOP NOT SET
1134	6004	GTF		/GET THE FLAGS
1135	1136	TAD	M1100	/CHECK FOR INTERRUPT REQUEST AND USER FLAG
1136	7640	SZA	CLA	
1137	4503	ERROR		/USER FLAG OR INT REQUEST NOT SET
1147	6234	RIB		/READ THE INTERRUPT BUFFER
1141	1133	TAD	M100	
1142	7640	SZA	CLA	
1143	4503	ERROR		/USER FLAG GOT CLEARED
1144	6202	TEST11A,	CIF	/CHANGE INSTRUCTION FIELD TO FIELD 0
1145	7300	CLA	CLL	/CLEAR THE LINK
1146	6001	ION		/TURN THE INTERRUPT ON
1147	6224	RIF		/READ THE INSTRUCTION FIELD
1150	7440	SZA		/IS IT ZERO
1151	7402	HLT		/THE IF IS NON ZERO OR INTERRUPTED
1152	5353	JMP	.+1	/CLEAR INTERRUPT INHIBIT
1153	4503	ERROR		/PROGRAM FAILED TO INTERRUPT
1154	6004	GTF		/GET THE FLAGS
1155	1360	TAD	.+3	/CHECK FOR USER INTERRUPT REQUEST
1156	7640	SZA	CLA	
1157	4503	ERROR		/INT REG NOT SET OR SAVE FIELD NON ZERO
1160	7000	NOP		
1161	6234	RIB		/READ THE INTERRUPT BUFFER
1162	7640	SZA	CLA	/IS THE SAVE FIELD 0?
1163	4503	ERROR		/NO, SAVE FIELD OR USER FIELD NON ZERO
1164	7240	TEST11B,	CLA	/SET A LOCATION TO ALL ONE'S TO CHECK THAT
1165	3374	OCA	CJMS21	/THE JMS TO FIELD 7 DIDN'T JMS TO FIELD 0
1166	6272	CIF	73	/CHANGE INSTRUCTION FIELD TO FIELD 7
1167	6001	ION		/SET INTERRUPT ENABLE
1170	6224	RIF		/READ THE INSTRUCTION FIELD
1171	7440	SZA		/IS IT STILL ZERO
1172	7402	HLT		/THE IF IS NON ZERO OR IT INTERRUPTED
1173	4374	JMS	.+1	/CLEAR INTERRUPT INHIBIT
1174	7402	TEST11C,	HLT	/THIS LOCATION PRESET TO 1'S SHOULDN'T CHANGE
1175	4503	ERROR		/PROGRAM FAILED TO INTERRUPT

1176	7360	CLA CLL CML CMA		/SET AC AND LINK TO ALL ONES
1177	5004	GTF		/GET THE FLAGS
1202	1374	TAD	M5000	/CHECK FOR LINK, USER INTERRUPT REQUEST,
1201	1131	TAD	M70	/AND SAVE FIELD REGISTER OF 70
1202	7640	SZA CLA		
1203	4503	ERROR		/GTF FAILED OR READ SOMETHING OTHER THAN ABOVE
1224	6234	RIB		/READ THE INTERRUPT BUFFER
1205	1131	TAD	M70	/IN THE SF SET TO I,S,F, 7 ONLY?
1206	7640	SZA CLA		
1207	4503	ERROR		/SAVE FIELD IS NOT EQUAL TO FIELD 7
1210	2777	ISZ	CJMS01	/CHECK THAT THE JMS DIDN'T GO TO FIELD 0
1211	4503	ERROR		/THE JMS TO FIELD 7 WENT TO FIELD 0
1212	7240	TST110, CLA CMA		/SET A LOCATION TO ALL ONE'S TO CHECK THAT A
1213	3224	DCA	CJMS02	/JMS TO FIELD 5 DIDN'T CHANGE FIELD 0
1214	6254	SINT		/SKIP ON USER INTERRUPT REQUEST
1215	4503	ERROR		/USER INTERRUPT F/F GOT CLEARED
1216	6252	CIF	50	/CHANGE TO INSTRUCTION FIELD 5
1217	6001	ION		/SET INTERRUPT ENABLE
1220	6224	RIF		/READ THE INSTRUCTION FIELD
1221	7440	SZA		/IS IT STILL ZERO
1222	7402	HLT		/THE IF IS NON ZERO OR IT INTERRUPTED
1223	4224	JMS	,+1	/CLEAR INTERRUPT INHIBIT AND INTERRUPT
1224	7402	CJMS02, HLT		/THIS LOCATION PRESET TO 1'S SHOULDN'T CHANGE
1225	4503	ERROR		/PROGRAM FAILED TO INTERRUPT
1226	7340	CLA CLL CMA		/SET THE AC TO ALL ONES
1227	6004	GTF		/GET THE FLAGS
1230	1373	TAD	N1000	/CHECK FOR USER INTERRUPT REQUEST AND SAVE
1231	1125	TAD	M50	/FIELD REGISTER OF 50
1232	7640	SZA CLA		
1233	4503	ERROR		/GTF FAILED OR READ SOMETHING OTHER THAN ABOVE
1234	6234	RIB		/READ THE INTERRUPT BUFFER
1235	1125	TAD	M50	/CHECK THE INTERRUPT BUFFER FOR ISF 50
1236	7640	SZA CLA		
1237	4503	ERROR		/SAVE FIELD IS NOT EQUAL TO I,F, 5
1240	2224	ISZ	CJMS02	/CHECK THAT JMS DIDN'T GO TO FIELD 0
1241	4503	ERROR		/THE JMS TO I,F,S, WENT TO FIELD 0
1242	7240	TST110, CLA CMA		/SET A LOCATION TO ALL ONE'S TO CHECK THAT A JMS
1243	3252	DCA	CJMS03	/TO FIELD 2 DIDN'T CHANGE FIELD 0
1244	6222	CIF	20	/CHANGE INSTRUCTION FIELD TO FIELD 2
1245	6001	ION		/SET INTERRUPT ENABLE
1246	6224	RIF		/READ THE INSTRUCTION FIELD
1247	7440	SZA		/IS IT STILL EQUAL TO ZERO
1250	7402	HLT		/THE IF IS NON ZERO OR IT INTERRUPTED
1251	4252	JMS	,+1	/CLEAR INTERRUPT INHIBIT AND INTERRUPT
1252	7402	CJMS03, HLT		/THIS LOCATION PRESET TO 1'S SHOULDN'T CHANGE
1253	4503	ERROR		/PROGRAM FAILED TO INTERRUPT
1254	7360	CLA CLL CML CMA		/SET THE AC AND LINK TO 1'S
1255	6004	GTF		/GET THE FLAGS
1256	1374	TAD	M5000	/CHECK FOR LINK AND USER INTERRUPT REQUEST
1257	1120	TAD	M20	/AND SAVE FIELD REGISTER OF 20
1260	7640	SZA CLA		
1261	4503	ERROR		/GTF FAILED OR READ SOMETHING OTHER THAN ABOVE
1262	6234	RIB		/READ THE INTERRUPT BUFFER
1263	1120	TAD	M20	
1264	7640	SZA CLA		/DOES THE INTERRUPT BUFFER CONTAIN 20

1265	4503	ERROR		/NO, ERROR SAVE FIELD IS NOT EQUAL TO 20
1266	2252	ISZ	CJMS03	/CHECK THAT JMS DIDN'T GO TO FIELD 0
1267	4503	ERROR		/THE JMS TO FIELD 2 WENT TO FIELD 0
1270	7240	TST11E, CLA CMA		/SET A LOCATION TO ALL ONE'S TO CHECK THAT THE
1271	3320	DCA	CJMS04	/JMS TO FIELD 4 DIDN'T JMS TO FIELD 0
1272	6212	CIF	10	/CHANGE INSTRUCTION FIELD TO FIELD 1,
1273	6001	ION		/TURN THE INTERRUPT ON
1274	6224	RIF		/READ THE INSTRUCTION FIELD
1275	7440	SZA		/IS IT STILL ZERO
1276	7402	HLT		/THE IF IS NON ZERO OR IT INTERRUPTED
1277	4300	JMS	,+1	/CLEAR INTERRUPT INHIBIT AND INTERRUPT
1307	7402	CJMS04, HLT		/THIS LOCATION PRESET TO ALL ONE'S SHOULDN'T CHANGE
1301	4503	ERROR		/PROGRAM FAILED TO INTERRUPT
1302	7340	CLA CLL CMA		/SET THE AC TO ALL ONE'S
1303	6004	GTF		/GET THE FLAGS
1304	1373	TAD	N1000	/CHECK FOR USER INTERRUPT REQUEST AND
1305	1116	TAD	M10	/SAVE FIELD OF 10
1306	7640	SZA CLA		
1307	4503	ERROR		/GTF FAILED OR READ SOMETHING OTHER THAN ABOVE
1310	6234	RIB		/READ THE INTERRUPT BUFFER
1311	1116	TAD	M10	
1312	7640	SZA CLA		
1313	4503	ERROR		/SAVE FIELD IS NOT EQUAL TO FIELD 10
1314	2300	ISZ	CJMS04	/CHECK THAT THE JMS DIDN'T GO TO FIELD 0
1315	4503	ERROR		/THE JMS TO FIELD 1 WENT TO FIELD 0
1316	7240	TST11F, CLA CMA		/SET A LOCATION TO ALL ONE'S TO CHECK THAT THE
1317	3326	DCA	CJMS05	/JMS TO FIELD 6 DIDN'T JMS TO FIELD 0
1320	6262	CIF	60	/CHANGE INSTRUCTION FIELD TO FIELD 6
1321	6001	ION		/TURN THE INTERRUPT ON
1322	6224	RIF		/READ THE INSTRUCTION FIELD
1323	7440	SZA		/IS IT STILL ZERO
1324	7402	HLT		/THE IF IS NON ZERO OR IT INTERRUPTED
1325	4326	JMS	,+1	/CLEAR INTERRUPT INHIBIT AND INTERRUPT
1326	7402	CJMS05, HLT		/THIS LOCATION SET TO ALL ONE'S, IT SHOULDN'T CHANGE
1327	4503	ERROR		/PROGRAM FAILED TO INTERRUPT
1330	7360	CLA CLL CML CMA		/SET THE AC AND LINK TO ALL ONE'S
1331	6004	GTF		/GET THE FLAG
1332	1374	TAD	M5000	/CHECK FOR LINK, USER INTERRUPT REQUEST
1333	1127	TAD	M60	/AND SAVE FIELD OF 60
1334	7640	SZA CLA		
1335	4503	ERROR		/GTF FAILED OR READ SOMETHING OTHER THAN ABOVE
1336	6234	RIB		/READ THE INTERRUPT BUFFER
1337	1127	TAD	M60	
1340	7640	SZA CLA		
1341	4503	ERROR		/SAVE FIELD IS NOT EQUAL TO FIELD 60
1342	2326	ISZ	CJMS05	/CHECK THAT THE JMS DIDN'T GO TO FIELD 0
1343	4503	ERROR		/THE JMS TO FIELD 6 WENT TO FIELD 0
1344	7240	TST11G, CLA CMA		/SET A LOCATION TO ALL 1'S TO CHECK THAT THE
1345	3354	DCA	CJMS06	/JMS TO FIELD 3 DIDN'T JMS TO FIELD 0
1346	6232	CIF	30	/CHANGE INSTRUCTION FIELD TO FIELD 3
1347	6001	ION		/TURN THE INTERRUPT ON
1350	6224	RIF		/READ THE INSTRUCTION FIELD
1351	7440	SZA		/IS THE IF STILL ZERO
1352	7402	HLT		/THE IF IS NON ZERO OR IT INTERRUPTED
1353	4354	JMS	,+1	/CLEAR INTERRUPT INHIBIT AND INTERRUPT

1354	7402	CJMS06,	HLT			
1355	4503		ERROR		/THIS LOCATION PRESET TO ALL ONES, IT SHOULDN'T CHANGE	
1356	7340		CLA CLL CMA		/PROGRAM FAILED TO INTERRUPT	
1357	6004		GTF		/SET THE AC TO ALL ONE'S	
1362	1373		TAD	M1000	/GET THE FLAGS	
1361	1375		TAD	M30	/CHECK FOR USER INTERRUPT REQUEST AND	
1362	7640		SZA CLA		/SAVE FIELD OF 3	
1363	4503		ERROR			
1364	6234		RIB		/GTF FAILED OR READ SOMETHING OTHER THAN ABOVE	
1365	1375		TAD	M30	/READ THE INTERRUPT BUFFER	
1366	7640		SZA CLA			
1367	4503		ERROR			
1372	2354		ISZ	CJMS06	/SAVE FIELD NOT EQUAL TO FIELD 3	
1371	4503		ERROR			
1372	5776		JMP	TST11H	/JMS TO FIELD 3 WENT TO FIELD 0	
					/GO TO NEXT SECTION	
1373	7000		M1000,	-1000		
1374	3000		M5000,	-5000		
1375	7750		M30,	-30		
1376	1400					
1377	1174					
	1400					
1403	7240	TST11H,	PAGE			
1401	3210		CLA CMA		/SET A LOCATION TO ALL ONES TO CHECK	
1402	6242		DCA	CJMS07	/THAT A JMS TO FIELD 4 DIDN'T JMS TO FIELD 0	
1403	6001		CIF	40	/CHANGE INSTRUCTION FIELD TO FIELD 4	
1404	6224		ION		/SET INTERRUPT ENABLE	
1405	7440		RIF		/READ THE INSTRUCTION FIELD	
1406	7402		SZA		/IS THE IF STILL ZERO	
1407	4210		HLT		/THE IF IS NON ZERO OR IT INTERRUPTED	
1412	7402	CJMS07,	JMS	+1		
1411	4503		HLT			
1412	7360		ERROR		/THIS LOCATION PRESET TO ALL ONE'S	
1413	6004		CLA CLL CML CMA		/PROGRAM FAILED TO INTERRUPT	
1414	1363		GTF		/SET THE AC AND LINK TO 1'S	
1415	1364		TAD	M5000	/GET THE FLAGS	
1416	7640		TAD	M40	/CHECK FOR USER INTERRUPT REQUEST AND LINK	
1417	4503		SZA CLA		/AND SAVE FIELD OF 4	
1422	6234		ERROR			
1421	1364		RIB		/GTF FAILED OR READ SOMETHING OTHER THAN ABOVE	
1422	7640		TAD	M40	/READ THE INTERRUPT BUFFER	
1423	4503		SZA CLA			
1424	2210		ERROR		/SAVE FIELD NOT EQUAL TO 40	
1425	4503		ISZ	CJMS07		
1426	7340	TST11I,	ERROR		/JMS TO FIELD 4 WENT TO FIELD 0	
1427	3236		CLA CLL CMA		/SETUP A LOCATION TO CHECK THAT A JMS TO	
1432	6202		DCA	CJMS10	/FIELD 0 GETS EXECUTED	
1431	6001		CIF	00	/CHANGE INSTRUCTION FIELD TO FIELD 00	
1432	6224		ION		/TURN THE INTERRUPT ON	
1433	7440		RIF		/READ THE INSTRUCTION FIELD	
1434	7402		SZA		/IS THE IF STILL ZERO	
1435	4236		HLT		/THE IF IS NON ZERO OR IT INTERRUPTED	
1436	7402	CJMS10,	JMS	+1	/CLEAR INTERRUPT ENABLE AND INTERRUPT	
1437	4503		HLT		/THIS LOCATION PREVIOUSLY SET TO 1'S	
			ERROR		/PROGRAM FAILED TO INTERRUPT	

1442	6004		GTF			
1441	1242		TAD	+1	/GET THE FLAGS	
1442	7000		NOP		/CHECK FOR INTERRUPT REQUEST AND	
1443	7640		SZA CLA			
1444	4503		ERROR		/SAVE FIELD OF 0	
1445	6234		RIB		/GTF FAILED OR READ SOMETHING OTHER THAN ABOVE	
1446	7640		SZA CLA		/READ THE INTERRUPT BUFFER	
1447	4503		ERROR			
1450	2236		ISZ	CJMS10	/SAVE FIELD NON ZERO OR RIB FAILED	
1451	7610		SKP	CLA	/CHECK THAT THE JMS DID CHANGE LOCATION CJMS10	
1452	4503		ERROR			
1453	6007		CAF		/JMS TO FIELD 0 FAILED TO STORE ITS PC IN CJMS10	
1454	6004		GTF		/CLEAR ALL FLAGS INCLUDING USER INTERRUPT	
1455	7640		SZA CLA		/GET THE FLAGS	
1456	4503		ERROR			
1457	4504		LOOP		/INIT FAILED TO CLEAR USER INTERRUPT F/F	
1462	5777		JMP	TEST12	/LOOP ON TEST IF SR = 1000	
1461	0000	XORCHK,	Z			
1462	7710		SPA	CLA		
1463	7402		HLT			
1464	1021		TAD	OP1SEL	/END OF A COMPLETE PROGRAM PASS	
1465	2376		AND	(100	/GET THE HARDWARE CONFIGURATION	
1466	7650		SNA	CLA	/MASK OUT THE XOR BIT	
1467	5661		JMP	I XORCHK	/IS IT SET	
1472	6007		CAF		/NO, RETURN TO THE PROGRAM	
1471	6173		STIF		/CLEAR ALL FLAGS	
1472	7610		SKP	CLA	/SKIP IF MUT POWER ON AND 1ST XRON	
1473	5277		JMP	+4		
1474	5160		CLRMOD		/MUT POWER ON GO ISSUE SECOND XRON	
1475	5170		XRON		/CLEAR THE SIMULATOR	
1476	5661		JMP	I XORCHK	/START INITIALIZATION OF MUT	
1477	6007		CAF		/RETURN TO THE PROGRAM	
1500	6171		SKXR		/CLEAR ALL FLAGS	
1501	6170		XRON		/SKIP IF ERROR 1 FLOP SET	
1502	6007		CAF		/START ACTUAL XOR TESTING	
1503	5661		JMP	I XORCHK	/CLEAR ALL FLAGS AGAIN	
					/RETURN TO THE PROGRAM	
1504	0000	XORLOP,	Z			
1505	3321		DCA	SAVSWH	/SAVE THE SWITCH SETTINGS	
1506	1021		TAD	OP1SEL	/GET THE HARDWARE CONFIGURATION	
1507	376		AND	(100	/MASK OUT THE XOR BIT	
1510	7640		SZA	CLA	/IS IT SET	
1511	5316		JMP	+5		
1512	1321		TAD	SAVSWH	/YES, GO CHECK FOR XOR ERROR	
1513	7700		SMA	CLA	/NO, GET THE SWITCH SETTINGS	
1514	5704		JMP	I XORLOP	/LOOP ON TEST 1	
1515	5502		JMP	I TEST	/NO, RETURN FOR NEXT TEST	
1516	6171		SKXR		/YES, LOOP ON THE TEST	
1517	5312		JMP	+5	/SKIP ON XOR ERROR 1	
1520	5502		JMP	I TEST	/XOR ERROR NOT SET CHECK S,R, 2	
					/LOOP ON THE TEST A XOR ERROR	
1521	0000	SAVSWH,	Z			

/RX8 FLOPPY BOOT STRAP

1522	0024	RX8ADD,	0024
1523	7742		RX8CMP=RX8END=1
1524	7126	RX8CMP,	7126
1525	1060		1060
1526	6751		6751
1527	7201		7201
1530	4053		4053
1531	4053		4053
1532	7104		7104
1533	6755		6755
1534	5054		5054
1535	6754		6754
1536	7450		7450
1537	7610		7610
1540	5046		5046
1541	1060		1060
1542	7041		7041
1543	1061		1061
1544	3060		3060
1545	5024		5024
1546	6751		6751
1547	4053		4053
1550	3002		3002
1551	2050		2050
1552	5047		5047
1553	0000		0000
1554	6753		6753
1555	5033		5033
1556	6752		6752
1557	5453		5453
1560	7024		7024
1561	6030	RX8END,	6030
1562	0000		0000
1563	3000	MS000,	=5000
1564	7740	440,	=40
1576	0100		
1577	1600		
	1600		PAGE

 /TEST 12 = CHECKS THAT A CIF AND CDF WILL LOAD THE APPROPRIATE
 /SAVE FIELD REGISTERS, A DCA INDIRECT IS CHECKED NOT TO CHANGE
 /A LOCATION IN FIELD 0 WHEN THE DATA FIELD IS NON ZERO, A
 /JMS I IS CHECKED NOT TO CHANGE A LOCATION IN FIELD ZERO WHEN
 /THE INSTRUCTION FIELD IS NON ZERO.

1600 4505 TEST12, SCOPLP /SETUP TEST AND SCOPE LOOPING ADDRESS

1601	6007	CAF		/CLEAR ALL FLAGS
1602	6001	ION		/TURN THE INTERRUPT ON
1603	6274	SUF		/SET USER BUFFER FLIP=FL0P
1604	5205	JMP	,+1	/ENTER TIME SHARE MODE
1605	7402	HLT		/PROGRAM FAILED TO ENTER USER MODE
1606	5206	JMP		/HLT FAILED TO TRAP
1607	6254	SINT		/SKIP ON USER INTERRUPT
1610	4503	ERROR		/SINT FAILED OR USER INTERRUPT NOT SET
1611	6004	GTF		/GET THE FLAGS
1612	1136	TAD	M1130	/CHECK FOR USER INTERRUPT AND USER FLAG
1613	7640	SZA CLA		
1614	4503	ERROR		/GTF READ SOMETHING DIFFERENT THAN ABOVE
1615	7340	TST12A, CLA CLL	CMA	/SET THE AC TO ALL ONES
1616	3062	DCA	CDPCHK	/STORE IT TO CHECK THAT THE DATA FIELD CHANGED
1617	7340	CLA CLL	CMA	/SET THE AC TO ALL ONES
1620	3227	DCA	CKJMS1	/SAVE IT TO CHECK THE JMS TO ANOTHER FIELD
1621	6261	CDP	60	/CHANGE DATA FIELD TO FIELD 6
1622	6212	CIF	10	/CHANGE INSTRUCTION FIELD TO FIELD 1
1623	3463	DCA I	CHKCDF	/CHANGE EMA LINES TO CHECK THAT THE /DCA WENT TO ANOTHER FIELD THAN FIELD 0
1624	6001	ION		/TURN THE INTERRUPT ON
1625	4626	JMS I	,+1	/CLEAR INTERRUPT INHIBIT AND INTERRUPT
1626	1627	CKJMS1,		
1627	7402	HLT		/THIS LOCATION PRESET TO ONE'S TO CHECK JMS TO ANOTHER FIELD
1630	4503	ERROR		/PROGRAM FAILED TO INTERRUPT
1631	6004	GTF		/GET THE FLAGS
1632	1361	TAD	M1016	/CHECK FOR INT REQ, ISF OF 10 AND DSF OF 6
1633	7640	SZA CLA		/IN SAVE FIELD REGISTER
1634	4503	ERROR		/SAVE FIELD NOT EQUAL TO ABOVE
1635	6234	RIB		/READ THE INTERRUPT BUFFER
1636	1370	TAD	M16	/CHECK FOR ISF OF 10 AND DSF OF 6
1637	7640	SZA CLA		
1642	4503	ERROR		/RIB FAILED OR SAVE FIELD NOT EQUAL TO 16
1641	2062	ISZ	CDPCHK	/CHECK THAT THE DCA I WENT TO ANOTHER FIELD
1642	4503	ERROR		/DCA I WENT TO FIELD 0 INSTEAD OF FIELD 6
1643	2227	ISZ	CKJMS1	/CHECK THAT JMS I WENT TO ANOTHER FIELD
1644	4503	ERROR		/JMS I WENT TO FIELD 0 INSTEAD OF FIELD 1
1645	7340	TST12B, CLA CLL	CMA	/SET LOCATION CDPCHK AND CKJMS2 TO ONES
1646	3062	DCA	CDPCHK	/TO CHECK DCA I AND JMS I WENT TO
1647	7340	CLA CLL	CMA	/ANOTHER FIELD THAN FIELD 0
1650	3257	DCA	CKJMS2	
1651	6211	CDP	10	/CHANGE DATA FIELD TO FIELD 1
1652	6262	CIF	60	/CHANGE INSTRUCTION FIELD TO FIELD 6
1653	3463	DCA I	CHKCDF	/CHANGE EMA LINES TO FIELD 1 /CDPCHK SHOULD NOT CHANGE IN FIELD 0
1654	6001	ION		/TURN THE INTERRUPT ON
1655	4656	JMS I	,+1	/CLEAR INTERRUPT INHIBIT
1656	1657	CKJMS2,		/INDIRECT ADDRESS
1657	7402	HLT		/THIS LOCATION PRESET TO ONE'S TO CHECK JMS TO FIELD 6
1660	4503	ERROR		/PROGRAM FAILED TO INTERRUPT
1661	7340	CLA CLL	CMA	/SET THE AC TO ALL ONES
1662	6004	GTF		/GET THE FLAGS
1663	1362	TAD	M1061	/CHECK FOR INT REQ, ISF OF 60 AND DSF OF 1
1664	7640	SZA CLA		
1665	4503	ERROR		/THE SAVE FIELD NOT EQUAL TO ABOVE

1666	6234	RIB		/READ THE INTERRUPT BUFFER
1667	1367	TAD	M61	/CHECK FOR I,S,F, OF 6 AND I,D,F, OF 1
1670	7640	SZA CLA		
1671	4503	ERROR		/THE SAVE FIELD NOT EQUAL TO ABOVE
1672	2062	ISZ	CDPCHK	/CHECK THAT DCA I WENT TO ANOTHER FIELD
1673	4503	ERROR		/DCA I WENT TO FIELD 0 INSTEAD OF FIELD 1
1674	2257	ISZ	CKJMS2	/CHECK THAT JMS I WENT TO ANOTHER FIELD
1675	4503	ERROR		/JMS I WENT TO FIELD 0 INSTEAD OF FIELD 16,
1676	7340	TST12C, CLA CLL	CMA	/SET LOCATIONS CDPCHK AND CKJMS3 TO ONE'S
1677	3062	DCA	CDPCHK	/TO CHECK THAT DCA I AND JMS I WENT
1700	7340	CLA CLL	CMA	/TO ANOTHER FIELD THAN FIELD 0
1701	3310	DCA	CKJMS3	
1702	6232	CIF	30	/CHANGE INSTRUCTION FIELD TO FIELD 3
1703	6241	CDF	40	/CHANGE DATA FIELD TO FIELD 4
1704	3463	DCA I	CHKCDF	/CHANGE EMA LINES TO FIELD 4
1705	6001	ION		/TURN THE INTERRUPT ON
1706	4707	JMS I	,+1	/CLEAR INTERRUPT INHIBIT
1707	1710	CKJMS3		/INDIRECT ADDRESS
1710	7402	CKJMS3, HLT		/THIS LOCATION PRESET TO ONES TO CHECK JMS TO FIELD 3
1711	4503	ERROR		/PROGRAM FAILED TO INTERRUPT
1712	7340	CLA CLL	CMA	/SET THE AC TO ALL ONES
1713	6004	GTF		/GET THE FLAGS
1714	1363	TAD	M1034	/CHECK FOR INT REG, ISF OF 3 AND DSF OF 4
1715	7640	SZA CLA		
1716	4503	ERROR		/THE SAVE FIELD REGISTER NOT EQUAL TO ABOVE
1717	6234	RIB		/READ THE INTERRUPT BUFFER
1720	1365	TAD	M34	/CHECK FOR ISF OF 3 AND DSF OF 4
1721	7640	SZA CLA		
1722	4503	ERROR		/THE SAVE FIELD REGISTER NOT EQUAL TO ABOVE
1723	2062	ISZ	CDPCHK	
1724	4503	ERROR		/DCA I WENT TO FIELD 0 INSTEAD OF FIELD 4
1725	2310	ISZ	CKJMS3	
1726	4503	ERROR		
1727	7340	TST12D, CLA CLL	CMA	/JMS I WENT TO FIELD 0 INSTEAD OF FIELD 3
1730	3062	DCA	CDPCHK	/SET LOCATIONS CDPCHK AND CKJMS4 TO ONES,
1731	7340	CLA CLL	CMA	/TO CHECK THAT DCA I OR JMS I TO ANOTHER
1732	3341	DCA	CKJMS4	/FIELD DOESN'T GO TO FIELD 0
1733	6252	CIF	50	/CHANGE INSTRUCTION FIELD TO FIELD 5
1734	6221	CDF	20	/CHANGE DATA FIELD TO FIELD 2
1735	3463	DCA I	CHKCDF	/CHANGE EMA LINES TO FIELD 2
1736	6001	ION		/TURN THE INTERRUPT ON
1737	4740	JMS I	,+1	/CLEAR INTERRUPT INHIBIT
1740	1741	CKJMS4		/INDIRECT ADDRESS
1741	7402	CKJMS4, HLT		/THIS LOCATION PRESET TO ONES TO CHECK JMS TO FIELD 5
1742	4503	ERROR		/PROGRAM FAILED TO INTERRUPT
1743	7340	CLA CLL	CMA	/SET THE AC TO ALL ONES
1744	6004	GTF		/GET THE FLAGS
1745	1364	TAD	M1052	/CHECK FOR INT, REG,, ISF OF 5, AND DSF OF 2
1746	7640	SZA CLA		
1747	4503	ERROR		/THE SAVE FIELD REGISTER NOT EQUAL TO ABOVE
1750	6234	RIB		/READ THE INTERRUPT BUFFER
1751	1366	TAD	M52	/CHECK FOR ISF OF 5 AND DSF OF 2
1752	7640	SZA CLA		
1753	4503	ERROR		/SAVE FIELD NOT EQUAL TO ABOVE
1754	2062	ISZ	CDPCHK	

1755	4503	ERROR		/DCA I TO FIELD 2 WENT TO FIELD 0
1756	2341	ISZ	CKJMS4	
1757	4503	ERROR		/JMS I TO FIELD 5 WENT TO FIELD 0
1760	5777	JMP	TST12E	
1761	6762	M1016,	-1016	
1762	6717	M1061,	-1061	
1763	6744	M1034,	-1034	
1764	6726	M1052,	-1052	
1765	7744	M34,	-34	
1766	7726	M52,	-52	
1767	7717	M61,	-61	
1770	7762	M16,	-16	
1777	2005			
2000	2000	PAGE		
2000	4501	JMS I	AUTRST	//AUTO RESTART HANDLER
2001	6753	M1025,	-1025	
2002	6735	M1043,	-1043	
2003	6710	M1070,	-1070	
2004	6771	M1007,	-1007	
2005	7340	TST12E, CLA CLL	CMA	/SETUP LOCATIONS CDPCHK AND CKJMS5 TO ONES
2006	3062	DCA	CDPCHK	/TO CHECK THAT DCA I OR JMP I TO ANOTHER
2007	7240	CLA CMA		/FIELD DOESN'T GO TO FIELD 0
2010	3217	DCA	CKJMS5	
2011	6251	CDF	50	/CHANGE DATA FIELD TO FIELD 5
2012	6222	CIF	20	/CHANGE INSTRUCTION FIELD TO 2
2013	3463	DCA I	CHKCDF	/CHANGE EMA LINES TO 5 (DF 0V)
2014	6001	ION		/TURN INTERRUPT ENABLE ON
2015	4616	JMS I	,+1	/CLEAR INTERRUPT INHIBIT
2016	2017	CKJMS5		/INDIRECT ADDRESS
2017	7402	CKJMS5, HLT		/THIS LOCATION PRESET TO ONES TO CHECK JMS TO FIELD 2
2020	4503	ERROR		/PROGRAM FAILED TO INTERRUPT
2021	7340	CLA CLL	CMA	/SET THE AC TO ALL ONES
2022	6004	GTF		/GET THE FLAGS
2023	1201	TAD	M1025	/CHECK FOR INT, REG,, ISF=2 AND DSF=5
2024	7640	SZA CLA		
2025	4503	ERROR		/THE SAVE FIELD REGISTER NOT EQUAL TO ABOVE
2026	6234	RIB		/READ THE INTERRUPT BUFFER
2027	1121	TAD	M25	/CHECK FOR ISF OF 2 AND DSF=5
2032	7640	SZA CLA		
2031	4503	ERROR		/SAVE FIELD REGISTER NOT EQUAL TO ABOVE
2032	2062	ISZ	CDPCHK	
2033	4503	ERROR		/DCA I TO FIELD 5 WENT TO FIELD 2
2034	2217	ISZ	CKJMS5	
2035	4503	ERROR		
2036	7340	TST12F, CLA CLL	CMA	/JMS I TO FIELD 2 WENT TO FIELD 0
2037	3062	DCA	CDPCHK	/SET LOCATIONS CDPCHK AND CKJMS6 TO
2040	7240	CLA CMA		/ONES TO CHECK THAT DCA I AND JMS I
2041	3250	DCA	CKJMS6	/TO ANOTHER FIELD DOESN'T GO TO FIELD 0
2042	6231	CDF	30	/CHANGE DATA FIELD TO FIELD 3
2043	6242	CIF	40	/CHANGE INSTRUCTION FIELD TO FIELD 4
2044	3463	DCA I	CHKCDF	/CHANGE EMA LINES TO 3
2045	6001	ION		/TURN THE INTERRUPT ON

2046	4647	JMS I	,+1	/CLEAR INTERRUPT INHIBIT
2047	2050	CKJMS6		/INDIRECT ADDRESS
2050	7402	HLT		/THIS LOCATION PRESET TO ONES TO CHECK JMS TO FIELD 4
2051	4503	ERROR		/PROGRAM FAILED TO INTERRUPT
2052	7340	CLA CLL	CMA	/SET THE AC TO ALL ONE'S
2053	6004	GTF		/GET THE FLAGS
2054	1202	TAD	M1043	/CHECK FOR INT, REQ,, ISF OF 4 AND DSF OF 3,
2055	7640	SZA CLA		
2056	4503	ERROR		/SAVE FIELD NOT EQUAL TO ABOVE
2057	6234	RIB		/READ THE INTERRUPT BUFFER
2060	1123	TAD	M43	/CHECK FOR ISF OF 4 AND DSF OF 3
2061	7640	SZA CLA		
2062	4503	ERROR		/SAVE FIELD NOT EQUAL TO ABOVE
2063	2062	ISE	CDPCHK	
2064	4503	ERROR		/DCA I WENT TO FIELD 0 INSTEAD OF FIELD 3
2065	2250	ISE	CKJMS6	
2066	4503	ERROR		/JMS I WENT TO FIELD 0 INSTEAD OF FIELD 4
2067	7340	CLA CLL	CMA	/SET CDPCHK AND CKJMS7 TO ONES TO
2070	3062	DCA	CDPCHK	/CHECK FOR DCA I TO ANOTHER FIELD AND A
2071	7240	CLA CMA		/JMS I TO ANOTHER FIELD
2072	3301	DCA	CKJMS7	
2073	6271	CPF	70	/CHANGE DATA FIELD TO FIELD 7
2074	6202	CIF	00	/CHANGE INSTRUCTION FIELD TO FIELD 0
2075	3463	DCA I	CHKCDF	/CHANGE EMA LINES TO 7
2076	6001	ION		/TURN INTERRUPT ON
2077	4700	JMS I	,+1	/CLEAR INTERRUPT INHIBIT
2100	2101	CKJMS7		/INDIRECT ADDRESS
2101	7402	HLT		/THIS LOCATION WAS SET TO ONE'S BUT SHOULD CHANGE
2102	4503	ERROR		/PROGRAM FAILED TO INTERRUPT
2103	7340	CLA CLL	CMA	
2104	6004	GTF		/GET THE FLAGS
2105	1204	TAD	M1007	/CHECK FOR INT, REQ,, ISF=0, DSF=7
2106	7640	SZA CLA		
2107	4503	ERROR		/SAVE FIELD NOT EQUAL TO ABOVE
2110	6234	RIB		/READ THE INTERRUPT BUFFER
2111	1115	TAD	M7	/CHECK FOR DSF OF 7
2112	7640	SZA CLA		
2113	4503	ERROR		/SAVE FIELD NOT EQUAL TO DSF OF 7
2114	2062	ISE	CDPCHK	
2115	4503	ERROR		/DCA I WENT TO FIELD 0 INSTEAD OF FIELD 7
2116	2301	ISE	CKJMS7	
2117	7410	SKP		
2120	4503	ERROR		/JMS I TO FIELD 0 WENT TO ANOTHER FIELD
2121	7340	CLA CLL	CMA	/SET UP CDPCHK TO ONES TO CHECK THAT
2122	3062	DCA	CDPCHK	/DCA I TO FIELD 0 WILL CLEAR IT AND SET
2123	7340	CLA CLL	CMA	/LOCATION CKJMS8 TO 1'S TO CHECK THAT
2124	3333	DCA	CKJMS8	/JMS I TO FIELD 7 WON'T CLEAR IT
2125	6201	CPF	00	/CHANGE DATA FIELD TO FIELD 0
2126	6272	CIF	70	/CHANGE INSTRUCTION FIELD TO FIELD 7
2127	3463	DCA I	CHKCDF	/CLEAR LOCATION CDPCHK IF EMA LINES WENT TO ZERO
2130	6001	ION		/TURN THE INTERRUPT ON
2131	4732	JMS I	,+1	/CLEAR INTERRUPT INHIBIT
2132	2133	CKJMS8		/INDIRECT ADDRESS
2133	7402	HLT		/THIS LOCATION PRESET TO 1'S, IT SHOULD NOT CHANGE
2134	4503	ERROR		/PROGRAM FAILED TO INTERRUPT

2135	7340	CLA CLL	CMA	/SET THE AC TO ALL ONES
2136	6004	GTF		/GET THE FLAGS
2137	1203	TAD	M1070	/CHECK FOR INT, REQ,, ISF=7 AND DSF=0
2140	7640	SZA CLA		
2141	4503	ERROR		/SAVE FIELD REGISTER NOT EQUAL TO ABOVE
2142	6234	RIB		/READ THE INTERRUPT BUFFER
2143	1131	TAD	M70	/CHECK SAVE FIELDS FOR ISF OF 7 AND DSF OF 0
2144	7640	SZA CLA		
2145	4503	ERROR		/SAVE FIELD NOT EQUAL TO ABOVE
2146	2062	ISE	CDPCHK	
2147	7410	SKP		
2150	4503	ERROR		/DCA I TO FIELD 0 WENT TO ANOTHER FIELD
2151	2333	ISE	CKJMS8	
2152	4503	ERROR		/JMS I TO FIELD 7 WENT TO FIELD 0
2153	7240	CLA CMA		/SETUP CDPCHK AND CKJMS9 TO ONES TO
2154	3062	DCA	CDPCHK	/CHECK THAT DCA I AND JMS I TO FIELD 0
2155	7340	CLA CLL	CMA	/WILL CHANGE THESE LOCATIONS
2156	3365	DCA	CKJMS9	
2157	6201	CPF	00	/CHANGE DATA FIELD TO FIELD 0
2160	6202	CIF	00	/CHANGE INSTRUCTION FIELD TO FIELD 0
2161	3463	DCA I	CHKCDF	/CLEAR LOCATION CDPCHK
2162	6001	ION		/SET INTERRUPT ENABLE
2163	4764	JMS I	,+1	/CLEAR INTERRUPT INHIBIT
2164	2165	CKJMS9		/INDIRECT ADDRESS
2165	7402	HLT		/THIS LOCATION PRESET TO ONES, SHOULD CHANGE
2166	4503	ERROR		/PROGRAM FAILED TO INTERRUPT
2167	7340	CLA CLL	CMA	/SET THE AC TO ALL ONE'S
2172	6004	GTF		/GET THE FLAGS
2171	1372	TAD	,+1	/CHECK FOR INTERRUPT REQUEST
2172	7000	NOP		
2173	7640	SZA CLA		
2174	4503	ERROR		/SAVE FIELD NOT EQUAL TO ABOVE
2175	6234	RIB		/READ THE INTERRUPT BUFFER
2176	7640	SZA CLA		/IS THE SAVE FIELD EQUAL TO 0
2177	4503	ERROR		/SAVE FIELD NOT EQUAL TO ZERO
2200	2062	ISE	CDPCHK	
2201	7410	SKP		
2202	4503	ERROR		/DCA I TO FIELD 0 DID NOT GO TO FIELD 0
2203	2777	ISE	CKJMS9	
2204	7410	SKP		
2205	4503	ERROR		/JMS I TO FIELD 0 DID NOT GO TO FIELD 0
2206	1371	TAD	K7707	/CHECK THE INCLUSIVE OR OF RIF WITH AC
2207	6224	RIF		
2210	1142	TAD	K70	
2211	7040	CMA		
2212	7640	SZA CLA		
2213	4503	ERROR		/THE INCLUSIVE OR OF IF WITH AC FAILED
2214	6254	SINT		/SKIP ON USER INTERRUPT
2215	4503	ERROR		/USER INTERRUPT FLIP-FLOP GOT CLEARED
2216	6007	CAF		/CLEAR ALL FLAGS
2217	6254	SINT		/SKIP ON USER INTERRUPT
2220	7410	SKP		
2221	4503	ERROR		/INIT FAILED TO CLEAR USER INTERRUPT F/F
2222	4504	LOOP		/LOOP ON TEST IF SR = 1000

 /TEST 13 - CHECKS THE MICRO PROGRAM INSTRUCTIONS CDF CIF (62X3), A DCA I
 /AND JMS ARE ALSO ISSUED TO CHECK THAT THESE INSTRUCTIONS DO NOT DESTROY
 /LOCATIONS IN FIELD 0, THE USER INTERRUPT F/F IS USED TO CAUSE INTERRUPTS,

2223	4505	TEST13, SCOPLP		/SETUP TEST AND SCOPLE LOOPING ADDRESS
2224	6007	CAF		/CLEAR ALL FLAGS
2225	6202	CIF	00	/INITIALIZE THE IF AND DF TO FIELD 0
2226	6201	CDF	00	/
2227	5230	JMP	,+1	/LOAD THE IF BY A JMP
2233	6001	ION		/TURN THE INTERRUPT ON
2231	6274	SUF		/SET THE USER BUFFER F/F
2232	5233	JMP	,+1	/ENTER USER MODE
2233	7402	HLT		/PROGRAM FAILED TO TRAP
2234	5234	JMP	.	/HALT FAILED TO TRAP
2235	6254	SINT		/SKIP ON USER INTERRUPT FLIP=FLOP
2236	4503	ERROR		/USER INTERRUPT FLIP=FLOP NOT SET
2237	6234	RIB		/READ THE INTERRUPT BUFFER
2240	1133	TAD	M100	
2241	7640	SZA CLA		
2242	4503	ERROR		/USER FLAG NOT SET OR SAVE FIELD NON ZERO
2243	7240	TST13A, CLA CMA		/SETUP TWO LOCATIONS TO CHECK THAT A CIF,CDF
2244	3062	DCA	CDFCHK	/WENT TO ANOTHER FIELD BY DOING A DCA I AND JMS
2245	7240	CLA CMA		
2246	3253	DCA	JMSCK1	
2247	6273	CIFCDF	70	/CHANGE IF AND DF TO FIELD 7
2250	3463	DCA I	CHKCDF	/TRY TO CLEAR CDFCHK IN FIELD 7
2251	6001	ION		/SET INTERRUPT ENABLE
2252	4253	JMS	JMSCK1	/CLEAR INTERRUPT INHIBIT AND INTERRUPT
2253	7402	HLT		/THIS LOCATION PRESET TO 7777
2254	4503	ERROR		/PROGRAM FAILED TO INTERRUPT
2255	6234	RIB		/READ THE INTERRUPT BUFFER
2256	1132	TAD	M77	/CHECK SAVE FIELD FOR ISF OF 7 AND DSF OF 7
2257	7640	SZA CLA		
2260	4503	ERROR		/CIFCDF TO FIELD 7 FAILED OR SAVE FIELD NOT=TO 77
2261	2062	ISZ	CDFCHK	
2262	4503	ERROR		/DCA I TO FIELD 7 WENT TO FIELD 0
2263	2253	ISZ	JMSCK1	
2264	4503	ERROR		/JMS TO FIELD 7 WENT TO FIELD 0
2265	6254	SINT		/SKIP ON USER INTERRUPT F/F
2266	4503	ERROR		/USER INTERRUPT F/F GOT CLEARED
2267	7240	TST13B, CLA CMA		/SETUP TWO LOCATIONS TO CHECK THAT CIFCDF 20
2273	3062	DCA	CDFCHK	/WENT TO ANOTHER FIELD THAN FIELD 0
2271	7240	CLA CMA		
2272	3277	DCA	JMSCK2	
2273	6223	CIFCDF	20	/CHANGE INSTRUCTION FIELD AND DATA FIELD TO 2
2274	3463	DCA I	CHKCDF	/TRY TO CLEAR CDFCHK IN FIELD 2
2275	6001	ION		/SET INTERRUPT ENABLE
2276	4277	JMS	JMSCK2	/CLEAR INTERRUPT INHIBIT AND INTERRUPT
2277	7402	HLT		/THIS LOCATIONS PRESET TO 7777
2300	4503	ERROR		/PROGRAM FAILED TO INTERRUPT
2301	6234	RIB		/READ THE INTERRUPT BUFFER
2302	1372	TAD	M22	/CHECK SAVE FIELD FOR ISF=2 * DSF=2
2303	7640	SZA CLA		

2304	4503	ERROR		/SAVE FIELD INTO EQUAL OT CIFCDF 20 FAILED
2305	2062	ISZ	CDFCHK	
2306	4503	ERROR		/DCA I TO FIELD 2 WENT TO FIELD 0
2307	2277	ISZ	JMSCK2	
2310	4503	ERROR		/JMS TO FIELD 2 WENT TO FIELD 0
2311	7240	TST13C, CLA CMA		/SETUP TWO LOCATIONS TO CHECK THAT CIFCDF 50
2312	3062	DCA	CDFCHK	/WENT TO ANOTHER FIELD THAN FIELD 0
2313	7240	CLA CMA		
2314	3321	DCA	JMSCK3	
2315	6253	CIFCDF	50	/CHANGE INSTRUCTION FIELD AND DATA FIELD TO FIELD 5
2316	3463	DCA I	CHKCDF	/TRY TO CLEAR CDFCHK IN FIELD 5
2317	6001	ION		/SET INTERRUPT ENABLE
2320	4321	JMS	JMSCK3	/CLEAR INTERRUPT INHIBIT AND INTERRUPT
2321	7402	HLT		/THIS LOCATIONS PRESET TO 7777
2322	4503	ERROR		/PROGRAM FAILED TO INTERRUPT
2323	6234	RIB		/READ THE INTERRUPT BUFFER
2324	1126	TAD	M55	/CHECK FOR ISF OF 5 AND DSF OF 5
2325	7640	SZA CLA		
2326	4503	ERROR		/SAVE FIELD NOT EQUAL TO ISF,DSF OF 5
2327	2062	ISZ	CDFCHK	
2330	4503	ERROR		/DCA I TO FIELD 5 WENT TO FIELD 0
2331	2321	ISZ	JMSCK3	
2332	4503	ERROR		/JMS TO FIELD 5 WENT TO FIELD 0
2333	6254	SINT		/SKIP ON USER INTERRUPT F/F
2334	4503	ERROR		/USER INTERRUPT F/F GOT CLEARED
2335	7240	TST13D, CLA CMA		/SETUP TWO LOCATIONS TO ONE'S TO CHECK
2336	3062	DCA	CDFCHK	/THAT CIFCDF TO FIELD 4 WENT TO ANOTHER
2337	7240	CLA CMA		/FIELD THAN FIELD 0
2340	3345	DCA	JMSCK4	
2341	6243	CIFCDF	40	/CHANGE INSTRUCTION FIELD AND DATA FIELD TO FIELD 4
2342	3463	DCA I	CHKCDF	/TRY TO CLEAR CDFCHK IN FIELD 4
2343	6001	ION		/SET INTERRUPT ENABLE
2344	4345	JMS	JMSCK4	/CLEAR INTERRUPT INHIBIT AND INTERRUPT
2345	7402	HLT		/THIS LOCATION PRESET TO ONE'S
2346	4503	ERROR		/PROGRAM FAILED TO INTERRUPT
2347	6234	RIB		/READ THE INTERRUPT BUFFER
2350	1124	TAD	M44	/CHECK ISF FOR 4 AND DSF FOR 4
2351	7640	SZA CLA		
2352	4503	ERROR		/SAVE FIELD NOT EQUAL TO 44
2353	2062	ISZ	CDFCHK	
2354	4503	ERROR		/DCA I TO FIELD 4 WENT TO FIELD 0
2355	2345	ISZ	JMSCK4	
2356	4503	ERROR		/JMS TO FIELD 4 WENT TO FIELD 0
2357	6254	SINT		/SKIP ON USER INTERRUPT F/F
2360	4503	ERROR		/USER INTERRUPT F/F GOT CLEARED
2361	7340	TST13E, CLA CLL CMA		/SETUP TWO LOCATIONS TO CHECK THAT CIFCDF 30
2362	3062	DCA	CDFCHK	/WENT TO ANOTHER FIELD THAN FIELD 0
2363	7240	CLA CMA		
2364	3776	DCA	JMSCK5	
2365	6233	CIFCDF	30	/CHANGE INSTRUCTION AND DATA FIELD TO FIELD 3
2366	3463	DCA I	CHKCDF	/TRY TO CLEAR CDFCHK IN FIELD 3
2367	6001	ION		/SET INTERRUPT ENABLE
2370	4776	JMS	JMSCK5	/CLEAR INTERRUPT INHIBIT AND INTERRUPT

2371 7707 K7707, 7727


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2372 7756 422, -22

2376 2400
2377 2165
2400 2400 PAGE
2400 7402 JMSCK5, HLT /THIS LOCATION PRESET TO ONES
2401 4503 ERROR /PROGRAM FAILED TO INTERRUPT
2402 6234 RIB /READ THE INTERRUPT BUFFER
2403 1122 TAD M33 /CHECK FOR ISF OF 3 AND DSF OF 3
2404 7640 SZA CLA
2405 4503 ERROR
2406 2062 ISZ CDFCHK /SAVE FIELD NOT EQUAL TO ABOVE OR CIFCDF 30 FAILED
2407 4503 ERROR
2410 2200 ISZ JMSCK5 /DCA I TO FIELD 3 WENT TO FIELD 0
2411 4503 ERROR
2412 6254 SINT /JMS TO FIELD 3 WENT TO FIELD 0
2413 4503 ERROR /SKIP ON USER INTERRUPT F/F
2414 7240 TST13F, CLA CMA /USER INTERRUPT F/F GOT CLEARED
2415 3062 DCA CDFCHK /SETUP TWO LOCATIONS TO CHECK THAT
2416 7240 CLA CMA /CIFCDF 60 WENT TO ANOTHER FIELD
2417 3224 DCA JMSCK6 /THEN FIELD ZERO
2420 6263 CIFCDF 60
2421 3463 DCA I CHKCDF /CHANGE INSTRUCTION AND DATA FIELD TO FIELD 6,
2422 6001 ION /TRY TO CLEAR CDFCHK IN FIELD 6
2423 4224 JMS JMSCK6 /SET INTERRUPT ENABLE
2424 7402 JMSCK6, HLT /CLEAR INTERRUPT INHIBIT AND INTERRUPT
2425 4503 ERROR /THIS LOCATIONS PRESET TO ONES
2426 6234 RIB /PROGRAM FAILED TO INTERRUPT
2427 1130 TAD M66 /READ THE INTERRUPT BUFFER
2430 7640 SZA CLA /CHECK FOR ISF OF 6 AND DSF OF 6
2431 4503 ERROR
2432 2062 ISZ CDFCHK /SAVE FIELD NOT EQUAL ABOVE OR CIFCDF 60 FAILED
2433 4503 ERROR
2434 2224 ISZ JMSCK6 /DCA I TO FIELD 6 WENT TO FIELD 0
2435 4503 ERROR
2436 6254 SINT /JMS TO FIELD 6 WENT TO FIELD 0
2437 4503 ERROR /SKIP ON USER INTERRUPT F/F
2440 7240 TST13G, CLA CMA /USER INTERRUPT GOT CLEARED
2441 3062 DCA CDFCHK /SETUP 2 LOCATIONS TO CHECK THAT
2442 7240 CLA CMA /CIFCDF 10 WENT TO ANOTHER FIELD
2443 3250 DCA JMSCK7 /THAN FIELD 0
2444 6213 CIFCDF 10
2445 3463 DCA I CHKCDF /CHANGE INSTRUCTION FIELD + DATA FIELD TO FIELD 1
2446 6001 ION /TRY TO CLEAR CDFCHK IN FIELD 1
2447 4250 JMS JMSCK7 /SET INTERRUPT ENABLE
2450 7402 JMSCK7, HLT /CLEAR INTERRUPT INHIBIT AND INTERRUPT
2451 4503 ERROR /THIS LOCATION PRESET TO ONES
2452 6234 RIB /PROGRAM FAILED TO INTERRUPT
2453 1117 TAD M11 /READ THE INTERRUPT BUFFER
2454 7640 SZA CLA /CHECK FOR ISF OF 1 AND DSF OF 1
2455 4503 ERROR
2456 2062 ISZ CDFCHK /SAVE FIELD NOT EQUAL ABOVE OR CIFCDF 10 FAILED
2457 4503 ERROR /DCA I TO FIELD 1 WENT TO FIELD 0

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2460 2250 ISZ JMSCK7
2461 4503 ERROR
2462 6254 SINT /JMS TO FIELD 1 WENT TO FIELD 0
2463 4503 ERROR /SKIP ON USER INTERRUPT F/F
2464 7240 TST13H, CLA CMA /USER INTERRUPT F/F GOT CLEARED
2465 3062 DCA CDFCHK /SET UP 2 LOCATIONS TO CHECK THAT
2466 7240 CLA CMA /CIFCDF 00 WENT TO FIELD 0 INSTEAD
2467 3274 DCA JMSCK8 /OF ANOTHER FIELD
2470 6203 CIFCDF 00
2471 3463 DCA I CHKCDF /CHANGE INSTRUCTION AND DATA FIELD TO 0
2472 6001 ION /CLEAR CDFCHK IN FIELD 0
2473 4274 JMS JMSCK8 /SET INTERRUPT ENABLE
2474 7402 JMSCK8, HLT /CLEAR INTERRUPT INHIBIT AND INTERRUPT
2475 4503 ERROR /THIS LOCATIONS PRESET TO ONES
2476 6234 RIB /PROGRAM FAILED TO INTERRUPT
2477 7640 SZA CLA /READ THE INTERRUPT BUFFER
2500 4503 ERROR
2501 2062 ISZ CDFCHK /SAVE FIELD IS NOT EQUAL TO 2
2502 7410 SKP
2503 4503 ERROR
2504 2274 ISZ JMSCK8 /DCA I FAILED TO CLEAR CDFCHK IN FIELD 0
2505 7410 SKP
2506 4503 ERROR
2507 6204 SINT /JMS FAILED TO CHANGE JMSCK8 IN FIELD 0
2510 6254 SINT /CLEAR USER INTERRUPT F/F
2511 7410 SKP /SKIP ON USER INTERRUPT F/F
2512 4503 ERROR
2513 4504 LOOP /SINT FAILED TO CLEAR USER INTERRUPT F/F
/LOOP ON TEST IF SR 2 = 1000

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 /TEST 14 = CHECKS THAT RTF CAN LOAD THE IF AND DF AND THAT RMF CAN
 /RELOAD IT,

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2514 4505 TEST14, SCOPLP /SETUP SCOPE AND TEST LOOPING ADDRESS
2515 6007 CAF /CLEAR ALL FLAGS
2516 6001 ION /SET INTERRUPT ENABLE
2517 6274 SUP /SET USER BUFFER
2520 5321 JMP ,+1 /LOAD THE UB INTO THE IF
2521 7402 HLT /HALT SHOULD TRAP
2522 5322 JMP /HLT FAILED TO TRAP
2523 6254 SINT /SKIP ON USER INTERRUPT
2524 4503 ERROR /USER INTERRUPT NOT SET
2525 6234 RIB /READ THE INTERRUPT BUFFER
2526 1133 TAD M100 /CHECK FOR USER FLAG
2527 7640 SZA CLA
2530 4503 ERROR /USER FLAG OR INT REQ NOT SET
2531 1125 TST14A, TAD ,=1
2532 1331 RTF
2533 6005 CAF /LOAD THE UB, IB, + DF WITH USER FLAG, IF OF 2 + DF OF 5
2534 7300 CLA CLL /AND SET INTERRUPT ENABLE
2535 6214 ROP /READ THE DATA FIELD TO CHECK THAT FIELD 5 GOT LOADED
2536 1125 TAD M50
2537 7640 SZA CLA
2540 7402 HLT /RTF FAILED TO LOAD DATA FIELD TO 5

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2541	5342	JMP	,+1	/ENTER USER MODE,CLEAR INT INHIBIT,AND INTERRUPT
2542	4503	ERROR		/FAILED TO INTERRUPT , RTF OR JMP FAILED
2543	6254	SINT		/SKIP ON USER INTERRUPT F/F
2544	4503	ERROR		/SINT FAILED OR USER INTERRUPT F/F CLEARED
2545	6234	RIB		/CHECK FOR USER FLAG, ISF OF 2 AND DSF OF 5
2546	1134	TAD	M125	
2547	7640	SZA CLA		
2550	4503	ERROR		/SAVE FIELD NOT EQUAL TO ABOVE
2551	6244	RMF		/LOAD THE UB, IB, + DF FROM THE SAVE FIELD
2552	6214	RDF		/READ THE DATA FIELD
2553	1125	TAD	M50	/CHECK THAT RMF LOADED THE DF
2554	7640	SZA CLA		
2555	4503	ERROR		/RMF FAILED TO LOAD DF TO FIELD 5
2556	6001	ION		/SET INTERRUPT ENABLE
2557	5360	JMP	,+1	/LOAD THE IF, CLEAR INTERRUPT INHIBIT, ENTER USER MODE
2560	4503	ERROR		/FAILED TO INTERRUPT OR RMF JMP FAILED
2561	6254	SINT		/SKIP ON USER INTERRUPT FLIP=FLOP
2562	4503	ERROR		/USER INTERRUPT FLIP=FLOP NOT SET
2563	6234	RIB		/READ THE INTERRUPT BUFFER
2564	1134	TAD	M125	/CHECK FOR USER FLAG, ISF OF 2 AND DSF OF 5
2565	7640	SZA CLA		
2566	4503	ERROR		/RMF FAILED TO LOAD THE ABOVE
2567	7152	TAD		
2570	1367	TAD	,+1	
2571	6005	RTF		/LOAD THE UB, IB, + DF WITH UF, ISF OF 5 AND DSF OF 2
2572	7300	CLA CLL		/AND SET INTERRUPT ENABLE
2573	6214	RDF		/READ THE DATA FIELD
2574	1120	TAD	M20	/CHECK FOR A DF SET TO FIELD 2
2575	7640	SZA CLA		
2576	7402	HLT		/RTF FAILED TO LOAD DF WITH 2
2577	7000	NOP		
2600	5201	JMP	,+1	/ENTER USER MODE CLEAR INTERRUPT INHIBIT
2601	4503	ERROR		/FAILED TO INTERRUPT
2602	6254	SINT		/SKIP ON USER INTERRUPT
2603	4503	ERROR		/USER INTERRUPT NOT SET
2604	6234	RIB		/READ THE INTERRUPT BUFFER
2605	1135	TAD	M152	/CHECK FOR USER FLAG, ISF OF 5 AND DSF OF 2
2606	7640	SZA CLA		
2607	4503	ERROR		/SAVE FIELD NOT EQUAL TO ABOVE
2610	6244	RMF		/RESTORE MEMORY FIELDS
2611	6214	RDF		/READ THE DATA FIELD
2612	1120	TAD	M20	/CHECK THAT RMF LOADED DF TO FIELD 2
2613	7640	SZA CLA		
2614	4503	ERROR		/RMF FAILED TO LOAD DF TO FIELD 2
2615	7002	NOP		
2616	6021	ION		/SET INTERRUPT ENABLE
2617	5220	JMP	,+1	/CLEAR INTERRUPT INHIBIT, LOAD IF, ENTER USER MODE
2620	4503	ERROR		/FAILED TO INTERRUPT
2621	6254	SINT		/SKIP ON USER INTERRUPT
2622	4503	ERROR		/USER INTERRUPT NOT SET
2623	6234	RIB		/READ THE INTERRUPT BUFFER
2624	1135	TAD	M152	/CHECK SF FOR USER FLAG, ISF OF 5 AND DSF OF 2
2625	7640	SZA CLA		
2626	4503	ERROR		/RMF FAILED TO LOAD THE ABOVE
2627	6254	SINT		/SKIP ON USER INTERRUPT FLIP=FLOP

2630	4503	ERROR		/USER INTERRUPT FLIP=FLOP GOT CLEARED,
2631	1143	TAD	K77	/LOAD DATA FIELD AND IB TO FIELD 7
2632	6005	RTF		/RESTORE THE FLAG AND SET INTERRUPT ENABLE
2633	7300	CLA CLL		
2634	6214	RDF		/READ THE DATA FIELD
2635	1131	TAD	M70	/CHECK FOR DATA FIELD SET TO FIELD 7
2636	7640	SZA CLA		
2637	7402	HLT		/RTF FAILED TO SET DF TO FIELD 7
2640	5241	JMP	,+1	/CLEAR INTERRUPT INHIBIT AND INTERRUPT
2641	4503	ERROR		/PROGRAM FAILED TO INTERRUPT ON USER INTERRUPT
2642	6234	RIB		/READ THE INTERRUPT BUFFER
2643	1132	TAD	M77	/CHECK FOR UF=0, ISF=7 AND DSF=7
2644	7640	SZA CLA		
2645	4503	ERROR		/SAVE FIELD NOT EQUAL TO ABOVE
2646	6254	SINT		/SKIP ON USER INTERRUPT
2647	4503	ERROR		/USER INTERRUPT GOT CLEARED
2650	5244	RMF		/RESTORE MEMORY FIELDS
2651	0214	RDF		/CHECK THAT RMF RESTORED THE DF
2652	1131	TAD	M70	
2653	7640	SZA CLA		
2654	4503	ERROR		/RMF FAILED TO LOAD DF TO 7
2655	6224	RIF		/CHECK INSTRUCTION FIELD TO BE SET 0
2656	7640	SZA CLA		
2657	4503	ERROR		/IF IS NON ZERO AFTER A RMF
2660	6001	ION		/SET INTERRUPT ENABLE
2661	5262	JMP	,+1	/CLEAR INTERRUPT INHIBIT AND INTERRUPT
2662	4503	ERROR		/PROGRAM FAILED TO INTERRUPT,
2663	6234	RIB		/READ THE INTERRUPT BUFFER
2664	1132	TAD	M77	/CHECK FOR ISF AND DSF = TO 7
2665	7640	SZA CLA		
2666	4503	ERROR		/RMF FAILED TO RESTORE IF AND DF TO 7
2667	6254	SINT		/SKIP ON USER INTERRUPT FLIP=FLOP
2670	4503	ERROR		/USER INTERRUPT CLEARED
2671	6005	RTF		/RESTORE THE FLAG, SET IB=DF TO ZERO
2672	5273	JMP	,+1	/CLEAR INTERRUPT INHIBIT AND INTERRUPT
2673	4503	ERROR		/PROGRAM FAILED TO INTERRUPT
2674	6234	RIB		/READ THE INTERRUPT BUFFER
2675	7640	SZA CLA		
2676	4503	ERROR		/THE ISF OR DSF IS NON ZERO
2677	6244	RMF		/RESTORE MEMORY FIELDS
2700	6001	ION		/SET INTERRUPT ENABLE
2701	5302	JMP	,+1	/CLEAR INTERRUPT INHIBIT AND INTERRUPT
2702	4503	ERROR		/PROGRAM FAILED TO INTERRUPT
2703	6234	RIB		/READ THE INTERRUPT BUFFER
2704	7640	SZA CLA		
2705	4503	ERROR		/RMF FAILED TO RELOAD IF AND DF TO ZERO
2706	6204	SINT		/CLEAR USER INTERRUPT FLIP=FLOP
2707	6254	SINT		/SKIP ON USER INTERRUPT FLIP=FLOP
2710	7612	SKP	CLA	
2711	4503	ERROR		/CINT FAILED TO CLEAR USER INTERRUPT
2712	4524	LOOP		/LOOP ON TEST IF SR = 1000

 /TEST 10 - SETS THE UB TO A 1, THE IF AND DF TO FIELD 5, THE PROGRAM
 /THEM ISSUES AND, TAD, ISZ, AND DCA INDIRECTS TO CHECK THAT THE

/PROGRAM DOESN'T INTERRUPT UNTIL A JUMP INSTRUCTION IS ISSUED,
 /*****

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2713 4505 TEST15, SCOPLP /SETUP SCOPE AND TEST LOOPING ADDRESS
2714 6007 CAF /CLEAR ALL FLAGS
2715 6203 CIFCDF /CHANGE DATA AND INSTRUCTION FIELD TO 0
2716 5317 JMP ,+1 /CLEAR INTERRUPT INHIBIT
2717 6264 CUF /CLEAR USER FLAG
2720 6204 CINT /CLEAR USER INTERRUPT FLIP=FLOP
2721 6001 ION /SET INTERRUPT ENABLE
2722 6274 SUP /SET USER BUFFER FLIP=FLOP
2723 5324 JMP ,+1 /CLEAR INTERRUPT INHIBIT
2724 7402 HLT /FAILED TO ENTER USER MODE
2725 5325 JMP /HLT FAILED TO TRAP
2726 6254 SINT /SKIP ON USER INTERRUPT FLIP=FLOP
2727 4503 ERROR /USER INTERRUPT FLIP=FLOP NOT SET
2732 6234 RIB /READ THE INTERRUPT BUFFER
2731 1133 TAD M100 /CHECK FOR USER FLAG
2732 7640 SZA CLA
2733 4503 ERROR /USER FLAG NOT SET
2734 6263 CIFCDF 60 /CHANGE IB AND DF TO FIELD 6 AND SET INTERRUPT INHIBIT
2735 6001 ION /SET INTERRUPT ENABLE, THE PROGRAM
/SHOULDN'T INTERRUPT UNTIL A JMP OR JMS IS ISSUED,
/CHECK THAT PROGRAM DOESN'T INTERRUPT

2736 7000 NOP
2737 7410 SKP
2740 7402 HLT /PROGRAM INTERRUPTED BEFORE A JMP WAS ISSUED
2741 3742 DCA I ,+1 /DO A DCA I TO NEXT LOCATIONS
2742 7410 SKP
2743 7402 HLT /PROGRAM INTERRUPTED BEFORE A JMP WAS ISSUED
2744 1745 TAD I ,+1 /DO A TAD I TO NEXT LOCATION
2745 7410 SKP
2746 7402 HLT /PROGRAM INTERRUPTED BEFORE A JMP WAS ISSUED
2747 2750 AND I ,+1 /DO A AND I TO THE NEXT LOCATION
2750 7410 SKP
2751 7402 HLT /PROGRAM INTERRUPTED BEFORE A JMP WAS ISSUED
2752 2753 ISZ I ,+1 /DO A ISZ I TO THE NEXT LOCATION
2753 7410 SKP
2754 7402 HLT /PROGRAM INTERRUPTED BEFORE A JMP WAS ISSUED
2755 5356 JMP ,+1 /CLEAR INTERRUPT INHIBIT AND INTERRUPT
2756 4503 ERROR /PROGRAM FAILED TO INTERRUPT
2757 6234 RIB /READ THE INTERRUPT BUFFER
2760 1130 TAD M66 /CHECK FOR ISF AND OSF OF 6
2761 7640 SZA CLA
2762 4503 ERROR /SAVE FIELD NOT EQUAL TO 66
2763 6254 SINT /SKIP ON USER INTERRUPT F/F
2764 4503 ERROR /USER INTERRUPT F/F NOT SET
2765 7300 CLA CLL
2766 6203 CIFCDF /SET IB AND DF TO 0
2767 6001 ION /SET INTERRUPT ENABLE
2772 5371 JMP ,+1 /CLEAR INTERRUPT INHIBIT
2771 4503 ERROR /PROGRAM FAILED TO INTERRUPT
2772 6254 SINT /SKIP ON USER INTERRUPT
2773 4503 ERROR /USER INTERRUPT NOT SET
2774 6204 CINT /CLEAR USER INTERRUPT
2775 7340 CLA CLL CMA /SET THE AC TO ONES AND LINK TO 0
  
```

```

2776 6004 GTF /GET THE FLAGS
2777 7640 SZA CLA
3000 4503 ERROR /THE LINK, INT REQ, OR SAVE FIELD NON ZERO
3001 4504 LOOP /LOOP ON TEST IF SR = 1000
  
```

 /TEST 16 * IS A DATA TEST TO CHECK THAT DATA CAN BE DEPOSITED INTO EACH
 /SELECTED EXTENDED FIELD, DATA IS DEPOSITED INTO THE LAST ADDRESS OF
 /EACH 1K MEMORY SEGMENT IN THE EXTENDED MEMORY FIELD, THE USER INTERRUPT
 /IS SET FOR THIS TEST, THE PROGRAM CHANGES THE DATA FIELD TO THE NEW FIELD
 /CHECKS, IT THEN TURNS THE INTERRUPT ON AND DOES A DCA I TO THE LAST
 /ADDRESS IN A 1K MEMORY SEGMENT OF THAT FIELD, THE PROGRAM THEN DOES THE
 /SAME AS ABOVE, ONLY DOING A TAD I TO THE LAST ADDRESS OF A 1K MEMORY
 /SEGMENT, THE DATA THAT IS PUT INTO THE LAST ADDRESS OF EACH EXTENDED
 /1K MEMORY SEGMENT CONTAINS THE FIELD IN BITS 6-8 AND THE 1K SEGMENT IN
 /BITS 9-11,
 /*****

```

3002 4505 TEST16, SCOPLP /SETUP TEST AND SCOPE LOOPING ADDRESS
3003 6007 CAF /CLEAR ALL FLAGS
3004 6001 ION /TURN THE INTERRUPT ON
3005 1021 TAD OP1SEL /GET MEMORY SIZE FROM LOCATION 21
3006 2371 AND K37 /MASK OFF THE MEMORY BITS
3007 7104 CLL /ROTATE BITS LEFT ONCE TO SETUP FOR FIELD
3010 3065 DCA SAVESZ /LIMIT AND LAST ADDRESS IN LAST FIELD
3011 1065 TAD /GET THE NUMBER
3012 1142 AND K70 /MASK OFF BITS 6-8 FOR FIELD LIMIT
3013 3066 DCA FLDLIM /SAVE THE NUMBER AS THE LAST SELECTED FIELD
3014 1065 TAD SAVESZ /GET THE ROTATED NUMBER
3015 1142 AND K7 /MASK OFF ADDRESS BITS
3016 7112 CLL RTR /ROTATE THE NUMBER 4 PLACES TO THE RIGHT
3017 7012 PTR
3022 1372 TAD K1777 /ADD 1K TO THE NUMBER
3021 3267 DCA UPERLM /SAVE THIS NUMBER AS THE LAST ADDRESS IN LAST FIELD
3022 1066 TAD FLDLIM /GET THE FIELD LIMIT
3023 7650 SNA CLA /IS THE LAST FIELD = TO FIELD 3
3024 5777 JMP TEST18 /YES, ABORT THIS TEST, GO CHECK FOR SIMULATOR EMA TEST
3025 4776 JMS ACTLIN /CHECK FOR ACT LINE AND 32K OF MEMORY
3026 6001 ION /TURN THE INTERRUPT ON
3027 6274 SUP /SET USER BUFFER F/F
3030 5231 JMP ,+1
3031 7402 HLT /SHOULD TRAP HERE
3032 5232 JMP /HALT FAILED TO TRAP
3033 6254 SINT /SKIP ON USER INTERRUPT
3034 4503 ERROR /USER INTERRUPT NOT SET
3035 7340 CLA CLL CMA /SET THE AC TO ALL ONES
3036 6004 GTF /GET THE FLAGS
3037 1136 TAD M1100 /CHECK FOR USER FLAG AND INT REQ
3040 7640 SZA CLA
3041 4503 ERROR /SAVE FIELD NOT EQUAL TO ABOVE
3042 3070 DCA WRKFLD /CLEAR WORKING FIELD
3043 3071 DCA DATPAT /CLEAR DATA PATTERN
3044 1372 REGT16, TAD K1777 /GET UPPER ADDRESS OF 1K FIELD
3045 3272 DCA WRKADD /SET FIRST ADDRESS EQUAL TO 1777
  
```

3046	1070	TAD	WRKFLD	/GET THE WORKING FIELD
3047	1141	TAD	K10	/ADD A FIELD TO IT
3050	3070	DCA	WRKFLD	
3051	1070	TAD	WRKFLD	/GET THE WORKING FIELD
3052	7041	CIA		/NEGATE IT
3053	1060	TAD	FLDLIM	/COMPARE IT TO THE FIELD LIMIT
3054	7510	SPA		/IS THE NEW FIELD GREATER THAN FIELD LIMIT
3055	5363	JMP	ENDTST	/YES END OF TEST
3056	7640	SZA	CLA	/IS NEW FIELD EQUAL TO LAST FIELD
3057	7240	CLA	CMA	/NO, THE LAST ADDRESS IN THIS FIELD WILL BE 7777
3060	7450	SNA		/YES, THE LAST ADDRESS WILL BE EQUAL TO UPERLM
3061	1067	TAD	UPERLM	
3062	3073	DCA	HGHLIM	/SAVE THE LAST ADDRESS IN THIS FIELD
3063	1073	TAD	HGHLIM	/GET THE HIGH LIMIT
3064	7040	CMA		/COMPLEMENT IT
3065	7106	CLL	RTL	/ROTATE 3 PLACES TO THE RIGHT
3066	7004	RAL		/
3067	1146	TAD	K7774	/ADD IN 4K ADDRESS CONSTANT
3070	3076	DCA	ADDCNT	/SAVE IT
3071	1070	TAD	WRKFLD	/GET THE NEW FIELD
3072	7001	IAC		/ADD 1 TO IT
3073	3071	DCA	DATPAT	/SAVE THE WORD AS THE DATA PATTERN
3074	6254	T16LCD, SINT		/SKIP ON USER INTERRUPT
3075	4503	ERROR		/USER INTERRUPT GOT CLEARED
3076	1070	TAD	WRKFLD	/GET THE NEW FIELD
3077	1074	TAD	K6201	/GET THE CDF INSTRUCTION
3102	3301	DCA	,+1	/PUT CDF TO NEW FIELD IN NEXT ADDRESS
3101	7402	CDNEW, HLT/CDP		/CHANGE DATA FIELD TO NEW FIELD
3102	6214	RDF		/READ THE DATA FIELD
3103	7041	CIA		/NEGATE IT
3104	1070	TAD	WRKFLD	/GET THE NEW FIELD
3105	7640	SZA	CLA	
3106	4503	ERROR		/CDF TO NEW FIELD FAILED
3107	1071	TAD	DATPAT	/GET THE DATA PATTERN
3110	6001	ION		/TURN THE INTERRUPT ON
3111	3472	DCA I	WRKADD	/PUT THE WORD UP IN NEW FIELD AND INTERRUPT
3112	4503	ERROR		/PROGRAM FAILED TO INTERRUPT
3113	1070	TAD	WRKFLD	
3114	7112	CLL	RTR	
3115	7010	PAR		
3116	3075	DCA	SAVWFD	/SAVE THE WORKING FIELD IN BITS 9=11
3117	6234	RIB		/READ THE INTERRUPT BUFFER
3120	7041	CIA		/NEGATE IT
3121	1075	TAD	SAVWFD	/GET THE EXPECTED WORKING SAVE FIELD
3122	7640	SZA	CLA	
3123	4503	ERROR		/SAVE FIELD NOT EQUAL TO EXPECTED FIELD
3124	6254	SINT		/SKIP ON USER INTERRUPT F/F
3125	4503	ERROR		/USER INTERRUPT GOT CLEARED
3126	1301	TAD	CDNEW	/GET THE CDF INSTRUCTION TO THE NEW FIELD
3127	3330	DCA	,+1	/PUT IT IN THE NEXT LOCATION
3130	7402	HLT/CDP		/CDF TO NEW FIELD
3131	6214	RDF		/READ THE DATA FIELD
3132	7041	CIA		/NEGATE IT
3133	1070	TAD	WRKFLD	/GET THE WORKING FIELD

3134	7640	SZA	CLA	
3135	4503	ERROR		/CDF TO NEW FIELD FAILED
3136	6001	ION		/TURN THE INTERRUPT ON
3137	1472	TAD I	WRKADD	/GET DATA PATTERN FROM NEW FIELD
3140	4503	ERROR		/PROGRAM FAILED TO INTERRUPT
3141	6234	RIB		/READ THE INTERRUPT BUFFER
3142	7041	CIA		/NEGATE IT
3143	1075	TAD	SAVWFD	/GET THE EXPECTED SAVE FIELD
3144	7640	SZA	CLA	/ARE THEY EQUAL
3145	4503	ERROR		/NO, EXPECTED SAVE FIELD NOT EQUAL TO FIELD READ
3146	1071	TAD	DATPAT	/GET THE DATA PATTERN
3147	7041	CIA		/NEGATE IT
3150	1064	TAD	DATREC	/GET THE WORD RECEIVED
3151	7640	SZA	CLA	/ARE THEY EQUAL?
3152	4503	ERROR		/NO, DATA ERROR IN WRKFLD
3153	2076	ISZ	ADDCNT	/GET NEXT ADDRESS IN THIS FIELD?
3154	7610	SKP	CLA	/YES
3155	5244	JMP	BEGT16	/NO, GO GET NEXT FIELD IF ANY LEFT
3156	7332	CLA CLL	CML RTR	/ADD 1K
3157	1072	TAD	WRKADD	/GET THE WORKING ADDRESS
3160	3072	DCA	WRKADD	/SAVE NEW 1K UPPER ADDRESS BOUNDARY
3161	2071	ISZ	DATPAT	/ADD ANOTHER 1K TO DATA WORD
3162	5274	JMP	T16LCD	/GO LOAD AND COMPARE THIS ADDRESS
3163	6204	ENDTST, CINT		/CLEAR USER INTERRUPT
3164	6254	SINT		/SKIP ON USER INTERRUPT
3165	7610	SKP	CLA	
3166	4503	ERROR		/CINT FAILED TO CLEAR USER INTERRUPT
3167	4504	LOOP		/LOOP ON TEST IF SR = 1000
3172	5775	JMP	TEST17	
3171	0037	K37,	37	
3172	1777	K1777,	1777	
3175	3200			
3176	5000			
3177	3321			
	3200			

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 /TEST 17 - CHECKS THE RIF INSTRUCTION TO READ THE INSTRUCTION FIELD
 /REGISTER, THE PROGRAM DEPOSITS THE FOLLOWING CODE INTO LOCATIONS 0000.
 /3304 OF EACH SELECTED EXTENDED FIELD: RIF=ION, JMP I 3=17RET-1,
 /THE PROGRAM USES THE USER INTERRUPT TO RETURN TO THE PROGRAM,

3200	4505	TEST17, SCOPLP		/SETUP TEST AND SCOPE LOOP ADDRESS
3201	6007	CAF		/CLEAR ALL FLAGS
3202	6001	ION		/TURN THE INTERRUPT ON
3203	6274	SUF		/SET USER BUFFER F/F
3204	5205	JMP	,+1	/ENTER TIME SHARE MODE
3205	7402	HLT		/RAISE INTERRUPT REQUEST AND INTERRUPT
3206	5206	JMP		/HALT FAILED TO TRAP
3207	6254	SINT		/SKIP ON USER INTERRUPT FLIP = FLOP
3210	4503	ERROR		/USER INTERRUPT F/F NOT SET

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3211 7340          CLA CLL CMA          /SET THE AC TO ALL ONES
3212 6004          GTF                    /GET THE FLAGS
3213 1136          TAD M1100              /CHECK FOR USER FLAG AND INT REQ
3214 7640          SZA CLA
3215 4503          ERROR                  /USER FLAG OR USER INT NOT SET
3216 3070          DCA WRKFLD            /CLEAR THE WORKING FIELD
3217 3072          REGT17, DCA WRKADD      /SET THE FIRST ADDRESS TO 0
3221 1070          TAD WRKFLD            /GET THE FIELD
3221 1141          TAD K10              /ADD ONE FIELD TO IT
3222 3070          DCA WRKFLD            /SAVE THIS AS THE NEW FIELD
3223 1070          TAD WRKFLD            /GET THE FIELD
3224 7041          CIA                    /NEGATE IT
3225 1066          TAD FLDLIM            /COMPARE IT TO THE FIELD LIMIT
3226 7710          SPA CLA                /IS THE NEW FIELD GREATER THAN FIELD LIMIT
3227 5314          JMP ENDT17            /YES GO CHECK LOOP ON TEST
3231 1306          TAD TABLE            /GET THE BEGINNING OF THE TABLE TO
3231 3313          DCA POINTR            /LOAD UP THE FIRST 4 LOCATIONS IN THE
3232 1146          TAD K7774            /NEW FIELD, SET UP A COUNT OF FOUR
3233 3076          DCA ADDCNT            /SAVE THE COUNT,
3234 1070          TAD WRKFLD            /GET THE NEW FIELD
3235 7112          CLL RTR              /SETUP LOCATION HGHLIM TO EQUAL
3236 7010          RAR                    /THE EXPECTED SAVE FIELD AFTER A INT,
3237 1070          TAD WRKFLD            /
3240 3073          DCA HGHLIM            /SAVE THE NUMBER AS THE EXPECTED S,F,
3241 1070          TAD WRKFLD            /GET THE NEW FIELD
3242 1074          TAD K6201            /GET THE CDF INSTRUCTION
3243 3246          DCA T17CDF            /STORE IT
3244 6201          CDF                    /CHANGE DATA FIELD TO PROGRAM FIELD
3245 1713          TAD I POINTR          /GET THE INSTRUCTION FROM PROGRAM FIELD
3246 7402          T17CDF, HLT/CDF        /CHANGE DATA FIELD TO NEW FIELD
3247 3472          DCA I WRKADD          /PUT THE INSTRUCTION INTO NEW FIELD
3253 1472          TAD I WRKADD          /BRING IT BACK OUT
3251 6201          CDF 00              /CHANGE THE DATA FIELD BACK TO PROG
3252 7041          CIA                    /NEGATE IT
3253 1713          TAD I POINTR          /GET THE WORD THAT WAS PUT UP THERE
3254 7640          SZA CLA
3255 4503          ERROR                  /WORDS DO NOT COMPARE BETWEEN 2 FIELDS
3256 2313          ISZ POINTR            /ADD ONE TO THE POINTER ADDRESS
3257 2072          ISZ WRKADD            /ADD ONE TO THE ADDRESS
3260 2076          ISZ ADDCNT            /ADD ON TO THE LOCATION COUNTER
3261 5245          JMP T17CDF=1          /GO DO NEXT LOCATION
3262 3072          DCA WRKADD            /RESET THE ADDRESS TO 0
3263 7326          CLA CLL CML RTL        /ADD TWO TO THE CDF INSTR TO NEW FIELD
3264 1246          TAD T17CDF            /GET THE CDF INSTRUCTION TO NEW FIELD
3265 3266          DCA ,+1              /PUT CDF TO NEW FIELD IN NEXT ADDRESS
3266 7402          HLT/CDF CDF          /CHANGE DF AND IF TO NEW FIELD
3267 5472          JMP I WRKADD          /GO UP TO THE NEW FIELD
3270 4503          ERROR                  /PROGRAM RETURNED TO THE WRONG LOC,
3271 6234          T17RET, RIB            /READ THE SAVE FIELD REGISTER
3272 7341          CIA                    /NEGATE IT
3273 1073          TAD HGHLIM            /GET THE EXPECTED SAVE FIELD REGISTER
3274 7640          SZA CLA                /ARE THEY EQUAL
3275 4503          ERROR                  /NO,SAVE FIELD NOT EQUAL EXPECTED
3276 1064          TAD DATREC            /GET THE I,F. THAT WAS READ IN NEW FIELD
3277 7041          CIA                    /NEGATE IT

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3300 1070          TAD WRKFLD            /GET THE EXPECTED FIELD
3301 7640          SZA CLA                /ARE THEY EQUAL
3302 4503          ERROR                  /RIF FAILED OR WENT TO WRONG FIELD
3303 6254          SINT                    /SKIP ON USER INTERRUPT F/F
3304 4503          ERROR                  /USER INTERRUPT GOT CLEARED
3305 5217          JMP BEGT17            /GO DO NEXT FIELD IF SELECTED

3306 3307          *TABLE, ,+1
3307 6224          RIF
3310 6001          ION
3311 5403          JMP I 3
3312 3270          T17RET=1
3313 0000          POINTR, 0

3314 6204          ENDT17, CINT          /CLEAR USER INTERRUPT F/F
3315 6254          SINT                    /SKIP ON USER INTERRUPT F/F
3316 7610          SKP CLA
3317 4503          ERROR                  /CINT FAILED TO CLEAR USER INT F/F,
3320 4524          LOOP                    /LOOP ON TEST IF SR = 1000

/*****
/TEST 18 - IS ONLY EXECUTED WHEN THE SIMULATOR IS SELECTED (BIT 4 OF LOCATION 21 SET TO A 1),
/TEST 18 CHECKS THAT THE EMA IS LOADED ONTO THE BUS DURING A DCA I FOLLOWING
/A CDF 10; CDF 20; CDF 40, THE SIMULATOR IS USED TO CAUSE A INTERRUPT
/FOLLOWING A EMA CHANGE ON THE BUS, THE SIMULATOR STORES THE EMA INTO A
/EMA CATCHER REGISTER AND THEN THE PROGRAM READS AND COMPARES IT,
/*****

3321 4505          TEST18, SCOLPL          /SETUP TEST AND SCOPE LOOPING ADDRESS
3322 6007          CAF                    /CLEAR ALL FLAGS
3323 1021          TAD OP1SEL            /CHECK BIT 4 OF LOCATION 21 FOR SIMULATOR SELECT
3324 144           AND K200              /
3325 7650          SNA CLA                /WAS THE SIMULATOR SELECTED ?
3326 5510          JMP I PASEND          /NO, END OF ONE PROGRAM PASS
3327 4331          JMS EMACLR            /LOAD CONTROL WORD AND CLEAR EMA REGISTER
3330 5345          JMP TST18A            /GO TO FIRST TEST
3331 0000          EMACLR, ?            /ROUTINE TO LOAD CONTROL WORD AND CLEAR EMA CATCHER REGISTER
3332 1145          TAD K400              /
3333 6153          LODRG3                /LOAD CONTROL REGISTER 3 FOR INT AND SKIP ENABLE
3334 6154          CLREMA                /CLEAR EMA CATCHER REGISTER
3335 6166          SKPEMA                /SKIP ON EMA CATCHER REGISTER SET
3336 7610          SKP CLA
3337 4503          ERROR                  /CLREMA FAILED TO CLEAR CATCHER F/F
3340 6155          REDEMA                /READ THE EMA CATCHER REGISTER
3341 1110          TAD M7                /CLEARING THE REGISTER SET IT TO 7
3342 7640          SZA CLA                /IS THE REGISTER SET TO 7 ?
3343 4503          ERROR                  /NO, CLREMA FAILED TO SET REGISTER TO 7
3344 5731          JMP I EMACLR          /
3345 6211          TST18A, CDF 10        /CHANGE DATA FIELD TO FIELD 10
3346 6001          ION                    /TURN THE INTERRUPT ON
3347 3750          DCA I ,+1            /CHANGE THE EMA LINES TO 1 AND INTERRUPT
3350 7402          HLT                    /SIMULATOR FAILED TO INT, OR EMA DIDN'T CHANGE
3351 6166          SKPEMA                /SKIP ON EMA REGISTER SET

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3352 4503 ERROR /SIMULATOR EMA CATCHER REGISTER NOT SET
3353 6234 RIB /READ THE INTERRUPT BUFFER
3354 1111 TAD M1
3355 7640 SZA CLA /IS THE SAVE FIELD EQUAL TO 1 ?
3356 4503 ERROR /NO,SAVE FIELD NOT EQUAL TO 1
3357 6155 REDEMA /READ THE SIMULATOR EMA CATCHER REGISTER
3360 1111 TAD M1
3361 7640 SZA CLA /IS THE EMA CATCHER REGISTER = 1 ?
3362 4503 ERROR /NO,EMA LINES OTHER THAN EMA2 MUST HAVE BEEN SET
3363 4331 JMS EMACLR /LOAD CONTROL WORD AND CLEAR EMA CARCHER REGISTER
3364 6221 TST18B, CDF 20 /CHANGE DATA FIELD TO FIELD 2
3365 6001 ION /TURN THE INTERRUPT ON
3366 3767 DCA I ,+1 /CHANGE THE EMA LINES TO 2 AND INTERRUPT
3367 7402 HLT /PROGRAM FAILED TO INTERRUPT OR EMA DID NOT CHANGE
3370 6166 SKPEMA /SKIP ON EMA REGISTER SET
3371 4503 ERROR /EMA CATCHER REGISTER NOT SET
3372 6155 REDEMA /READ THE EMA CATCHER REGISTER
3373 1112 TAD M2
3374 7640 SZA CLA /DID THE DF SET EMA1 ON TO THE BUS
3375 4503 ERROR /NO, EMA REGISTER NOT EQUAL TO 2
3376 4331 JMS EMACLR /LOAD CONTROL WORD CLEAR EMA REGISTER
3377 6241 TST18C, CDF 40 /CHANGE DATA FIELD TO FIELD 4
3400 6001 ION /TURN THE INTERRUPT ON
3401 3602 DCA I ,+1 /CHANGE EMA LINES TO 4 AND INTERRUPT
3402 7402 HLT /PROGRAM FAILED TO INTERRUPT OR EMA DID NOT CHANGE
3403 6166 SKPEMA /SKIP ON EMA CATCHER REGISTER SET
3404 4503 ERROR /EMA CATCHER F/F NOT SET
3405 6155 REDEMA /READ THE EMA CATCHER REGISTER
3406 1113 TAD M4
3407 7640 SZA CLA /DID THE DF SET EMA0 ONTO THE BUS
3410 4503 ERROR /NO,EMA CATCHER REGISTER NOT EQUAL TO 4
3411 4612 JMS I ,+1 /LOAD CONTROL WORD AND CLEAR EMA CATCHER REGISTER
3412 3331 EMACLR
3413 6152 CLRSIM /CLEAR SIMULATOR CONTROL WORD
3414 4534 LOOP /LOOP ON TEST IF SR = 1000

/TEST 19 - IS A CONTINUATION OF TEST 18 ONLY TESTING THAT THE CIF
/INSTRUCTION LOADS THE APPROPRIATE EMA LINE, THE TEST WILL BE FOR CIF 10
/CIF 201 AND CIF 40, THE SIMULATOR IS USED FOR INTERRUPTS AND TO READ
/THE EMA LINES,

3415 4505 TEST19, SCOPLP /SETUP TEST AND SCOPE LOOPING ADDRESS
3416 6007 CAF /CLEAR ALL FLAGS
3417 6160 CLRMOD /CLEAR SIMULATOR MODULE
3420 6211 CDF 10 /CHANGE DATA FIELD TO FIELD 1
3421 3747 DCA I EMA1 /CLEAR THE FIRST TEST LOCATION
3422 6221 CDF 20 /CHANGE DATA FILED TO FIELD 2
3423 3750 DCA I EMA2
3424 6241 CDF 40 /CHANGE DATA FIELD TO FIELD 4
3425 3751 DCA I EMA3 /CLEAR A LOCATION IN FIELD 4
3426 6201 CDF 00 /CHANGE DATA FIELD BACK TO FIELD 0
3427 4746 JMS I CLRERG /LOAD CONTROL WORD AND CLEAR EMA CATCHER REGISTER
3430 6212 TST19A, CIF 10 /CHANGE INSTRUCTION FIELD TO 1

3431 6001 ION /TURN THE INTERRUPT ON
3432 6232 EMAIF1, JMP /CLEAR INT INHIBIT AND INTERRUPT
3433 7402 HLT /PROGRAM FAILED TO INTERRUPT
3434 6166 SKPEMA /SKIP ON EMA CATCHER F/F SET
3435 4503 ERROR /EMA CATCHER F/F NOT SET
3436 6234 RIB /READ THE INTERRUPT BUFFER
3437 1116 TAD M13
3440 7640 SZA CLA /IS THE SAVE FIELD EQUAL TO IF OF 1
3441 4503 ERROR /SAVE FIELD NOT EQUAL TO IF OF 1
3442 6155 REDEMA /READ THE EMA CATCHER REGISTER
3443 1111 TAD M1
3444 7640 SZA CLA /IS THE EMA CATCHER REGISTER EQUAL TO 1
3445 4503 ERROR /NO,EMA CATCHER REGISTER NOT EQUAL TO 1
3446 4746 TST19B, JMS I CLRERG /LOAD CONTROL WORD, CLEAR EMA CATCHER REGISTER
3447 6222 CIF 20 /CHANGE INSTRUCTION FIELD TO FIELD 2
3450 6001 ION /TURN THE INTERRUPT ON
3451 5251 EMAIF2, JMP /CLEAR INT INHIBIT AND INTERRUPT
3452 7402 HLT /PROGRAM FAILED TO INTERRUPT OR EMA DID NOT CHANGE
3453 6166 SKPEMA /SKIP ON EMA CATCHER F/F SET
3454 4503 ERROR /EMA CATCHER REGISTER NOT SET
3455 6155 REDEMA /READ THE EMA CATCHER REGISTER
3456 1112 TAD M2
3457 7640 SZA CLA /IS THE EMA CATCHER REGISTER EQUAL TO 2
3460 4503 ERROR /NO, EMA WASN'T SET TO 2
3461 4746 TST19C, JMS I CLRERG /LOAD CONTROL WORD, CLEAR EMA REGISTER
3462 6242 CIF 40 /CHANGE INSTRUCTION FIELD TO FIELD 4
3463 6001 ION /TURN THE INTERRUPT ON
3464 5264 EMAIF3, JMP /CLEAR INTERRUPT INHIBIT AND INTERRUPT
3465 7402 HLT /PROGRAM FAILED TO INTERRUPT
3466 6166 SKPEMA /SKIP ON EMA CATCHER F/F SET
3467 4503 ERROR /EMA CATCHER REGISTER NOT SET
3470 6155 REDEMA /READ THE EMA CATCHER REGISTER
3471 1113 TAD M4
3472 7640 SZA CLA /IS THE EMA CATCHER REGISTER SET TO 4
3473 4503 ERROR /NO, EMA WASN'T SET TO 4
3474 4746 JMS I CLRERG /LOAD CONTROL WORD CLEAR CATCHER F/F'S
3475 6150 CLRSIM /CLEAR SIMULATOR CONTROL WORDS
3476 4504 LOOP /LOOP ON TEST IF SR = 1000

/TEST 20 - IS EXECUTED WHEN THE SIMULATOR IS SELECTED, TEST 20 CHECKS
/THAT THE TIME SHARE LOGIC CAN BE DISABLED, THIS IS DONE WITH THE
/SIMULATOR BY PULLING KMTS TIME SHARE DISA, L LOW, THE PROGRAM THEN
/TRIES TO LOAD THE USER BUFFER AND THEN DOES A IOT, LAS, OSR AND CHECKS
/THAT THE PROGRAM DIDN'T INTERRUPT.

3477 4505 TEST20, SCOPLP /SETUP TEST AND SCOPE LOOPING ADDRESS
3500 6007 CAF /CLEAR ALL FLAGS
3501 6160 CLRMOD /CLEAR SIMULATOR LOGIC
3502 7330 CLA CLL CML BAR /SET BIT 0 TO A ONE
3503 6153 LODRG3 /LOAD CONTROL REGISTER 3 WITH TIME SHARE DISABLE
3504 7300 CLA CLL
3505 6001 ION /TURN THE INTERRUPT ON

3506	6274	SUF		/TRY TO SET USER BUFFER
3507	5310	JMP	,+1	/TRY TO ENTER TIME SHARE MODE
3512	7404	OSR		/SHOULD TRAP HERE IF TIME SHARE NOT DISABLED
3511	7410	SKP		
3512	4513	ERROR		/TIME SHARE NOT DISABLED=PROGRAM INTERRUPTED
3513	7634	LAS		/SHOULD TRAP HERE IF TIME SHARE NOT DISABLED
3514	7410	SKP		
3515	4503	ERROR		/LAS TRAPPED WITHOUT TIME SHARE ENABLED
3516	6001	ION		/ISSUE A IOT
3517	7610	SKP	CLA	
3520	4503	ERROR		/IOT TRAPPED WITHOUT TIME SHARE ENABLED
3521	6007	CAF		/CLEAR ALL FLAGS
3522	7610	SKP	CLA	
3523	4503	ERROR		/CAF TRAPPED
3524	6150	CLRSIM		/CLEAR THE SIMULATOR CONTROL REGISTERS
3525	6001	ION		/TURN INTERRUPT ENABLE ON
3526	6274	SUF		/SET THE USER BUFFER F/F
3527	5330	JMP	,+1	/ENTER TIME SHARE MODE
3530	7402	HLT		/SHOULD TRAP HERE
3531	5331	JMP	.	/HALT FAILED TO TRAP IN USER MODE
3532	6254	SINT		/SKIP ON USER INTERRUPT F/F SET
3533	4503	ERROR		/USER INTERRUPT F/F NOT SET
3534	6007	CAF		/CLEAR USER INTERRUPT F/F
3535	4504	LOOP		/LOOP ON TEST IF SR = 1000
3536	1021	TAD	OP1SEL	/GET THE HARDWARE CONFIGURATION
3537	5345	AND	K100	/MASK OUT THE XOR BIT
3540	7640	SZA	CLA	/IS IT ON THE PDP=8A XOR
3541	5744	JMP	I,+3	/YES ABORT THE BOOTSTRAP AND AUTO RESTART TESTS
3542	5743	JMP	I,+1	/NO=DO BOOTSTRAP AND AUTO RESTARTS
3543	3635	TEST21		
3544	4201	TEST23		
3545	2100	K100,	100	
3546	3331	CLRERG,	EMACLR	
3547	3432	EMA1,	EMAIF1	
3550	3451	EMA2,	EMAIF2	
3551	3464	EMA3,	EMAIF3	

/THE FOLLOWING LOCATIONS CONTAIN THE CONTENTS OF THE TAPE CASSETTE BOOTSTRAP

3552	4000	TABADD,	4000	/BOOTSTRAP WILL START LOADING INTO THIS ADDRESS
3553	7740		TABCMP=TABEND-1	
3554	1237	TABCMP,	1237	
3555	1206		1206	
3556	6704		6704	
3557	6706		6706	
3560	6703		6703	
3561	5204		5204	
3562	7264		7264	
3563	6702		6702	
3564	7610		7610	
3565	3211		3211	

3566	3636		3636	
3567	1205		1205	
3572	6704		6704	
3571	6706		6706	
3572	6701		6701	
3573	5216		5216	
3574	7002		7002	
3575	7430		7430	
3576	1636		1636	
3577	7022		7022	
3602	3636		3636	
3601	7420		7420	
3602	2236		2236	
3603	2235		2235	
3604	5215		5215	
3605	7346		7346	
3606	7002		7002	
3607	3235		3235	
3610	5201		5201	
3611	7737		7737	
3612	3557		3557	
3613	7730	TABEND,	7730	
3614	0000		0000	/TERMINATOR
3615	4304	BOOTB,	PTPAD	
3616	4346		OSKADD	
3617	3552		TABADD	
3620	1522		RXBADD	
3621	3623		RKBADD	
3622	0000		?	

/THE FOLLOWING LOCATIONS CONTAIN THE CONTENTS OF THE RKB BOOTSTRAP

3623	0023	RKBADD,	0023	/BOOTSTRAP WILL LOAD INTO THIS ADDRESS
3624	7771		RKBKMP=RKBEND-1	/NUMBER OF LOCATIONS TO COMPARE
3625	2200	RKBKMP,	2200	
3626	6745		6745	
3627	0023		0023	
3630	7640		7640	
3631	5024		5024	
3632	6743		6743	
3633	5031	RKBEND,	5031	
3634	0000		0000	/TERMINATOR

/THE FOLLOWING TEST CHECKS THE BOOTSTRAP TO LOAD AND TO COMPARE CORRECTLY

```

3635 4505 TEST21, SCOPLP /SETUP TEST COUNT AND SCOPE LOOPING ADDRESS
3636 1377 TAD (JMS I ATRST /SETUP LOCATIONS 0 AND 200
3637 3000 DCA INTSER
3641 1377 TAD (JMS I ATRST
3641 3776 DCA TEST1=1
3642 1375 TAD (NOBOOT /SET UP A LOCATION IN CASE LOGIC DID A AUTO RESTART
3643 3101 DCA ATRST /SAVE IT
3644 5247 JMP ,+3
3645 0000 NOBOOT, 0
3646 4503 ERROR /PROGRAM DID A AUTO-RESTART INSTEAD OF A BOOT
3647 6160 CLRMOD /CLEAR SIMULATOR TEST LOGIC
3652 4774 JMS SETUP /GO SETUP FOR BOOTSTRAPS
3651 1373 NTRBOT, TAD (BOTSEL /GET THE ADDRESS OF THE BOOT SELECT TABLE
3652 1355 TAD SIMBOT /GET THE BOOTSTRAP TO BE EXECUTED
3653 3357 DCA CONTW2 /SAVE THE ADDRESS OF BOOTSTRAP SELECT
3654 1372 TAD (BOTENA /GET THE ADDRESS OF THE BOOTSTRAP ENABLE BITS
3655 3360 DCA CONTW3 /SAVE THE ADDRESS OF BOOTSTRAP ENABLE CODE
3656 7346 CLA CLL CMA RTL /SETUP TO DO 3 BOOTSTRAP COMBINATIONS
3657 3362 DCA BTSUBT /SAVE SUB-TEST COUNT
3660 6160 BTTST1, CLRMOD /CLEAR SIMULATOR MODULE
3661 4771 JMS CLEARB /CLEAR BOOTSTRAP LOCATIONS IN MEMORY
3662 1022 TAD OP2SEL /CHECK FOR THE ACT LINE
3663 7710 SPA CLA /IS PROGRAM RUNNING ON ACT LINE?
3664 6305 6305 /YES, DISABLE ACT UNTIL BOOTSTRAP IS COMPLETED
3665 1757 TAD I CONTW2 /GET THE BOOTSTRAP SELECT ADDRESS
3666 6152 LOORG2 /LOAD SIMULATOR CONTROL REGISTER 2
3667 7300 CLA CLL
3672 1363 TAD BOOTR1 /GET BOOT STRAP RETURN ADDRESS FOR BOOT RETURN
3671 3761 DCA I ADD401 /PUT IT INTO LOCATION 401
3672 1760 TAD I CONTW3 /GET BOOTSTRAP ENABLING CODE
3673 6153 LOORG3 /LOAD SIMULATOR CONTROL REGISTER 3
3674 7300 CLA CLL
3675 6164 EXECUT /LOAD THE BOOTSTRAP
3676 5276 JMP . /PROGRAM FAILED TO BOOTSTRAP ON 1 OF THE FOLLOWING CONDITIONS
/0001 SW-SW ENABLE BOOT WHEN RUNNING
/0003 SW-SW ENABLE BOOT WHEN RUNNING
/0005 SW-SW ENABLE BOOT WHEN RUNNING
/CLEAR SIMULATOR LOGIC
/BOOTSTRAP SHOULD RETURN HERE VIA SIMULATOR
/CHECK FOR THE ACT LINE
/IS THE PROGRAM ON THE ACT LINE
/YES, ENABLE THE ACT LINE

3677 6160 ROTRT1, CLRMOD
3700 7301 CLA CLL IAC
3701 1022 TAD OP2SEL
3702 7510 SPA
3703 6305 6305
3704 7300 CLA CLL
3705 1355 TAD SIMBOT /GET THE BOOT BEING EXECUTED
3706 4770 JMS BOTCMP+2 /GO COMPARE THE BOOT THAT WAS LOADED
3707 2360 ISZ CONTW3 /ADD 1 TO THE BOOTSTRAP ENABLE ADDRESS
3710 2362 ISZ BTSUBT /DONE WITH THIS SUB TEST?
3711 5260 JMP BTTST1 /NO, DO NEXT ENABLING CONDITION
3712 4767 JMS GOODBD /SIGNAL ACT LINE IF SELECTED
3713 1114 TAD M5 /SETUP TO DO NEXT SUB TEST 5 TIMES
3714 3362 DCA BTSUBT /SAVE SUB-TEST COUNT
3715 6160 BTTST2, CLRMOD /CLEAR SIMULATOR MODULE
3716 4771 JMS CLEARB /CLEAR BOOTSTRAP LOCATIONS IN MEMORY

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3717 1022 TAD OP2SEL /CHECK FOR THE ACT LINE
3727 7710 SPA CLA /IS IT ON THE ACT LINE
3721 6305 6305 /YES, DISABLE ACT LINE UNTIL BOOT IS DONE
3722 1757 TAD I CONTW2 /GET THE BOOTSTRAP SELECT ADDRESS
3723 6152 LOORG2 /LOAD CONTROL REGISTER 2
3724 7300 CLA CLL
3725 1364 TAD BOOTR2 /GET BOOT RETURN ADDRESS FOR BOOT RETURN
3726 3761 DCA I ADD401 /PUT IT IN LOCATION 401
3727 1760 TAD I CONTW3 /GET BOOT STRAP ENABLE CODE
3730 6153 LOORG3 /LOAD CONTROL REGISTER 3
3731 7300 CLA CLL
3732 6164 EXECUT /LOAD THE BOOTSTRAP
3733 7602 HLT CLA /IF PROGRAM HALTED IT FAILED TO DO 1 OF FOLLOWING
/0011 SW-SW DISABLE BOOT WHEN RUNNING
/0032 POWER ON DISABLE BOOT WHEN RUNNING
/0013 SW-SW DISABLE BOOT WHEN RUNNING
/0033 POWER ON DISABLE BOOT WHEN RUNNING
/0015 SW-SW DISABLE BOOT WHEN RUNNING
/CLEAR SIMULATOR LOGIC

3734 6160 BOTRT2, CLRMOD
3735 7301 CLA CLL IAC
3736 1022 TAD OP2SEL
3737 7510 SPA
3740 6305 6305
3741 7300 CLA CLL
3742 1355 TAD SIMBOT /GET THE BOOTSTRAP BEING EXECUTED
3743 4770 JMS BOTCMP+2 /GO COMPARE THE BOOTSTRAP THAT WAS LOADED
3744 2360 ISZ CONTW3 /ADD 1 TO BOOTSTRAP ENABLE ADDRESS
3745 2362 ISZ BTSUBT /DONE WITH THE SUB-TEST ?
3746 5315 JMP BTTST2 /NO, DO NEXT ENABLING CODE
3747 4767 JMS GOODBD /SIGNAL ACT LINE IF SELECTED
3750 2355 ISZ SIMBOT /ADD 1 TO THE BOOTSTRAP SELECT
3751 2356 ISZ NTRBOT /DONE ALL 3 BOOTSTRAPS?
3752 5251 JMP NTRBOT /NO, GO DO NEXT BOOTSTRAP
3753 4504 LOOP /LOOP ON TEST IF SR = 1000
3754 5766 JMP TEST22 /GO TO THE NEXT TEST

3755 0000 SIMBOT, 0
3756 0000 NTRBOT, 0
3757 0000 CONTW2, 0
3760 0000 CONTW3, 0
3761 1401 ADD401, 0401
3762 0000 BTSUBT, 0

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/BOOTSTRAP RETURN ADDRESSES

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3763 3677 BOOTR1, ROTRT1
3764 3734 BOOTR2, BOTRT2

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3766 4041
3767 5100
3772 4402
3771 4463
3772 4155
3773 4150

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3774 4517
 3775 3645
 3776 0200
 3777 4501
 4000

PAGE

/THE CAPS8 CASSETTE BOOT STRAP WILL LOAD INTO THE FOLLOWING LOCATIONS,

4000	7402	CAPS8, HLT	/1237
4001	7402	HLT	/1206
4002	7402	HLT	/6704
4003	7402	HLT	/6706
4004	7402	HLT	/6703
4005	7402	HLT	/5204
4006	7402	HLT	/7264
4007	7402	HLT	/6702
4010	7402	HLT	/7610
4011	7402	HLT	/3211
4012	7402	HLT	/3636
4013	7402	HLT	/1205
4014	7402	HLT	/6704
4015	7402	HLT	/6706
4016	7402	HLT	/6701
4017	7402	HLT	/5216
4020	7402	HLT	/7002
4021	7402	HLT	/7430
4022	7402	HLT	/1636
4023	7402	HLT	/7022
4024	7402	HLT	/3636
4025	7402	HLT	/7420
4026	7402	HLT	/2236
4027	7402	HLT	/2235
4030	7402	HLT	/2235
4031	7402	HLT	/5215
4032	7402	HLT	/7346
4033	7402	HLT	/7002
4034	7402	HLT	/3235
4035	7402	HLT	/5201
4036	7402	HLT	/7737
4037	7402	HLT	/3557
4040	7402	HLT	/7730
			/TERMINATOR

 /TEST 22 CHECKS THAT THE AUTO RESTART OCCURS AT THE APPROPRIATE ADDRESS, THIS
 /TEST USES THE SIMULATOR TO SELECT AND CAUSE A AUTO RESTART,

4041	4505	TEST22, SCOPLP	/SETUP TEST AND SCOPE LOOP ADDRESS
4042	1377	TAD (JMS I ATRST	/SETUP LOCATIONS 0 AND 200
4043	3000	DCA INTSER	/
4044	1377	TAD (JMS I ATRST	/

4045	3776	DCA TEST1=1	/
4046	1375	TAD (RSTAUT	/GET THE AUTO RESTART ADDRESS
4047	3131	DCA ATRST	/SAVE IT
4050	1374	TAD (NOAUTO	/GET BOOT STRAP ADDRESS
4051	3653	DCA I	
4052	5255	JMP	,+2
4053	4001	JMP	,+3
4054	4503	(NOAUTO, ERROR	
4055	4773	JMS SETUP	/LOGIC DID A BOOT INSTEAD OF A AUTO RESTART
4056	6160	AJTTST, CLRMOD	/GO SETUP FOR TEST
4057	1372	TAD (RESADD	/CLEAR SIMULATOR MODULE
4060	1334	TAD AUTSEL	/GET THE ADDRESS OF AUTO RESTART TABLE
4061	3335	DCA ADDRES	/GET THE PROGRAM AJTO = RESTART TO BE EXECUTED
4062	1371	TAD (SELAUT	/SAVE THE TABLE ADDRESS
4063	1334	TAD AUTSEL	/GET THE CONTROL WORD 2 TABLE ADDRESS
4064	3336	DCA CONW2	/ADD IN THE RESTART TO BE EXECUTED
4065	1022	TAD OP2SEL	/SAVE THIS ADDRESS TO GET THE CONTROL WORD
4066	7710	SPA CLA	/CHECK TO SEE IF PROGRAM IS ON ACT LINE
4067	6305	TAD I CONW2	/DISABLE ACT LINE UNTIL AUTO RESTART IS DONE
4070	1736	LODRG2	/GET THE CONTROL WORD
4071	6152	CLA	/LOAD CONTROL REGISTER 2
4072	7300	CLA AUTENA	
4073	1347	TAD	
4074	6153	LODRG3	/GET THE ENABLE CONTROL WORD
4075	7300	CLA	/LOAD CONTROL REGISTER 3
4076	5164	EXECUT	
4077	7602	HLT CLA	/EXECUTE A AUTO RESTART
4100	5256	JMP AUTTST	/SHOULD DO A AUTO RESTART HERE-PRESS CONT FOR RETRY
4101	0000	RSTAJT, 0	/RETRY
4102	6160	CLRMOD	/A AUTO RESTART SHOULD COME HERE
4103	7301	CLA CLL IAC	/CLEAR SIMULATOR LOGIC
4104	1022	TAD OP2SEL	/SET BIT 11 TO A ONE
4105	7510	SPA	/CHECK FOR THE ACT LINE
4106	6305	6305	/IS IT RUNNING ON ACT LINE
4107	7340	CLA CLL CMA	/YES, ENABLE ACT LINE
4110	1301	TAD RSTAUT	/SET THE AC TO MINUS 1
4111	7041	CIA	/GET THE PC FROM THE AUTO RESTART
4112	1735	TAD I ADDRES	/NEGATE IT
4113	7650	SNA CLA	/GET THE EXPECTED AUTO RESTART PC
4114	5325	JMP GODAUT	/ARE THEY EQUAL?
4115	4503	ERROR	/YES GO DO NEXT ADDRESS
			/EXPECTED AUTO RESTART ADDRESS NOT EQUAL TO
			/RETURN ADDRESS, PRESS CONT TO GET EXP AND ACT ADDRESS
4116	1735	TAD I ADDRES	/
4117	7402	HLT	/AC EQUALS EXPECTED AUTO RESTART ADDRESS
4120	7340	CLA CLL CMA	
4121	1301	TAD RSTAUT	/
4122	7402	HLT	/AC EQUALS ACTUAL AUTO RESTART ADDRESS
4123	7200	CLA	
4124	5256	JMP	/
4125	2334	GODAJT, ISZ	/DO SAME RESTART OVER AGAIN
4126	2333	ISZ	/ADD 1 TO PROGRAM SELECT RESTART
4127	5256	JMP	/DONE ALL FOUR AUTO RESTARTS?
4130	4770	JMS	/NO, GO DO NEXT ONE
4131	4504	LOOP	/SIGNAL ACT LINE OF A GOOD PASS IF ON IT
4132	5767	JMP	/LOOP ON TEST IF SR = 1000
			TEST23

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4133 0000 AJTONT, 0
4134 0000 AJTSEL, 0
4135 0000 ADDRES, 0
4136 0000 CONW2, 0

4137 4200 RESADD, 4200
4140 2000 2000
4141 2200 2200
4142 0000 0000

4143 1256 SELAUT, 1256 /AUTO RESTART AT 4200
4144 1254 1254 /AUTO RESTART AT 2000
4145 1252 1252 /AUTO RESTART AT 2200
4146 1250 1250 /AUTO RESTART AT 0000

4147 0037 AJTENA, 0037 /POWER ON TRIGGERED AUTO RESTART

/CONTROL WORD 2 BOOTSTRAP SELECT

4150 1672 BOTSEL, 1672 /HI-LOW PAPER TAPE SELECT
4151 2522 2522 /RF00/DF320 BOOTSTRAP SELECT

4152 0422 0422 /TAPE CASSETTE BOOTSTRAP SELECT
4153 1132 1132 /RFX FLOPPY BOOTSTRAP SELECT
4154 1252 1252 /RKB-E BOOTSTRAP SELECT

/CONTROL WORD 3 BOOTSTRAP ENABLES (POWER ON OR SWITCH SW)

4155 0001 BOTENA, 0001 /SW-SW ENABLE BOOT WHEN RUNNING
4156 0003 0003 /SW-SW ENABLE BOOT WHEN RUNNING
4157 0007 0007 /SW-SW ENABLE BOOT WHEN RUNNING
4160 0011 0011 /SW-SW DISABLE BOOT WHEN RUNNING
4161 0032 0032 /POWER ON DISABLE BOOT WHEN RUNNING
4162 0013 0013 /SW-SW DISABLE BOOT WHEN RUNNING
4163 0033 0033 /POWER ON DISABLE BOOT WHEN RUNNING
4164 0017 0017 /SW-SW DISABLE BOOT WHEN RUNNING

4167 4201
4170 5100
4171 4143
4172 4137
4173 4517
4174 4054
4175 4101
4176 0200
4177 4501
4200

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/TEST 23- USES THE SIMULATOR TO CHECK THAT AC LOW AND BATTERY EMPTY F/F'S
/CAV SKIP AND INTERRUPT AND THAT THEY CAN BE CLEARED.

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/*****
4200 4501 JMS I ATRST /AUTO RESTART HANDLER
4201 4505 TEST23, SCOPLP /SETUP TEST AND SCOPE LOOP ADDRESS
4202 1377 TAD (ACLBAT
4203 3101 DCA ATRST
4204 6007 CAF /CLEAR ALL FLAGS
4205 6160 CLRMOD /CLEAR SIMULATOR MODULE
4206 6101 SBE /SKIP ON BATTERY EMPTY
4207 7410 SKP
4210 4503 ERROR /BATTERY EMPTY IS SET
4211 6102 SPL /SKIP ON AC LOW
4212 7410 SKP
4213 4503 ERROR /AC LOW F/F IS SET
4214 7332 CLA CLL CXL RTR /GET CONTROL BIT FOR BATTERY EMPTY
4215 6153 LODRG3 /LOAD SIMULATOR REGISTER 3
4216 6001 ION /TURN THE INTERRUPT ON
4217 5220 JMP +1
4220 4503 ERROR /BATTERY EMPTY NOT SET OR FAILED TO INTERRUPT
4221 4503 ERROR /AC LOW OR LEVEL IS TRUE
4222 6102 SPL /SKIP ON AC LOW
4223 7410 SKP
4224 4503 ERROR /AC LOW SET-SHOULD ONLY BE BAT EMPTY
4225 1257 TAD K1300 /GET THE CONTROL BIT FOR AC LOW
4226 6153 LODRG3 /LOAD SIMULATOR REGISTER 3
4227 7200 CLA /NOW SET AC LOW HIGH TO CLEAR BAT EMPTY
4230 6153 LODRG3 /AND TO LEAVE AC LOW F/F SET
4231 6001 ION /TURN THE INTERRUPT ON
4232 5233 JMP +1 /GO INTERRUPT ON AC LOW F/F
4233 4503 ERROR /AC LOW F/F NOT SET OR FAILED TO INTERRUPT
4234 7610 SKP CLA
4235 4503 ERROR /AC F/F NOT SET AND AC LOW FAILED TO CLEAR
/BATTERY EMPTY
/SKIP ON AC LOW F/F

4236 6102 SPL
4237 7410 SKP
4240 4503 ERROR /CAL IN INT SERVICE FAILED TO CLEAR AC F/F
4241 6101 SBE /SKIP ON BATTERY EMPTY
4242 7610 SKP CLA
4243 4503 ERROR /AC LOW GOING HIGH FAILED TO CLEAR BAT EMPTY
4244 1257 TAD K1300 /GET THE AC LOW BIT
4245 6153 LODRG3 /LOAD SIMULATOR
4246 6007 CAF /CLEAR ALL FLAGS
4247 6102 SPL /SKIP ON AC LOW AS A LEVEL
4250 4503 ERROR /AC LOW AS A LEVEL FAILED TO SKIP
4251 6153 LODRG3 /RELEASE AC LOW
4252 6102 SPL /SKIP ON AC LOW
4253 7410 SKP
4254 4503 ERROR /CAF FAILED TO CLEAR AC LOW
4255 4504 LOOP /LOOP ON TEST IF SR = 1000
4256 5510 JMP I PASEND /END OF PROGRAM
4257 1000 K1000, 1000

```

/ATINDIS - IS AN OPERATOR INTERVENTION TEST, THE OPERATOR MUST SET THE

/TIME SHARE ENABLE SWITCH TO THE TIME SHARE DISABLE POSITION, THE PROGRAM
 /TRIES TO SET THE USER FLAG AND CHECKS THAT LAS, OSR, IOT, AND HALT
 /DO NOT TRAP AND THAT HLT HALTS,
 /*****

4260	4505	TIMDIS, SCOPL		
4261	6007	CAF		/SETUP TEST AND SCOPE LOOPING ADDRESS
4262	6264	CUF		/CLEAR ALL FLAGS
4263	6204	CINT		/CLEAR USER BUFFER F/F
4264	6001	ION		/CLEAR USER INTERRUPT F/F
4265	6274	SUF		/TURN THE INTERRUPT ON
4266	5267	JMP	+1	/TRY TO SET THE USER BUFFER F/F
4267	7404	OSR		/TRY TO ENTER TIME SHARE MODE
4270	7610	SKP	CLA	/SHOULD TRAP HERE IF TIME SHARE NOT DISABLED
4271	4503	ERROR		
4272	7604	LAS		/TIME SHARE NOT DISABLED=PROGRAM INTERRUPTED
4273	7610	SKP	CLA	/SHOULD TRAP HERE IF TIME SHARE NOT DISABLED
4274	4503	ERROR		
4275	6254	SINT		/LAS TRAPPED WITHOUT TIME SHARE ENABLED
4276	7610	SKP	CLA	/SKIP ON USER INTERRUPT
4277	4503	ERROR		
4300	7402	HLT		/IOT TRAPPED OR USER INTERRUPT SET
				/PROGRAM SHOULD HALT HERE FOR COMPLETION
4301	7610	SKP	CLA	/OF TIME SHARE DISABLE TEST
4302	4503	ERROR		
4303	5260	JMP	TIMDIS	/HLT TRAPPED
				/RETRY THE TEST

/THE FOLLOWING LOCATIONS CONTAINS THE CONTENTS OF THE HI-LOW PAPER TAPE
 /BOOTSTRAP

4304	7737	PTPADU, 7737		
4305	7741	PTPCMP=PTPEND=1		/BOOTSTRAP WILL START LOADING INTO THIS ADDRESS
4306	6214	PTPCMP, 6014		/NUMBER OF LOCATIONS TO COMPARE
4307	3376			
4310	7326			
4311	1337			
4312	2376			
4313	5341			
4314	6011			
4315	5356			
4316	3361			
4317	1361			
4320	3371			
4321	1345			
4322	3357			
4323	1345			
4324	3367			
4325	6032			
4326	6031			
4327	5357			
4332	6036			
4331	7106			
4332	7006			

4333	7510	7510		
4334	5374	5374		
4335	7006	7006		
4336	6031	6031		
4337	5367	5367		
4340	6034	6034		
4341	7420	7420		
4342	3776	3776		
4343	3376	3376		
4344	5356	PTPEND, 5356		
4345	0000	0000		/TERMINATOR

/THE FOLLOWING LOCATIONS CONTAINS THE CONTENTS OF THE RF08/DF32D BOOTSTRAP

4346	7750	DSKADD, 7750		
4347	7773	RFDFCP=RFDFED=1		/BOOTSTRAP WILL START LOADING INTO THIS ADDRESS
4350	7602	RFDFCP, 7602		/NUMBER OF LOCATIONS TO COMPARE
4351	6603			
4352	6622			
4353	5352			
4354	5752	RFDFED, 5752		
4355	0000	0000		/TERMINATOR

4377 5156
 4400 PAGE

 /TO RUN THE OPERATOR INTERVENTION BOOT STRAP COMPARE TEST, DO THE FOLLOWING:
 /1. RUN CLRBOOT TO CLEAR THE BOOTSTRAP LOCATIONS IN MEMORY
 /2. DISABLE ALL OPTIONS ASSOCIATED WITH THE BOOTSTRAP
 /3. SET THE APPROPRIATE SELECT AND ENABLE SWITCHES FOR THE BOOTSTRAP
 /4. SET THE HALT KEY
 /5. TOGGLE THE BOOT KEY OR SWITCH
 /6. START THE BOOT COMPARE TEST (BOOTCMP)
 /7. THE PROGRAM WILL HALT
 /8. SET THE APPROPRIATE SWITCH REGISTER OR PSEUDO SWITCH REGISTER
 / TO THE BOOTSTRAP TO COMPARE AND PRESS CONTINUE,
 / SR=0000=HI-LOW PAPER TAPE READER BOOTSTRAP
 / SR=0001=RF08/DF32D BOOTSTRAP
 / SR=0002=TABE CASSETTE BOOTSTRAP
 / SR=0003=RX8E FLOPPY BOOTSTRAP
 / SR=0004=RK8E BOOTSTRAP
 /9. THE PROGRAM SHOULD HALT AT ADDRESS BOOTOK IF NO ERRORS

4400	7402	BOOTCMP, HLT		
4401	5204	JMP	+3	/SET THE SR FOR THE APPROPRIATE BOOTSTRAP COMPARE
4402	0000			
4403	5213	JMP	+10	/SIMULATOR BOOTSTRAP CHECK ENTERS HERE
4404	1021	TAD	OP1SEL	
4405	7700	SMA	CLA	/GET THE HARDWARE OPTIONS
4406	5211	JMP	+3	/IS THE HARDWARE SR BIT SET
4407	7604	LAS		/NO, USE THE PSEUDO SWITCH REGISTER
				/USE THE HARDWARE SWITCH REGISTER

```

4410 7410 SKP
4411 1020 TAD SWITCH /GET THE PSEUDO SWITCH REGISTER
4412 1140 AND K7 /MASK OFF BITS 9-11
4413 1377 TAD (BOOTTB /ADD IT TO THE BOOTSTRAP TABLE ADDRESS
4414 3366 DCA SAVSTR /SAVE IT
4415 1766 TAD I SAVSTR /GET THE ADDRESS FROM THE TABLE
4416 3367 DCA BOTADD /SAVE IT
4417 1767 TAD I BOTADD /GET THE BOOTSTRAP STARTING ADDRESS
4422 3370 DCA BOTSAD /THIS IS THE BOOTSTRAP STARTING ADDRESS
4421 2367 ISZ BOTADD
4422 1767 TAD I BOTADD /GET THE WORD COUNT
4423 3371 DCA BOTCNT /SAVE IT
4424 2367 ISZ BOTADD /BOTADD IS THE STARTING ADDRESS OF BOOT COMPARE
4425 1770 COMPAR, TAD I BOTSAD /GET THE CONTENTS THAT BOOTSTRAP LOADED
4426 7041 CIA /NEGATE IT
4427 1767 TAD I BOTADD /GET THE EXPECTED BOOTSTRAP CONTENTS
4431 7650 SNA CLA /ARE THEY EQUAL
4431 5243 JMP GOODCP /YES, GO GET NEXT WORD
4432 4503 ERROR /BOOTSTRAP COMPARE ERROR, PRESS "CONT" TO
/GET BAD PC, GOOD CONTENTS, AND BAD CONTENTS
/GET BOOTSTRAP ADDRESS THAT WAS BAD
/AC=THE ADDRESS THAT DIDN'T COMPARE

4433 1370 TAD BOTSAD
4434 7402 HLT
4435 7200 CLA
4436 1767 TAD I BOTADD /AC=EXPECTED CONTENTS OF BOOTSTRAP
4437 7402 HLT
4442 7200 CLA
4441 1770 TAD I BOTSAD /AC=ACTUAL CONTENTS OF BOOTSTRAP
4442 7402 HLT
4443 7300 GOODCP, CLA CLL
4444 2370 ISZ BOTSAD
4445 7000 NOP
4446 2367 ISZ BOTADD
4447 7000 NOP
4451 2371 ISZ BOTCNT /END OF COMPARE
4451 5225 JMP COMPAR /NO, GO GET NEXT WORD
4452 1767 TAD I BOTADD /CONTINUE FOR TCOB
4453 7440 SZA
4454 5220 JMP COMPAR-5 /GET HARDWARE OPTIONS
4455 1021 TAD CP1SEL
4456 1144 AND K203
4457 7640 SZA CLA /WAS THE SIMULATOR BEING USED
4461 7402 JMP I BOTCMP+2 /YES, RETURN TO SIMULATOR BOOTSTRAP CHECK
4462 5200 BOOTOK, HLT /BOOT STRAP COMPARED OK
JMP BOTCMP /DO AGAIN

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 /THE FOLLOWING SECTIONS WILL CLEAR THE LOCATIONS THAT THE BOOT STRAP WILL LOAD INTO.
 /THIS SHOULD BE DONE BEFORE EACH BOOTSTRAP IS ATTEMPTED.
 /*****

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4463 0000 CLEARB, ? /SIMULATOR ENTERS HERE
4464 7610 SKP CLA
4465 4317 CLRBOT, JMS SETUP /GET MEMORY SIZE TO SEE WHAT BOOTS TO CLEAR
4466 1365 TAD BOTCLR /GET THE NUMBER TO START CLEARING BOOT
4467 1377 TAD (BOOTTB /GET THE ADDRESS OF BOOT STRAP TABLE

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4470 3366 DCA SAVSTR /SAVE IT
4471 1766 TAD I SAVSTR /GET THE ADDRESS FROM TABLE
4472 7450 SNA /END OF CLEARING BOOTSTRAP LOCATIONS
4473 5311 JMP BOTEND /SAVE IT
4474 3367 DCA BOTADD /GET THE BOOTSTRAP STARTING ADDRESS
4475 1767 TAD I BOTADD /SAVE IT
4476 3370 DCA BOTSAD
4477 2367 ISZ BOTADD
4500 1767 TAD I BOTADD /GET THE WORD COUNT
4501 3371 DCA BOTCNT /SAVE IT
4502 3770 DCA I BOTSAD
4523 2370 ISZ BOTSAD
4524 7000 NOP
4525 2371 ISZ BOTCNT
4526 5302 JMP ,=4
4527 2366 ISZ SAVSTR
4528 5271 JMP CLRBOT+4
4511 1021 BOTEND, TAD CP1SEL
4512 1144 AND K203
4513 7640 SZA CLA /RETURN TO SIMULATOR BOOTSTRAP TEST
4514 5663 JMP I CLEARB /END OF CLEARING BOOTSTRAPS
4515 7402 HLT /DO IT AGAIN
4516 5265 JMP CLRBOT

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4517 0000 SETJP,
4521 3776 DCA AUTSEL
4522 3775 DCA SIMBOT
4523 1021 TAD CP1SEL /GET THE HARDWARE CONFIGURATION
4524 7104 CLL HAL /MOVE FIELD BITS INTO BITS 6-8
4525 1142 AND K70 /MASK OUT FIELD BITS
4526 7650 SNA CLA /IS MEMORY SIZE GREATER THAN 4K
4527 5341 JMP SETJP2 /NO, GO GET THE MEMORY SIZE
4528 3775 DCA SIMBOT /YES THAN DO ALL BOOT'S
4529 1775 TAD SIMBOT /GET BOOTSTRAP SELECT
4531 1114 TAD M5 /SUBTRACT 5
4532 3774 DCA CNTBOT /SAVE IT
4533 1775 TAD SIMBOT /GET BOOT NUMBER
4534 3365 DCA BOTCLR /SAVE IT
4535 1776 TAD AUTSEL /GET AUTO RESTART SELECT
4536 1113 TAD *4
4537 1773 DCA AUTCNT /SAVE THE NUMBER OF AUTO'S TO DO
4541 5717 JMP I SETJP /RETURN TO DO BOOT OR AUTO=RESTART
4542 1021 SETJP2, TAD CP1SEL /GET THE HARDWARE CONFIGURATION
4543 1372 AND KK3 /MASK OFF FIELD 3 MEMORY SIZE
4544 5354 JMP SET1K /IS IT 1K OF MEMORY
4545 1111 TAD M1 /YES, SETUP TO DO 2 BOOTS OR 2 AUTO=RESTART
4546 7450 SNA /SUBTRACT 1
4547 5362 JMP SET2K /IS IT 2K OF MEMORY
4550 1111 TAD M1 /YES, DO TWO BOOTS AND 3 AUTO'S
4551 7650 SNA CLA /SUBTRACT 1
4552 5363 JMP SET3K /IS IT 3K OF MEMORY
/YES, SETUP TO DO 3 BOOTS AND 4 AUTO'S

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4553 5327      JMP      SETUP1
4554 7305      SET1K,  CLA CLL IAC RAL      /MUST BE 4K OF MEMORY=00 ALL
4555 3776      DCA      AUTSEL
4556 7325      CLA CLL CML IAC RAL
4557 5327      JMP      SETUP1
4560 7301      SET2K,  CLA CLL IAC
4561 3776      DCA      AUTSEL
4562 5356      JMP      ,=4
4563 7305      SET3K,  CLA CLL IAC RAL
4564 5327      JMP      SETUP1

4565 0000      BOTCLR, 0
4566 0000      SAVSTR, 0
4567 0000      BOTADD, 0
4570 0000      BOTSAD, 0
4571 0000      BOTCNT, 0
4572 0003      KK3, 3

4573 4133
4574 3756
4575 3755
4576 4134
4577 3615
4600
    
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PAGE

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/*****
/AUTO = IS AN OPERATOR INTERVENTION TEST TO CHECK POWER=FAIL/AUTO=RESTART.
/WHEN THE PROGRAM IS STARTED, IT FILLS LOCATIONS 5200 TO 7777 (4K) OR 5200 TO 5777 (3K) WITH A
/COMPLEMENTING DATA PATTERN (5252 = 2525), AND THEN HALTS, THE OPERATOR
/AT THIS TIME MUST SET THE APPROPRIATE AUTO RESTART SWITCHES ON THE
/MODULE, HE THEN MUST SIGNIFY TO THE PROGRAM VIA FRONT PANEL SWITCH
/REGISTER OR THE PSEUDO SWITCH REGISTER, WHICHEVER IS SELECTED, THE
/AUTO RESTART TO BE TESTED (0000=RESTART AT 4200; 0001=RESTART AT 2000;
/0002=RESTART AT 0200; 0003=RESTART AT 0000), THE OPERATOR THEN PRESSES
/"CONTINUE", THE PROGRAM THEN STARTS COMPARING DATA, WAITING FOR THE
/OPERATOR TO PULL THE LINE CORD, WHEN THE AC LINE CORD IS PULLED, THE
/PROGRAM SHOULD HALT AT LOCATION ACDOWN, THE OPERATOR SHOULD THEN PLUG
/THE LINE CORD BACK IN, AT THIS TIME THE PROGRAM SHOULD DO A AUTO RESTART
/TO THE ADDRESS SELECTED, THE PROGRAM THEN CHECKS FOR THE CORRECT
/AUTO RESTART AND THEN GOES BACK TO COMPARING DATA, THE ABOVE SEQUENCE
/OF UNPLUGGING AND PLUGGING LINE CORD SHOULD BE DONE SEVERAL TIMES FOR EACH
/AUTO RESTART.
///WARNING-THE BATTERY SUPPLY SHOULD BE FULLY CHARGED////////
/*****
    
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4600 4505      AUTO,  SCOPLP      /SETUP TEST AND SCOPE LOOP ADDRESS
4601 5007      CAF          /CLEAR ALL FLAGS
4602 1021      TAD          OP1SEL      /GET THE HARDWARE CONFIGURATION
    
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4603 144      AND      K200
4604 7640     SZA      CLA
4605 6150     CLRMOD
4606 1377     TAD      (OPRINT
4607 3101     DCA      AUTRST      /SIMULATOR SELECTED CLEAR TEST MODULE
4610 1376     TAD      (BUFFER      /GET THE ADDRESS FOR THE INTERRUPT ROUTINE
4611 3313     DCA      FILLIT      /SAVE IT
4612 1221     TAD      OP1SEL      /GET THE ADDRESS OF TEST BUFFER
4613 352      AND      K34      /SAVE IT
4614 7640     SZA      CLA      /GET HARDWARE CONFIGURATION
4615 5222     JMP      ,+5      /CHECK TO SEE IF MORE THAN 4K
4616 1021     TAD      OP1SEL      /IS IT GREATER, THEN 4K?
4617 353      AND      K1      /YES, THAN FIELD 0 EQUALS 4K
4620 7650     SNA      CLA      /NO, THAN IT MUST BE 3K OR 4K
4621 7332     CLA CLL CML RTR      /CHECK FOR 3K OR 4K
4622 1376     TAD      (BUFFER      /IS IT 3K OR 4K?
4623 3314     DCA      BUFCNT      /ONLY 3K ADD 2000 TO COUNTER
4624 1314     TAD      BUFCNT
4625 3315     DCA      CNTBUF      /GET THE NUMBER OF WORDS TO FILL THE BUFFER
4626 1317     TAD      K5252      /SAVE IT
4627 3316     DCA      BUFPAT      /THE FIRST WORD IN THE BUFFER WILL BE 5252
4630 1316     TAD      BUFPAT      /SAVE THE WORD
4631 3713     DCA I FILLIT      /GET THE WORD
4632 1316     TAD      BUFPAT      /PUT IT IN THE BUFFER
4633 7040     CMA          /GET THE WORD
4634 3316     DCA      BUFPAT      /COMPLEMENT IT
4635 2313     ISZ      FILLIT      /INCREMENT BUFFER ADDRESS
4636 2315     ISZ      CNTBUF      /DONE?
4637 5232     JMP      ,=7      /NO KEEP FILLING THE BUFFER
4640 7402     HLT
4641 1021     TAD      OP1SEL      /SET THE SWITCH REGISTER OR PSEUDO S,R
4642 7500     SMA          /TO THE AUTO-RESTART TO BE EXECUTED
4643 5246     JMP      ,+3      /GET THE HARDWARE CONFIGURATION
4644 7604     LAS          /IS THE HARDWARE S,R, BEING USED
4645 7410     SKP
4646 1020     TAD      SWITCH
4647 320     AND      K3      /NO USE THE PSEUDO SWITCH REGISTER
4650 1375     TAD      (RESADD      /MASK OFF BITS 17 AND 11
4651 5321     DCA      MANRST      /ADD THE AUTO RESTART TABLE ADDRESS TO IT
4652 1721     TAD I MANRST      /SAVE IT
4653 3321     DCA      MANRST      /GET THE AUTO RESTART TO BE EXECUTED
4654 1376     STRCMP, TAD (BUFFER      /SAVE IT FOR COMPARISON AFTER RESTART
4655 3313     DCA      FILLIT      /GET THE BUFFER ADDRESS
4656 1314     TAD      BUFCNT      /SAVE IT
4657 3315     DCA      CNTBUF      /GET THE BUFFER SIZE
4660 1317     TAD      K5252      /SAVE IT
4661 3316     DCA      BUFPAT      /SETUP INITIAL PATTERN
4662 0001     CMPBUF, ION      /TURN THE INTERRUPT ON
4663 1713     TAD I FILLIT      /GET THE WORD FROM BUFFER
4664 7041     CIA          /NEGATE IT
4665 1316     TAD      BUFPAT      /GET THE WORD EXPECTED
4666 7650     SNA      CLA
4667 5303     JMP      BUFGOD      /WORD COMPARED GO INCREMENT COUNTER
4670 4503     ERROR      /DATA WORDS DID'NT COMPARE= PRESS
    
```

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4671 1313 TAD FILLIT /"CONT" FOR ADDRESS AND GOOD AND BAD DATA
4672 7402 HLT /
4673 7300 CLA CLL /AC=BUFFER ADDRESS WHERE ERROR WAS DETECTED
4674 1316 TAD BUFPAT
4675 7402 HLT /AC = GOOD DATA WORD
4676 7300 CLA CLL
4677 1713 TAD I FILLIT
4700 7402 HLT /AC = BAD DATA WORD - PRESS "CONT" TO
4701 7300 CLA CLL /RETRY THE COMPLETE TEST
4702 5502 JMP I TEST /DO THE TEST OVER
4703 1316 BUFGOD, TAD BUFPAT /GET THE DATA PATTERN
4704 7040 CMA /NEGATE IT
4705 3316 DCA BUFPAT /SAVE IT FOR NEXT COMPARE
4706 2313 ISZ FILLIT /INCREMENT ADDRESS TO COMPARE
4707 7000 NOP /THIS IS NEEDED FOR ISZ OVERFLOW
4710 2315 ISZ CNTBUF /DONE COMPLETE BUFFER?
4711 5262 JMP CMPBUF /NO CONTINUE
4712 5254 JMP STRCMP /RE-INITIALIZE COMPARE LOOP AND COMPARE

4713 0000 FILLIT, 0
4714 5200 BUFCNT, 5200-7777-1
4715 0000 CNTBUF, 0
4716 0000 BUFPAT, 0
4717 5252 K5252, 5252
4720 0003 K3, 3
4721 0000 MANRST, 0

4722 0000 OPRRET, 0 /PROGRAM COMES HERE FROM AN AUTO RESTART
4723 7340 CLA CLL CMA
4724 1322 TAD OPRRET /GET THE ADDRESS FROM AUTO RESTART
4725 7041 CIA /NEGATE IT
4726 1321 TAD MANRST /GET EXPECTED RESTART
4727 7650 SNA CLA /ARE THEY EQUAL?
4730 5337 JMP RESET /YES RESET AC AND LINK AND RETURN TO COMPARE
4731 4503 ERROR /THE AUTO RESTART ADDRESS SELECTED BY
/OPERATOR DOES NOT COMPARE WITH AUTO
/AUTO RESTART THAT RETURNED, PRESS "CONT"
/FOR EXPECTED AND ACTUAL RETURN ADDRESS
/GET THE EXPECTED AUTO RESTART ADDRESS
/AC = EXPECTED AUTO RESTART ADDRESS

4732 1321 TAD MANRST
4733 7402 HLT
4734 7340 CLA CLL CMA
4735 1322 TAD OPRRET /GET ACTUAL
4736 7402 HLT /AC = ADDRESS RETURNED FROM AUTO RESTART
4737 7300 RESET, CLA CLL
4740 1377 TAD (OPRINT /SETUP RETURN ADDRESS FOR POWER FAIL
4741 3121 DCA AUTRST /SAVE IT
4742 1774' TAD PC
4743 3351 DCA RETPRG
4744 1773' TAD LINK /GET THE LINK
4745 7004 RAL /PUT IT IN THE LINK
4746 1064 TAD DATREC /GET THE AC
4747 6001 ION /TURN THE INTERRUPT ON
4750 5751 JMP I RETPRG

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4751 0000 RETPRG, 2
4752 0034 K34, 34
4753 0201 K1, 1

4754 0000 OPRINT, 2 /OPERATOR INTERVENTION AUTO RESTART
4755 1372 TAD (JMS I AUTRST
4756 3000 DCA INTSER
4757 1372 TAD (JMS I AUTRST
4760 3771' DCA TEST1-1
4761 1370 TAD OPRRET /SETUP FOR A AUTO RESTART
4762 3101 DCA AUTRST
4763 7402 ACQDWN, HLT /WAIT FOR LINE CORD TO BE PLUGGED IN
4764 5502 JMP I TEST /RETRY TEST

4770 4722
4771 0200
4772 4501
4773 5252
4774 5051
4775 4137
4776 5200
4777 4754
5010 PAGE

5000 0000 ACTLIN, 2
5001 1022 TAD OP2SEL
5002 7700 SMA CLA /IS THE PROGRAM RUNNING ON ACT LINE?
5003 5600 JMP I ACTLIN /NO, RETURN
5004 1066 TAD FLDLIM /GET THE FIELD LIMIT
5005 1131 TAD #73
5006 7640 SZA CLA /IS THE FIELD LIMIT EQUAL TO FIELD 7?
5007 5600 JMP I ACTLIN /NO, RETURN TO TEST
5010 1067 TAD UPERLM /GET THE UPPER ADDRESS LIMIT
5011 7001 IAC /ADD 1 TO IT
5012 7640 SZA CLA /WAS IT 777?
5013 5600 JMP I ACTLIN /NO, RETURN
5014 7352 CLA CLL CMA RTR /SET LAST ADDRESS = 5777
5015 3067 DCA UPERLM /SAVE IT
5016 5600 JMP I ACTLIN /RETURN TO PROGRAM

5017 1022 ENDPAS, TAD OP2SEL /CHECK FOR ACT LINE
5020 7700 SMA CLA /IS THE PROGRAM RUNNING ON ACT LINE
5021 5234 JMP ENDING /NO GO CHECK FOR SR 3 TO HALT AT END OF A PASS
5022 1021 TAD OP1SEL /GET THE HARDWARE CONFIGURATION
5023 0144 AND K200 /CHECK FOR THE SIMULATOR

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5024	7640	SZA	CLA		/WAS THE SIMULATOR SELECTED
5025	5234	JMP	ENDING		/YES, ALREADY NOTIFIED PROM OF GOOD PAS
5026	2241	ISZ	PRGPAS		/CHECK 1/2 SECOND COUNT
5027	5234	JMP	ENDING		/NOT 1/2 SECOND YET
5030	1377	TAD	(=144		/RESET THE COUNTER
5031	3241	DCA	PRGPAS		
5032	6272	CIF	70		
5033	4500	JMS	I	GOODPS	/CHANGE INSTRUCTION FIELD TO 7
5034	4340	ENDING,	JMS	SWCHK	/SIGNAL THE PROM
5035	7006	RTL			/CHECK SR 3 TO HALT ON A PROGRAM PASS
5036	7004	RAL			
5037	4776	JMS		XORCHK	/GO CHECK FOR XOR BIT
5040	5775	JMP		0201	/RESTART THE PROGRAM
5041	7634	PRGPAS,		-144	
5042	7010	POWFAL,	RAR		
5043	3250	DCA	LINK		
5044	1000	TAD	INTSER		
5045	3251	DCA	PC		
5046	6103	CAL			/CLEAR AC LOW F/F
5047	4501	JMS	I	AUTRST	/RETURN TO THE PROGRAM
5050	0000	LINK,	0		
5051	0000	PC,	0		
5052	0000	PRGRST,	0		
5053	6102	SPL			/SKIP ON AC LOW AS A LEVEL
5054	7610	SKP	CLA		
5055	5253	JMP	,+2		
5056	5502	JMP	I	TEST	/RETURN TO TEST BEING EXECUTED AND START OVER
5057	0000	TESTAD,	0		
5060	7340	CLA	CLL	CMA	
5061	1257	TAD		TESTAD	
5062	3102	DCA		TEST	
5063	1374	TAD		(PRGRST	
5064	3101	DCA		AUTRST	
5065	5657	JMP	I	TESTAD	
5066	1102	BATEMT,	TAD	TEST	/GET THE TEST
5067	7041	CIA			/NEGATE IT
5070	1373	TAD		(TEST23	
5071	7640	SZA	CLA		/WAS IT THE BATTERY EMPTY AND AC LOW TEST
5072	5276	JMP		DEAD	/NO, MACHINE GOING DONE STOP EVERYTHING
5073	2000	ISZ	INTSER		
5074	2000	ISZ	INTSER		
5075	5400	JMP	I	INTSER	
5076	7402	DEAD,	HLT		
5077	5502	JMP	I	TEST	/ITS ALL OVER NOW - GOOD=BYE

5100	0000	GOODBD,	0		
5101	1022	TAD		OP2SEL	/GET HARDWARE CONFIGURATION
5102	7700	SMA	CLA		/IS THE PROGRAM RUNNING ON ACT LINE
5103	5700	JMP	I	GOODBD	/NO RETURN TO PROGRAM
5104	5272	CIF	70		/CHANGE INSTRUCTION FIELD TO FIELD 7
5105	4500	JMS	I	GOODPS	/SIGNAL ACT LINE PROGRAM STILL RUNNING
5106	5700	JMP	I	GOODBD	/RETURN TO PROGRAM
5107	0000	ERRORX,	0		/ERROR ROUTINE
5110	7300	CLA	CLL		
5111	1022	TAD		OP2SEL	/CHECK FOR ACT LINE
5112	7700	SMA	CLA		
5113	5325	JMP		CHKINH	
5114	1021	TAD		OP1SEL	
5115	0144	AND		K200	
5116	7640	SZA	CLA		
5117	6160	CLRMOD			
5120	6002	IOF			/TURN THE INTERRUPT OFF
5121	7240	CLA		CMA	
5122	1307	TAD		ERRORX	
5123	6272	CIF	70		
5124	5477	JMP	I	5ADPAS	/GO TO ROM FOR ERROR
5125	4340	CHKINH,	JMS	SWCHK	/CHECK FOR SR 0(1) TO INHIBIT ERROR HALT
5126	7710	SPA	CLA		/IS SR 0 SET TO A ONE
5127	5333	JMP		ERLPSW	/YES, GO CHECK SR 1 TO LOOP ON ERROR
5130	7340	CLA	CLL	CMA	
5131	1307	TAD		ERRORX	/SUBTRACT ONE FROM JMS ERROR PC
5132	7402	HLT			/AC CONTAINS THE ADDRESS WHERE THE ERROR
5133	4340	ERLPSW,	JMS	SWCHK	/WAS DETECTED BY THE PROGRAM, REFER
5134	7004	RAL			/TO THE PROGRAM LISTING FOR ERROR
5135	7710	SPA	CLA		/EXPLANATION AND THE TEST DESCRIPTION,
5136	5502	JMP	I	TEST	/CHECK THE SWITCH REGISTER TO LOOP ON ERROR
5137	5727	JMP	I	ERRORX	
5140	0000	SWCHK,	0		
5141	7300	CLA	CLL		
5142	1021	TAD		OP1SEL	/GET THE HARDWARE STATUS WORD
5143	7700	SMA	CLA		/IS THE HARDWARE FRONT PANEL SELECTED
5144	5347	JMP		,+3	/NO, USE THE PSEUDO SWITCH REGISTER
5145	7604	LAS			
5146	5740	JMP	I	SWCHK	/RETURN
5147	1020	TAD		SWITCH	/THE PSEUDO SWITCH REGISTER
5150	5740	JMP	I	SWCHK	/RETURN
5151	0000	TSTLOP,	0		
5152	4340	JMS		SWCHK	/ROUTINE TO CHECK SR 2 TO LOOP ON TEST
5153	7006	RTL			/GO GET THE SWITCH REGISTER
5154	4772	JMS		XORLOP	/CHECK FOR XOR ERROR IF SELECTED
5155	5751	JMP	I	TSTLOP	/GO TO NEXT TEST

4100	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111
4200	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111
4300	11111111	11111111	11111111	11111111	11111111	11111100	00000070	00000001
4400	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111
4500	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111
4600	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111
4700	11111111	11111111	11111111	11111111	11111111	11111111	11111000	11111111
5000	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111
5100	11111111	11111111	11111111	11111111	11111111	11111111	10000000	00111111
5200	10000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
5300	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
5400								
5500								
5600								
5700								
6000								
6100								
6200								
6300								
6400								
6500								
6600								
6700								
7000								
7100								
7200								
7300								
7400								
7500								
7600								
7700								

ACDOWN	4763	CJMS04	1300	GOODPS	0100	M125	0134
ACLBAT	5156	CJMS05	1326	STF	6004	M152	0135
ACTLIN	5000	CJMS06	1354	HGHLIM	0073	M16	1770
ADD401	3761	CJMS07	1410	HLT	7402	M2	0112
ADDCNT	0276	CJMS10	1436	INTSER	0000	M20	0120
ADDRS	4135	CKJMS1	1627	JMSCK1	2253	M22	2372
AUTCNT	4133	CKJMS2	1657	JMSCK2	2277	M25	0121
AUTENA	4147	CKJMS3	1710	JMSCK3	2321	M30	1375
AUTO	4600	CKJMS4	1741	JMSCK4	2345	M300	0403
AJTHST	1101	CKJMS5	2017	JMSCK5	2400	M33	0122
AJTSEL	4134	CKJMS6	2050	JMSCK6	2424	M34	1765
AJTST	4056	CKJMS7	2101	JMSCK7	2450	M4	0113
RADPAS	0377	CKJMS8	2133	JMSCK8	2474	M40	1564
RATEMT	5066	CKJMS9	2165	K1	4753	M4100	0632
REGT16	3244	CLEARB	4463	K10	0141	M43	0123
REGT17	3217	CLRBOT	4465	K100	3545	M44	0124
ROOTOK	4461	CLREMA	6154	K1000	4257	M5	0114
ROOTR1	3763	CLRERG	3546	K1777	3172	M50	0125
ROOTR2	3764	CLRMOD	6160	K200	0144	M5000	1374
ROOTR3	3615	CLRSIM	6150	K3	4720	M5100	0137
ROTADD	4567	COMPBUF	4662	K34	4752	M52	1766
ROTCLR	4565	CNTBOT	3756	K37	3171	M55	0126
ROTCHP	4400	CNTBUF	4715	K400	0145	M60	0127
ROTCHT	4571	COMPAR	4425	M4100	0147	M61	1767
ROTENA	4155	CONTW2	3757	K5252	4717	M66	0130
ROTEND	4511	CONTW3	3760	K6201	0074	M7	0115
ROTR1	3677	CONW2	4136	K7	0140	M70	0131
ROTR2	3734	CUF	6264	K70	0142	M77	0132
ROTSAD	4570	DATPAT	0071	K7677	0402	M4NRST	4721
ROTSSEL	4150	DATREC	0064	K77	0143	M1000	1373
RTSURT	3762	DEAD	5076	K7707	2371	M30	0373
RTTST1	3660	DSKADD	4346	K7757	0372	M40	0374
RTTST2	3715	EMA1	3547	K7774	0146	M5000	1563
RUFCHT	4714	EMA2	3553	KK3	4572	M0AUTO	4054
RUFFER	5200	EMA3	3551	LINK	5050	M0BOOT	3645
RJFGOD	4703	EMACLR	3331	LUDRG2	6152	MXTBOT	3651
RUFPAT	4716	EMAIF1	3432	LUDRG3	6153	OP1SEL	0021
77707	375	EMAIF2	3451	LUOP	4504	OP234	0000
CAF	6007	EMAIF3	3464	M1	0111	OP2SEL	0022
CAL	5100	ENDING	5034	M10	0110	OPRINT	4754
CAPSB	4000	ENDPAS	5017	M100	0133	OPRRET	4722
CAF	6201	ENDT17	3314	M1000	0603	PASEND	0110
CAFCHK	1062	ENDTST	3163	M1007	2004	PC	5051
CAFNEW	3101	ERLPSW	5133	M1016	1701	POINTR	3313
CAFDEF	1063	ERROR	4503	M1025	2001	POWFAL	5042
CAFKNH	5125	ERRORX	5107	M1034	1753	PRGPAS	5041
CIF	6202	EXECUT	6164	M1043	2002	PRGRST	5052
CIFCDF	6203	FILLIT	4713	M1052	1764	RTPADD	4304
CINT	6204	FLDLIM	0066	M1061	1762	RTPCMP	4306
CJMS01	1174	GODAUT	4125	M1070	2003	RTPEND	4344
CJMS02	1224	GOODBD	5100	M11	0117	ROF	6214
CJMS03	1252	GOODCP	4443	M1100	0136	REDEMA	6155

PESADD	4137	TEST10	1060	TST14C	2627
RESET	4737	TEST11	1123	TST14D	2667
PETPRG	4751	TEST12	1600	TST18A	3345
RFDFOF	4350	TEST13	2223	TST18B	3364
RFDFOE	4354	TEST14	2514	TST18C	3377
RIB	6234	TEST15	2713	TST19A	3430
RIF	6224	TEST16	3002	TST19B	3446
RKBADD	3623	TEST17	3200	TST19C	3461
RKBCHP	3625	TEST18	3321	TST20N	0404
RKBE	0023	TEST19	3415	TSTLOP	5151
RKBEND	3633	TEST2	0342	UPERLM	0067
RMF	6244	TEST20	3477	WRKADJ	0072
RSTAUT	4101	TEST21	3635	WRKFLD	0070
RTF	6005	TEST22	4041	XBAT	0107
PXBADD	1522	TEST23	4201	XORCHK	1461
PXBCHP	1524	TEST3	0434	XORLOP	1504
PXBE	0024	TEST4	0476	XPWRFL	0106
PXBEND	1561	TEST5	0532	XRCI	6172
SAVESZ	0065	TEST6	0604	XRON	6170
SAVSTR	4566	TEST7	0654	XRSI	6174
SAVSWH	1521	TEST8	0713	XRT0	6176
SAVWFD	0075	TEST9	1003		
SBE	6101	TESTAD	5057		
SCOPLP	4505	TIMUIS	4260		
SELAUT	4143	TST11A	1144		
SET1K	4554	TST11B	1164		
SET2K	4560	TST11C	1212		
SET3K	4563	TST11D	1242		
SETUP	4517	TST11E	1270		
SETUP1	4527	TST11F	1316		
SETUP2	4541	TST11G	1344		
SIMBOT	0755	TST11H	1400		
SINT	6254	TST11I	1426		
SKON	6000	TST12A	1615		
SKPMA	6166	TST12B	1645		
SKXR	6171	TST12C	1676		
SPL	6102	TST12D	1727		
STIP	6173	TST12E	2005		
STRCMP	4654	TST12F	2036		
SUF	6274	TST12G	2067		
SWCHK	5140	TST12H	2121		
SWITCH	0020	TST12I	2153		
SXRC	6175	TST13A	2243		
T16LCD	3074	TST13B	2267		
T17CDF	3246	TST13C	2311		
T17RET	3271	TST13D	2335		
TABADD	3552	TST13E	2361		
TABCHP	3554	TST13F	2414		
TABEND	3613	TST13G	2440		
TABLE	3306	TST13H	2464		
TEST	102	TST14A	2532		
TEST1	221	TST14B	2570		

ERRORS DETECTED: 0
LINKS GENERATED: 40
RUN-TIME: 25 SECONDS
3K CORE USED

/KMB-A OPTION TEST 2 MAINDEC-08-DJKMA-B-L 1K PART 1
/COPYRIGHT (C) 1974, 1975 DIGITAL EQUIPMENT CORPORATION
/PROGRAMMER: BRUCE HANSEN

////////////////////////////////////
/THE FOLLOWING LISTING WILL CORRESPOND TO THE PAPER TAPE LABELED MAINDEC-08-DJKMA-B-PM1,
/1K PART 1, THIS PAPER TAPE AND LISTING WILL BE THE FIRST OF FOUR 1K SEGMENTED
/PAPER TAPES AND LISTINGS FOR COMPUTERS WITH LESS THAN 4K OF MEMORY.
////////////////////////////////////

/KMB-A OPTION TEST 2 MAINDEC-08-DJKMA-B-L 1K PART 1
/COPYRIGHT 1974, 1975 DIGITAL EQUIPMENT CORP., MAYNARD, MASS., 01754
/PDP-8A OPTION TEST 2 TESTS THE MEMORY EXTENTION/TIME SHARE CONTROL,
/POWER FAIL/AUTO RESTART, AND BOOTSTRAP LOADERS

6200 SKON=6200
6207 CAF=6207
7402 HLT=7402

/SWITCH REGISTER SETTINGS
/SR0=1 INHIBIT ERROR HALT
/SR1=1 LOOP ON ERROR
/SR2=1 LOOP ON TEST
/SR3=1 HALT AT COMPLETION OF A PROGRAM PASS

/MEMORY EXTENTION/TIME SHARE INSTRUCTIONS

6334 GTF=6334 /GET FLAGS, READS THE FOLLOWING MACHINE STATES
/INTO THE INDICATED BITS OF THE AC1
/AC0 LINE
/AC2 INTERRUPT REQUEST
/AC4 INTERRUPT ENABLE F/F
/AC5 USER FLAG
/AC6-11 SAVE FIELD REGISTER

6205 RTF=6205 /RESTORE THE FLAGS, RTF LOADS THE LINK FROM AC0,
/LOADS THE USER BUFFER F/F, INSTRUCTION BUFFER AND
/DATA FIELD WITH AC5, AC6-8, AC 9-11 AND INHIBITS
/PROCESSOR INTERRUPTS UNTIL NEXT JMP OR JMS INSTRUCTION,
/AT THE END OF THE JMP OR JMS, THE CONTENTS OF THE U,B, + I,B,
/ARE LOADED INTO USER FIELD F/F, AND THE I,F,, INTERRUPT ENABLE
/IS SET AND INTERRUPT INHIBIT AS CLEARED

6234 RIB=6234 /READ THE INTERRUPT BUFFER

6244 RIF=6244 /RESTORES MEMORY FLAGS

6234 CINT=6234 /CLEAR USER INTERRUPT FLIP=FLOP

6254 SINT=6254 /SKIP ON USER INTERRUPT FLIP=FLOP

6264 CJF=6264 /CLEAR USER BUFFER FLIP=FLOP

6274 SJF=6274 /SET USER BUFFER FLIP=FLOP (ENTER TIME SAME MODE)AND
/INHIBITS PROCESSOR INTERRUPTS UNTIL THE NEXT JMP OR
/JMS INSTRUCTION, AT THE END OF THE JMP OR JMS
/INSTRUCTION, THE USER BUFR IS LOADED INTO THE USER
/FIELD F/F,

6201 CDF=6201 /CHANGE DATA FIELD

```

6202 CIF=6202 /CHANGE INSTRUCTION FIELD
6214 RDF=6214 /READ THE DATA FIELD INTO AC BITS 6=8
6224 RIF=6224 /READ THE INSTRUCTION FIELD INTO AC BITS 6=8
6203 CIFCDF=6203 /PERFORMS THE CIF AND CDF FUNCTIONS

/POWER FAIL INSTRUCTIONS

6102 SPL=6102 /SKIP ON AC LOW FLIP-FLOP
6103 CAL=6103 /CLEAR AC LOW FLIP-FLOP
6101 SBE=6101 /SKIP ON BATTERY EMPTY FLIP-FLOP

/OPTION BOARD 2 SIMULATOR IOT'S

6150 CLRSM=6150 /CLEAR CONTROL REGISTERS
6152 LDRG2=6152 /LOAD CONTROL REGISTER 2
6153 LDRG3=6153 /LOAD CONTROL REGISTER 3
6154 CLREMA=6154 /CLEAR EMA CATCHER LOGIC
6155 REDEMA=6155 /READ EMA CATCHER REGISTER
6160 CLRMOD=6160 /CLEAR TEST MODULE LOGIC
6164 EXECUT=6164 /EXECUT AND CONTROL WORD 3 BIT 7 =1 ISSUE A POWER ON PULSE
6166 SKPEMA=6166 /EXECUT AND CONTROL WORD 3 BIT 7 =0 ISSUE A SWITCH SW PULSE
/ SKPEMA AND CONTROL WORD 3 BIT 3 =1 EMA INTERRUPT AND SKIP ENABLE
/ SKPEMA AND CONTROL WORD 3 BIT 3 =0 EMA INTERRUPT AND SKIP DISABLE

/OPTION BOARD2 SIMULATOR CONTROL WORD 2 BIT ASSIGNMENTS
/
/BITS 0 - 1 NOT USED
/BITS 2 - 9 BOOT STRAP PROGRAM SELECT
/BITS 9 - 11 AUTO-RESTART ADDRESS SELECT

/OPTION BOARD 2 SIMULATOR CONTROL WORD 3 BIT ASSIGNMENTS
/
/BIT 0 TIME SHARE 0=ENABLED 1=DISABLED
/BIT 1 BATT EMPTY 1=BATT EMPTY PULLED LOW 2=FREE STATE
/BIT 2 AC LOW (L) 1=PULLED LOW 0=FREE STATE
/BIT 3 1=EMA INTERRUPT/SKIP ENABLE 0=EMA INTERRUPT SKIP DISABLE
/BITS 4 - 6 NOT USED
/BIT 7 1=POWER ON PULSE WITH EXECUT 0=SWITCH SW PULSE WITH EXECUT
/BIT 8 1=DISABLES BOOTSTRAP WHILE RUNNING 2=ENABLES BOOTSTRAP WHILE RUNNING
/BIT 9 - 11 AUTO-RESTART/BOOT STRAP ENABLE CODE
    
```

```

0000 *0
0003 0000 INTSER, 0
0001 3264 DCA DATREC /JMS I ATRST PLACED HERE FOR SIMULATOR AUTO RESTART
0002 6102 SPL /SKIP ON AC LOW
0003 7410 SKP
    
```

```

0004 3506 JMP I XPRFL /POWER GOING DOWN
0005 5101 SBE /SKIP ON BATTERY EMPTY
0006 7410 SKP
0007 5507 JMP I XBAT /GO HALT THE COMPUTER ,ITS ALL OVER
0010 6224 RIF /READ THE INSTRUCTION FIELD
0011 7640 SZA CLA
0012 4503 ERROR /I,F, IS NOT 0 AFTER A INTERRUPT
0013 6214 RDF /READ THE DATA FIELD
0014 7640 SZA CLA
0015 4503 ERROR /D,F, IS NOT 0 AFTER A INTERRUPT
0016 2000 ISZ INTSER /ADD 1 TO THE INTERRUPTED PC
0017 5400 JMP I INTSER /RETURN TO THE PROGRAM
    
```

```

0020 *0
0020 0000 SWITCH, 0
0021 1000 OP1SEL, 1000 /PSEUDO SWITCH REGISTER IF BIT 0=0 OF OP1SEL

/BIT 0=0 USE LOC 20 AS A PSEUDO S,R,
/BIT 0=1 USE HARDWARE FRONT PANEL S,R,
/BIT 1=1 HAS BA OPTION 1
/BIT 2=1 HAS BA OPTION 2
/BIT 3=1 HAS BA CPU SIMULATOR
/BIT 4=1 HAS BA OPTION 1 + 2 TEST MODULE
/BIT 5=1 PROGRAM ON BA XDR
/BIT 6=1 HAS PDP-8E TYPE CPU
/BITS 7=11 MEMORY SIZE - 0'S = 1K, 37=32K,
/MEMORY SIZE CAN BE INCREASED IN 1K INCREMENTS
/BY ADDING A 1 TO THE NUMBER IN BITS 7=11,

0022 000 OP2SEL, 0
/RRSE BOOT STRAP WILL LOAD INTO THE FOLLOWING LOCATIONS
    
```

```

0023 7402 RXBE, HLT /2207
0024 7402 RXBE, HLT /6745
0025 7402 HLT /0023
0026 7402 HLT /7640
0027 7402 HLT /5024
0030 7402 HLT /6703
0031 7402 HLT /5031
0032 7402 HLT /TERMINATOR
    
```

```

0062 *62
0062 0000 CDFCHK, 0
0063 0062 CHKCF, CDFCHK
0064 0000 DATREC, 0
0065 0000 SAVESZ, 0
0066 0000 FLDLIN, 0
0067 0000 UPERLIN, 0
0070 0000 WRKFLD, 0
0071 0000 DATPAT, 0
0072 0000 WRKADD, 0
0073 0000 HGHLIN, 0
0074 6201 <62J1, 6201
    
```

0075	000	SAVWFD, 0
0076	000	ADDONT, 0
0077	6520	BADPAS, 6520
0100	6500	GOODPS, 6500
0101	1647	AUTRST, PRGRST
0102	0000	TEST, 0

/SCOPE LOOP AND TEST LOOP ADDRESS

0103	4503	ERROR= JMS I	ERRORX
	1674		
0104	4504	LOOP= JMS I	TSTLOP
	1736		
0105	4505	SCOPLP= JMS I	TESTAD
	1654		

0106	1637	XPWRFL, POWFAL
0107	1663	XBAT, BATEMT
0110	1617	PASEND, ENDPAS

/CONSTANTS USED BY THE PROGRAM

0111	7777	M1,	-1
0112	7776	M2,	-2
0113	7774	M4,	-4
0114	7773	M5,	-5
0115	7771	M7,	-7
0116	7770	M10,	-10
0117	7767	M11,	-11
0120	7760	M20,	-20
0121	7753	M25,	-25
0122	7745	M33,	-33
0123	7735	M43,	-43
0124	7734	M44,	-44
0125	7730	M50,	-50
0126	7723	M55,	-55
0127	7720	M60,	-60
0130	7712	M66,	-66
0131	7710	M70,	-70
0132	7701	M77,	-77
0133	7700	M100,	-100
0134	7653	M125,	-125
0135	7626	M152,	-152
0136	6700	M1100,	-1100
0137	2700	M5100,	-5100

0140	0007	K7,	7
0141	0010	K10,	10
0142	0070	K70,	70
0143	0077	K77,	77
0144	0200	K200,	200
0145	400	K400,	400
0146	7774	K7774,	7774
0147	4100	K4100,	4100

0200 *200

 /TEST 1 - CHECKS THE CDF AND RDF INSTRUCTIONS TO LOAD AND READ
 /THE DATA FIELD, A RIF IS ISSUED AFTER EACH DATA FIELD CHANGE
 /TO CHECK THAT THE INSTRUCTION FIELD REMAINS A ZERO,
 /THE INCLUSIVE OR OF THE D,F, WITH THE AC IS CHECKED WITH THE RDF INSTRUCTION,
 /SET TIME SHARE ENABLE SWITCH TO TIME SHARE ENABLE POSITION

0200	7000	NOP/JMS I AUTRST	
0201	6160	TEST1, CLRMOD	/IF SIMULATOR SELECTED THIS LOCATION WILL CHANGE TO JMS I AUTRST
0202	4505	SCOPLP	/CLEAR SIMULATOR TEST LOGIC
0203	6007	CAF	/SETUP SCOPE ANNO TEST LOOPING ADDRESS
0204	6264	CUF	/CLEAR ALL FLAGS
0205	7410	SKP	/CLEAR USER FLAG
0206	4503	ERROR	
0207	6254	SINT	/CUF SKIPPED
0217	7410	SKP	/SKIP IF USER INTERRUPT FLIP-FLOP SET
0211	4503	ERROR	
0212	6001	ION	/SINT SKIPPED OR CAF FAILED TO 0 USER INTERRUPT
0213	6201	CDF	/TURN THE INTERRUPT ON
0214	7410	SKP	/CHANGE DATA FIELD TO FIELD 2
0215	4503	ERROR	
0216	6214	RDF	/CDF SKIPPED
0217	7410	SKP	/READ THE DATA FIELD
0227	4503	ERROR	
0221	7640	SZA	/RDF SKIPPED
0222	4503	ERROR	/WAS IF FIELD 0?
0223	6224	RIF	/RDF READ BACK SOMETHING OTHER THAN D,F, 0
0224	7410	SKP	/READ THE INSTRUCTION FIELD
0225	4503	ERROR	
0226	7640	SZA	/RIF SKIPPED
0227	4503	ERROR	/WAS THE I,F, 0?
0230	6271	CDF	/RIF READ BACK SOMETHING OTHER THAN I,F, 0
0231	6214	RDF	/CHANGE DATA FIELD TO FIELD 7
0232	1131	TAD	/READ THE DATA FIELD
0233	7640	SZA	/CHECK THAT DATA FIELD 7 WAS READ BACK
0234	4503	ERROR	/INTO AC BITS 6,7 + 8,
0235	1375	TAD	/CDF OR RDF TO FIELD 7 FAILED
0236	6214	RDF	/CHECK THE INCLUSIVE OR FUNCTION OF RDF
0237	7040	CMA	/READ THE DATA FIELD
0240	7640	SZA	
0241	4503	ERROR	
0242	6224	RIF	/THE INCLUSIVE OR OF THE DF WITH AC FAILED
0243	7640	SZA	/READ THE INSTRUCTION FIELD
0244	4503	ERROR	/IS IT STILL 0?
0245	6221	CDF	/THE INSTRUCTION FIELD CHANGED
0246	6214	RDF	/CHANGE TO DATA FIELD 2
0247	1120	TAD	/READ THE DATA FIELD
0257	7640	SZA	/CHECK TO SEE IF DF 2 WAS READ BACK
0251	4503	ERROR	/WAS IT DATA FIELD 2?
0252	1372	TAD	/NO, CDF 20 OR RDF FAILED
0253	6214	RDF	/CHECK THE INCLUSIVE OR OF THE DF WITH THE AC
			/READ THE DATA FIELD

```

0254 7740 CMA
0255 7640 SZA CLA
0256 4503 ERROR /THE INCLUSIVE OR OF DF WITH AC FAILED
0257 6224 RIF /READ THE INSTRUCTION FIELD
0260 7640 SZA CLA /IS THE IF STILL 0?
0261 4503 ERROR /THE INSTRUCTION FIELD CHANGED
0262 6251 CDF 50 /CHANGE TO DATA FIELD 5
0263 6214 RDF /READ THE DATA FIELD
0264 1125 TAD M50
0265 7640 SZA CLA
0266 4503 ERROR /WAS IT DATA FIELD 5?
0267 6224 RIF /NO, CDF 50 OR RDF FAILED
0270 7640 SZA CLA /READ THE INSTRUCTION FIELD
0271 4503 ERROR /IS THE I,F, STILL 0?
0272 6231 CDF 30 /NO, THE INSTRUCTION FIELD CHANGED
0273 6214 RDF /CHANGE THE DATA FIELD TO 3
0274 1373 TAD N30 /READ THE DATA FIELD
0275 7640 SZA CLA /
0276 4503 ERROR /IS IT EQUAL TO FIELD 3
0277 6224 RIF /NO, CDF 30 OR RDF FAILED
0300 7640 SZA CLA /READ THE INSTRUCTION FIELD
0301 4503 ERROR /IS THE I,F, STILL EQUAL TO 0?
0302 6241 CDF 40 /NO, THE I,F, CHANGED
0303 6214 RDF /CHANGE THE DATA FIELD TO FIELD 4
0304 1374 TAD N40 /READ THE DATA FIELD
0305 7640 SZA CLA /
0306 4503 ERROR /IS IT EQUAL TO 0,F, 4
0307 6224 RIF /NO, CDF 40 OR RDF FAILED
0310 7640 SZA CLA /READ THE INSTRUCTION FIELD
0311 4503 ERROR /IS IT STILL EQUAL TO 0?
0312 6211 CDF 10 /NO, THE I,F, CHANGED
0313 6214 RDF /CHANGE THE DATA FIELD TO FIELD 1
0314 1116 TAD M10 /READ THE DATA FIELD
0315 7640 SZA CLA /
0316 4503 ERROR /IS IT EQUAL TO DATA FIELD 1
0317 6224 RIF /NO, CDF 10 OR RDF FAILED
0320 7640 SZA CLA /READ THE INSTRUCTION FIELD
0321 4503 ERROR /IS IT STILL EQUAL TO 0?
0322 6261 CDF 60 /NO, THE I,F, CHANGED
0323 6214 RDF /CHANGE DATA FIELD TO FIELD 6
0324 1127 TAD M60 /READ THE DATA FIELD
0325 7640 SZA CLA /
0326 4503 ERROR /IS THE D,F, EQUAL TO 6?
0327 6224 RIF /NO, CDF 60 OR RDF FAILED
0330 7640 SZA CLA /READ THE INSTRUCTION FIELD
0331 4503 ERROR /IS IT STILL EQUAL TO ZERO?
0332 6201 CDF 00 /NO, INSTRUCTION FIELD CHANGED
0333 6214 RDF /CHANGE DATA FIELD TO FIELD 0
0334 7640 SZA CLA /READ THE DATA FIELD
0335 4503 ERROR /IS IT EQUAL TO FIELD 0?
0336 6224 RIF /NO, CDF 00 OR RDF FAILED
0337 7640 SZA CLA /READ THE INSTRUCTION FIELD
0340 4503 ERROR /IS IT STILL EQUAL TO ZERO
0341 4504 LOOP /NO, INSTRUCTION FIELD CHANGED,
/LOOP ON TEST IF SR = 1000

```

```

/*****
/TEST 2 - CHECKS THAT USER MODE CAN BE ENTERED AND EXITED BY DOING A
/IOY-SUF-JMP-HLT, THE USER INTERRUPT IS CHECKED TO BE SET BY SINT AND
/CLEARED BY CINT, GTF AND RIB ARE ISSUED TO CHECK THAT THE SAVE FIELD
/GOT LOADED AND THAT THE INSTRUCTIONS CAN READ THE SAVE FIELD,
/*****

```

```

0342 4505 TEST2, SCOPLP /SETUP SCOPE AND TEST LOOPING ADDRESS
0343 6007 CAF /CLEAR ALL FLAGS
0344 6264 CUF /CLEAR USER BUFFER F/F
0345 7410 SKP
0346 4503 ERROR /CUF SKIPPED
0347 6204 CINT /CLEAR USER INTERRUPT FLIP=FLOP
0350 7410 SKP
0351 4503 ERROR /CINT SKIPPED
0352 6254 SINT /SKIP ON USER INTERRUPT FLIP=FLOP
0353 7410 SKP
0354 4503 ERROR /SINT SKIPPED OR USER INTERRUPT F/F SET
0355 6001 IOY /TURN THE INTERRUPT ON
0356 6274 SUF /SET USER BUFFER F/F, SET INT INHIBIT AT TP3
0357 5361 JMP ,+2 /LOAD UB INTO I,F, REGISTER, CLEAR INT INHIBIT F/F
0360 5360 JMP , /SUF SKIPPED OR TRAPPED,
0361 7402 -LT /USER INTERRUPT FAILED TO SET OR HALT FAILED TO TRAP
0362 5362 JMP , /HLT FAILED TO TRAP
0363 6254 SINT /SKIP ON USER INTERRUPT FLIP=FLOP
0364 5364 JMP , /USER INTERRUPT NOT SET OR SINT FAILED TO SKIP,
0365 6224 CINT /CLEAR USER INTERRUPT FLIP=FLOP
0366 6254 SINT /SKIP ON USER INTERRUPT FLIP=FLOP
0367 7410 SKP
0370 5370 JMP /CINT FAILED TO 0 USER INTERRUPT FLIP=FLOP
0371 5777 JMP TST2CN /CONTINUE THE TEST
0372 7757 X7757, 7757
0373 7750 X30, -30
0374 7740 X40, -40
0375 7727 C7727, 7727

0377 404 PAGE
0378 402

0400 7200 NOP
0401 7000 NOP
0402 7677 X7677, 7677
0403 7500 X300, -300
0404 6004 TST2CN, GTF /GET THE FLAGS
0405 7410 SKP
0406 5206 JMP /GTF SKIPPED
0407 1133 TAD M100 /CHECK USER FLAG TO BE SET
0410 7640 SZA CLA /WAS THE CORRECT IF, D,F, AND USER FIELD FLIP=FLOP LOADED?
0411 5211 JMP /NO, USER FIELD F/F NOT LOADED OR OTHER BITS SET
0412 7300 CLA CLL /OR GTF FAILED,
0413 6234 RIB /READ THE INTERRUPT BUFFER
0414 7410 SKP
0415 5215 JMP /RIB SKIPPED
0416 1133 TAD M100 /CHECK FOR USER FLAG
0417 7640 SZA CLA

```

0420	5220	JMP	.	
0421	1202	TAD	K7677	/RIB FAILED OR SAVE FIELDS CLEARED
0422	6234	RIB	.	/CHECK THE INCLUSIVE OR OF SF WITH AC
0423	7040	CMA	.	/READ THE INTERRUPT BUFFER
0424	7640	SZA	CLA	
0425	5225	JMP	.	
0426	7340	CLA	CLL CMA	/INCLUSIVE OR OF SAVE FIELD WITH AC FAILED
0427	6004	GTF	.	/SET THE AC TO ALL ONES
0430	1133	TAD	M100	/GET THE FLAGS
0431	7640	SZA	CLA	
0432	5232	JMP	.	
0433	4504	LOOP	.	/GTF FAILED TO DO A JAM TRANSFER TO AC /OR SAVE FIELDS CLEARED, /LOOP ON TEST IF SR = 1000

 /TEST 3- CHECKS THAT OSR WILL TRAP IN USER MODE AND THAT
 /IT WILL NOT AFTER A INTERRUPT, RIB, GTF, RIF, RDF ARE CHECKED TO
 /READ THE SAVE FIELDS AND I.F. AND D.F.

0434	4505	TEST3,	SCOPLP	/SETUP SCOPE AND TEST LOOPING ADDRESS
0435	6007	CAF	.	/CLEAR ALL FLAGS
0436	6001	ION	.	/TURN THE INTERRUPT ON
0437	6274	SUF	.	/SET USER BUFFER F/F, SET INT INH AT TP3
0440	5241	JMP	.,+1	/ENTER USER MODE
0441	7404	OSR	.	/OSR SHOULD SET USER INTERRUPT F/F + CAUSE A TRAP
0442	5242	JMP	.	/OSR FAILED TO TRAP
0443	6254	SINT	.	/SKIP ON USER INTERRUPT F/F
0444	5244	JMP	.	/USER INTERRUPT F/F NOT SET
0445	6204	CINT	.	/CLEAR USER INTERRUPT F/F
0446	6254	SINT	.	/SKIP ON USER INTERRUPT F/F
0447	7410	SKP	.	
0450	5250	JMP	.	
0451	6001	ION	.	/CINT FAILED TO CLEAR USER INTERRUPT F/F
0452	5253	JMP	.,+1	/TURN THE INTERRUPT ON,
0453	7404	OSR	.	/CHECK THAT THE INTERRUPT HAD CLEARED THE USER FIELD F/F
0454	7610	SKP	CLA	/OSR SHOULD NOT TRAP
0455	5255	JMP	.	
0456	6234	RIB	.	/OSR TRAPPED AFTER A INTERRUPT OCCURED ABOVE
0457	1133	TAD	M100	/CHECK THE USER BUFFER AND I.F.,
0460	7640	SZA	CLA	/READ THE INTERRUPT BUFFER
0461	4503	ERROR	.	/CHECK THE SAVE FIELD FOR USER FLAG
0462	7340	CLA	CLL CMA	/USER FLAG NOT SET OR OTHER BITS SET
0463	6004	GTF	.	/SET THE AC TO ALL ONES
0464	1203	TAD	M300	/GET THE FLAGS
0465	7640	SZA	CLA	/CHECK FOR INT ENA, AND USER FLAG
0466	4503	ERROR	.	
0467	6224	RIF	.	/USER FLAG AND INT ENA NOT SET OR OTHER BITS SET
0470	7640	SZA	CLA	/READ THE INSTRUCTION FIELD
0471	4503	ERROR	.	
0472	6214	RDF	.	/THE INSTRUCTION FIELD IS NON ZERO
0473	7640	SZA	CLA	
0474	4503	ERROR	.	
0475	4504	LOOP	.	/THE DATA FIELD IS NON ZERO, /LOOP ON TEST IF SR = 1000

 /TEST 4- CHECKS THAT AN IOT WILL TRAP OUT IN USER MODE AND NOT
 /AFTER A USER INTERRUPT, THE USER INTERRUPT IS CHECKED TO BE
 /CLEARED BY CAF, RIB AND GTF ARE ISSUED AND CHECKED,

0476	4505	TEST4,	SCOPLP	/SETUP SCOPE AND TEST LOOPING ADDRESS
0477	6007	CAF	.	/CLEAR ALL FLAGS
0500	6001	ION	.	/TURN THE INTERRUPT ON
0501	6274	SUF	.	/SET THE USER BUFFER FLIP=FLOP
0502	5303	JMP	.,+1	/TRANSFER USER BUFFER TO THE USER FIELD F/F
0503	6001	ION	.	/SHOULD TRAP HERE
0504	5304	JMP	.	/THE IOT FAILED TO TRAP
0505	6254	SINT	.	/SKIP ON USER INTERRUPT FLIP=FLOP,
0506	5306	JMP	.	/USER INTERRUPT F/F FAILED TO SET ON SINT FAILED
0507	6007	CAF	.	/CLEAR USER INTERRUPT WITH INITIALIZE
0510	6254	SINT	.	/SKIP ON USER INTERRUPT
0511	7410	SKP	.	
0512	5312	JMP	.	
0513	6001	ION	.	/CAF FAILED TO CLEAR USER INTERRUPT,
0514	5315	JMP	.,+1	/TURN THE INTERRUPT ON
0515	6001	ION	.	/CHECK THAT THE INTERRUPT CLEARED OF F/F
0516	7410	SKP	.	/IOT SHOULD NOT TRAP HERE
0517	5317	JMP	.	
0520	6234	RIB	.	/ION TRAPPED,
0521	1133	TAD	M100	/READ THE INTERRUPT BUFFER
0522	7640	SZA	CLA	
0523	4503	ERROR	.	
0524	7340	CLA	CLL CMA	/USER FLAG NOT SET OR OTHER BITS SET
0525	6004	GTF	.	/SET THE AC TO ALL ONES
0526	1203	TAD	M300	/GET THE FLAGS
0527	7640	SZA	CLA	
0530	4503	ERROR	.	
0531	4504	LOOP	.	/USER FLAG AND INT ENA NOT SET OR GTF FAILED /LOOP ON TEST IF SR = 1000

 /TEST 5- CHECKS THAT CUF WILL CLEAR THE USER MODE BY DOING ION, SUF,
 /CUF, JMP, IOT, THE IOT, SHOULD NOT TRAP, RIB AND GTF ARE
 /ISSUED AND CHECKED,

0532	4505	TEST5,	SCOPLP	/SETUP SCOPE AND TEST LOOPING ADDRESS
0533	6007	CAF	.	/CLEAR ALL FLAGS
0534	6001	ION	.	/TURN THE INTERRUPT ON
0535	6274	SUF	.	/SET THE USER BUFFER F/F
0536	5337	JMP	.,+1	/ENTER USER MODE
0537	7402	HLT	.	/HLT FAILED TO TRAP
0540	5340	JMP	.	/HLT FAILED TO TRAP
0541	6254	SINT	.	/SKIP ON USER INTERRUPT
0542	4503	ERROR	.	/USER INTERRUPT NOT SET
0543	6007	CAF	.	/CLEAR ALL FLAGS
0544	6254	SINT	.	/SKIP ON USER INTERRUPT F/F
0545	7410	SKP	.	
0546	4503	ERROR	.	
0547	6234	RIB	.	/CAF FAILED TO CLEAR USER INTERRUPT /READ THE INTERRUPT BUFFER

```

0550 1133 TAD M100
0551 7640 SZA CLA /CHECK FOR THE USER FLAG
0552 4503 ERROR /USER FLAG NOT SET OR OTHER BITS SET
0553 6001 ION /TURN THE INTERRUPT BACK ON
0554 6274 SUF /SET USER FLAG
0555 6264 CUF /CLEAR USER FLAG
0556 7410 SKP
0557 5357 JMP /CUF TRAPPED BEFORE A JMP WAS ISSUED
0560 5361 JMP +1
0561 6001 ION /ISSUE A IOT TO CHECK THAT PROGRAM DOESN'T TRAP.
0562 7410 SKP
0563 5363 JMP
0564 6254 SINT /CUF FAILED TO CLEAR USER BUFFER FLIP=FLOP
0565 7410 SKP /SKIP ON USER INTERRUPT SET
0566 4523 ERROR
0567 7340 CLA CLL CMA /SINT SKIPPED, USER INTERRUPT SHOULD NOT BE SET
0570 6004 GTF
0571 1203 TAD M300 /GET THE FLAGS
0572 7640 SZA CLA /
0573 4503 ERROR /CHECK FOR INTERRUPT ENABLE + USER FLAG
0574 6234 RIB /INTERRUPT ENABLE OR USER FLAG NOT SET
0575 1133 TAD M100 /READ THE INTERRUPT BUFFER
0576 7640 SZA CLA
0577 4503 ERROR
0600 4504 LOOP /USER FLAG NOT SET OR OTHER BITS SET
0601 5204 JMP +3 /LOOP ON TEST IF SR = 1000
0602 3700 M4100, -4100
0603 7000 M1000, -1000

```

 /TEST #6 CHECKS THAT USER MODE IS NOT ENTERED UNTIL A JMS INSTRUCTION IS ISSUED BY DOING A
 /ION, SUF, IOT, OSR, LAS, JMS, HLT. INTERRUPT REQUEST AND LINK ARE CHECKED TO
 /BE SET AND CLEARED BY GTF.

```

0604 4505 TEST6, SCOPLP /SETUP SCOPE AND TEST LOOPING ADDRESS
0605 6007 CAF /CLEAR ALL FLAGS
0606 6001 ION /TURN THE INTERRUPT ON
0607 6274 SUF /SET USER BUFFER F/F
0610 6001 ION /ISSUE A IOT
0611 7410 SKP
0612 5212 JMP /ION TRAPPED, USER MODE NOT SET UNTIL A JMP, JMS
0613 7404 OSR /OR THE SWITCH REGISTER WITH AC
0614 7610 SKP CLA
0615 5215 JMP /OSR TRAPPED OR USER MODE SET
0616 7604 LAS /LOAD THE AC WITH THE SWITCH REGISTER
0617 7610 SKP CLA
0620 5220 JMP
0621 4222 JMS +1 /LAS TRAPPED OR USER MODE SET
0622 7402 HLT/XXXX /SET USER BUFFER F/F
0623 7402 HLT /THE PC OF THE JMS
0624 5224 JMP /SHOULD TRAP HERE - IF NOT USER FIELD F/F PROBABLY NOT SET
0625 6254 SINT /HALT FAILED TO TRAP
0626 4503 ERROR /SKIP ON USER INTERRUPT F/F
0627 6234 RIB /USER INTERRUPT F/F NOT SET
/READ THE INTERRUPT BUFFER

```

```

0630 1133 TAD M100 /CHECK FOR USER FLAG
0631 7640 SZA CLA
0632 4503 ERROR /USER FLAG NOT SET OR OTHER FLAGS SET
0633 7340 CLA CLL CMA /SET THE AC TO ALL ONE'S
0634 6004 GTF /GET THE FLAGS
0635 1136 TAD M1100 /CHECK FOR INTERRUPT REQUEST AND USER FLAG
0636 7640 SZA CLA
0637 4503 ERROR /INTERRUPT REQUEST OR USER FLAG NOT SET
0640 6204 CINT /CLEAR USER INTERRUPT FLIP=FLOP
0641 7360 CLA CLL CML CMA /SET AC + LINK TO A 1
0642 6004 GTF
0643 1202 TAD M4100 /CHECK FOR LINK AND USER FLAG
0644 7640 SZA CLA
0645 4503 ERROR /SHOULD ONLY BE LINK AND USER FLAG SET
0646 7100 CLL /CLEAR THE LINK
0647 6004 GTF /GET THE FLAGS
0650 1133 TAD M100 /CHECK FOR USER FLAG
0651 7640 SZA CLA /IS IT SET?
0652 4503 ERROR /USER FLAG SHOULD BE ONLY FLAG SET,
0653 4504 LOOP /LOOP ON TEST IF SR = 1000

```

 /TEST 7- CHECKS THAT THE USER FLAG IN THE SAVE FIELD CAN BE CLEARED.
 /THIS IS DONE BY LEAVING THE USER INTERRUPT F/F SET AFTER A TRAP AND
 /THEN TURNING THE INTERRUPT BACK ON.

```

0654 4525 TEST7, SCOPLP /SETUP SCOPE AND TEST LOOPING ADDRESS
0655 6007 CAF /CLEAR ALL FLAGS
0656 6001 ION /TURN THE INTERRUPT ON
0657 6274 SUF /SET USER BUFFER FLIP=FLOP
0660 5261 JMP +1 /ENTER USER MODE
0661 7402 HLT /HLT FAILED TO TRAP
0662 5262 JMP /HLT FAILED TO TRAP
0663 6254 SINT /SKIP ON USER INTERRUPT
0664 4503 ERROR /USER INTERRUPT NOT SET
0665 7240 CLA CMA /SET THE AC TO ALL ONE'S
0666 6004 GTF /GET THE FLAGS
0667 1136 TAD M1100 /CHECK FOR USER FLAG AND INTERRUPT REQUEST
0670 7640 SZA CLA /IS IT THERE?
0671 4503 ERROR /SHOULD ONLY BE INT, REG, AND USER FLAG
0672 6001 ION /TURN THE INTERRUPT ON
0673 7030 NOP /SHOULD INTERRUPT HERE
0674 4503 ERROR /FAILED TO INTERRUPT
0675 7340 CLA CLL CMA /SET THE AC TO ALL ONE'S
0676 6004 GTF /GET THE FLAGS
0677 1203 TAD M1100 /CHECK FOR INTERRUPT REQUEST
0700 7640 SZA CLA
0701 4523 ERROR /SHOULD ONLY BE INTERRUPT REQUEST SET
0702 6204 CINT /CLEAR USER INTERRUPT REQUEST,
0703 6254 SINT /SKIP ON USER INTERRUPT FLIP=FLOP
0704 7410 SKP
0705 4503 ERROR /CINT FAILED TO CLEAR USER INT F/F
0706 7340 CLA CLL CMA
0707 6004 GTF

```


0712 7640
0711 4503
0712 4504

SZA CLA
ERROR
LOOP

/INTERRUPT REQUEST FAILED TO CLEAR
/LOOP ON TEST IF SR = 1000

/TEST8= CHECKS THAT RTF WILL RESET THE USER MODE AFTER A
/USER INTERRUPT,

0713	4505	TEST8,	SCOPLP		/SETUP SCOPE AND TEST LOOPING ADDRESS
0714	6007		CAF		/CLEAR ALL FLAGS
0715	6001		ION		/TURN THE INTERRUPT ON
0716	6274		SUF		/SET USER BUFFER FLIP=FLOP
0717	5320		JMP	+.1	
0720	7402		HLT		/HALT FAILED TO TRAP OR USER FIELD FAILED TO SET
0721	5321		JMP		/HALT FAILED TO TRAP
0722	6254		SINT		/SKIP ON USER INTERRUPT F/F
0723	4503		ERROR		/USER INTERRUPT FAILED TO SET
0724	6204		CINT		/CLEAR USER INTERRUPT FLIP=FLOP
0725	6254		SINT		
0726	7410		SKP		
0727	4503		ERROR		
0730	5234		RIB		/CINT FAILED TO CLEAR USER INTERRUPT
0731	1133		TAD	M100	/READ THE INTERRUPT BUFFER
0732	7640		SZA	CLA	/CHECK FOR USER FLAG
0733	4503		ERROR		
0734	7100		CLL		/USER FLAG NOT SET OR PICKED UP BITS
0735	1147		TAD	K4100	
0736	6005		RTF		/SET AC0 +5 TO A 1 TO SET LINK + USER BUFFER
0737	7610		SKP	CLA	/RESTORE THE FLAGS = SET USER BUFFER F/F
0740	5340		JMP		
0741	6224		RIF		/RTF SKIPPED
0742	7640		SZA	CLA	/READ THE INSTRUCTION FIELD
0743	5343		JMP		/IS IT NON ZERO
0744	6214		RDF		/RIF TRAPPED WITH OUT USER INT OR I.F. NON ZERO
0745	7640		SZA	CLA	/READ THE DATA FIELD
0746	5346		JMP		
0747	5350		JMP	+.1	/RDF TRAPPED WITH OUT USER INT OR D.F. IS NON-ZERO
0750	7402		HLT		/SET USER FIELD F/F, USER MODE, AND TURN INT ENA ON
0751	5351		JMP		/RTF FAILED TO SET USER BUFFER F/F OR ION NOT SET
0752	6254		SINT		/HLT FAILED TO TRAP
0753	4503		ERROR		/SKIP ON USER INTERRUPT F/F
0754	6004		GTF		/USER INTERRUPT NOT SET
0755	1137		TAD	M5100	/GET THE FLAGS
0756	7640		SZA	CLA	/CHECK FOR LINK, INTERRUPT REQUEST AND USER FLAG
0757	4533		ERROR		
0762	7100		CLL		/THE LINK, OR INTERRUPT REQUEST OR USER FLAG NOT SET
0761	6001		ION		/CLEAR THE LINK BUT LEAVE INTERRUPT REQUEST UP
0762	5363		JMP	+.1	/TURN THE INTERRUPT ON
0763	4503		ERROR		/SHOULD INTERRUPT AT TP4
0764	5004		GTF		/PROGRAM FAILED TO INTERRUPT WITH INT REQUEST SET
0765	1203		TAD	M1000	/GET THE FLAGS
0766	7640		SZA	CLA	/CHECK FOR INTERRUPT REQUEST
0767	4503		ERROR		/IS IT THE ONLY BIT SET
0770	6254		SINT		/NO, OTHER BITS SET BESIDES INT REG OR INT REQ NOT SET
					/SKIP ON USER INTERRUPT F/F

0771 4503
0772 6204
0773 6254
0774 7610
0775 4503
0776 7340
0777 6004
1000 7640
1001 4503
1002 4504

ERROR
CINT
SINT
SKP CLA
ERROR
CLA CLL CMA
GTF
SZA CLA
ERROR
LOOP

/USER INTERRUPT NOT SET
/CLEAR USER INTERRUPT F/F

/CINT FAILED TO CLEAR USER INTERRUPT F/F
/SET THE AC TO ALL ONES
/GET THE FLAGS
/SHOULD BE ALL ZEROS
/THE SAVE FIELD OR STATUS IS NON-ZERO
/LOOP ON TEST IF SR = 1000

/TEST9= CHECKS THAT RMF WILL RESET THE USER MODE AFTER A USER
/INTERRUPT

1203	4505	TEST9,	SCOPLP		/SETUP SCOPE AND TEST LOOPING ADDRESS
1204	7000		NOP		////////////////////////////////////
1205	6007		CAF		/CLEAR ALL FLAGS
1206	6001		ION		/TURN THE INTERRUPT ON
1207	6274		SUF		/SET USER BUFFER FLIP=FLOP
1210	5211		JMP	+.1	
1211	7402		HLT		/GO INTO USER MODE
1212	5212		JMP		/HLT FAILED TO TRAP OR NOT IN USER MODE
1213	6254		SINT		/HLT FAILED TO TRAP
1214	4503		ERROR		/SKIP ON USER INTERRUPT
1215	6204		CINT		/SINT FAILED OR USER INTERRUPT NOT SET
1216	6254		SINT		/CLEAR USER INTERRUPT FLIP=FLOP
1217	7410		SKP		/SKIP ON USER INTERRUPT
1220	4503		ERROR		
1221	6234		RIB		/CINT FAILED TO CLEAR USER INTERRUPT
1222	1133		TAD	M100	/READ THE INTERRUPT BUFFER
1223	7640		SZA	CLA	
1224	4503		ERROR		
1225	6001		ION		/USER FLAG NOT SET OR OTHER BITS SET
1226	6244		RMF		/TURN THE INTERRUPT ON
1227	7610		SKP	CLA	/RESTORE IB, DF AND JB
1232	5230		JMP		
1231	5232		JMP	+.1	/RMF SKIPPED
1232	7402		HLT		/ENTER USER MODE
1233	5233		JMP		/RMF + JMP FAILED TO SET USER FIELD OR RMF FAILED
1234	6254		SINT		/HLT FAILED TO TRAP
1235	4503		ERROR		/SKIP ON USER INTERRUPT
1236	7100		CLL		/USER INTERRUPT NOT SET
1237	6004		GTF		
1240	1136		TAD	M1100	/GET THE FLAGS
1241	7640		SZA	CLA	/CHECK FOR INTERRUPT REQUEST AND USER FLAG
1242	4503		ERROR		/WHERE THEY SET
					/NO, INT REQUEST OR USER FLAG NOT SET OR RMF
1243	6001		ION		/SET OTHER BITS IN THE IF AND DF
1244	5245		JMP	+.1	/TURN THE INTERRUPT BACK ON
1245	4503		ERROR		/INTERRUPT WITH INTERRUPT REQUEST SET
1246	6234		RIB		/PROGRAM FAILED TO INTERRUPT
1247	7640		SZA	CLA	/READ THE INTERRUPT BUFFER
1250	4503		ERROR		/USER FLAG NOT CLEARED ON INTERRUPT

```

1051 6254 SINT /CHECK USER INTERRUPT TO BE SET
1052 4503 ERROR /USED INTERRUPT GOT CLEARED
1053 6274 CINT /CLEAR USER INTERRUPT
1054 6254 SINT /SKIP ON USER INTERRUPT
1055 7410 SKP
1056 4503 ERROR /USER INTERRUPT SET
1057 4504 LOOP /LOOP ON TEST IF SR = 1000
    
```

 /TEST 10- CHECKS THAT USER MODE AND LINK AND ION CAN BE SET BY THE AC AND
 /THE RTF INSTRUCTION AND THAT IT CAN BE CLEAR BY RTF.

```

1060 4505 TEST10, SCOPLP /SETUP SCOPE AND TEST LOOPING ADDRESS
1061 6007 CAF /CLEAR ALL FLAGS
1062 1147 TAD K4100 /SET THE LINK AND USER BIT INTO THE AC
1063 6005 RTF /RESTORE THE FLAGS
1064 7620 SNL CLA /CHECK THE LINK
1065 7402 HLT /LINK NOT SET BY RTF
1066 6000 SKON /SKIP IF INTERRUPT ON AND TURN OFF
1067 7402 HLT /RTF FAILED TO SET INTERRUPT ENABLE
1070 6000 SKON /SKIP IF INTERRUPT ON AND TURN OFF
1071 7410 SKP
1072 7402 HLT /SKON FAILED TO CLEAR INTERRUPT ENABLE
1073 6001 ION /TURN THE INTERRUPT ON
1074 5275 JMP ,+1 /ENTER USER MODE
1075 7402 HLT /RTF FAILED TO SET U,B OR JMP FAILED TO LOAD I,F,
1076 5276 JMP /HLT FAILED TO TRAP
1077 6254 SINT /SKIP ON USER INTERRUPT
1100 4503 ERROR /USER INTERRUPT NOT SET
1101 6004 GTF /GET THE FLAGS
1102 1137 TAD M5100 /CHECK LINK, INTERRUPT REQUEST AND USER FLAG
1103 7640 SZA CLA
1104 4503 ERROR /LINK, INT REQ OR USER FLAG NOT SET
1105 7300 CLA /LEAVE INTERRUPT REQUEST SET
1106 6005 RTF /RESTORE THE FLAGS TO 0
1107 5310 JMP ,+1 /SHOULD INTERRUPT
1110 4503 ERROR /FAILED TO INTERRUPT
1111 6254 SINT /SKIP ON USER INTERRUPT
1112 4503 ERROR /USER INTERRUPT GOT CLEARED
1113 6204 CINT /CLEAR USER INTERRUPT
1114 6234 RIB /READ THE INTERRUPT BUFFER
1115 7640 SZA CLA
1116 4503 ERROR /THE SAVE FIELDS ARE NON ZERO
1117 6004 GTF /GET THE FLAGS
1120 7640 SZA CLA
1121 4503 ERROR /THE SAVE FIELDS ARE NON ZERO
1122 4504 LOOP /LOOP ON TEST IF SR = 1000
    
```

 /TEST 11 - USING THE USER INTERRUPT FLIP-FLOP AND INTERRUPT ENABLE
 /THE IF REGISTER CAN BE INDIRECTLY CHECKED TO SET BY CHECKING THE
 /SAVE FIELD REGISTER AFTER A INTERRUPT, THE I,F IS CHECKED NOT TO CHANGE
 /UNTIL A JMP OR JMS IS ISSUED, THE INT INHIBIT F/F IS CHECKED NOT
 /TO CLEAR BEFORE A JMP OR JMS IS ISSUED.

```

1123 4525 TEST11, SCOPLP /SETUP SCOPE AND TEST LOOPING ADDRESS
1124 6007 CAF /CLEAR ALL FLAGS
1125 6001 ION /TURN THE INTERRUPT ON
1126 6274 SUF /SET USER BUFFER F/F
1127 5330 JMP ,+1 /ENTER USER MODE
1130 7402 HLT /FAILED TO ENTER USER MODE
1131 5331 JMP /HLT FAILED TO TRAP IN USER MODE
1132 6254 SINT /SKIP ON USER INTERRUPT
1133 4503 ERROR /USER INTERRUPT FLIP-FLOP NOT SET
1134 6004 GTF /GET THE FLAGS
1135 1136 TAD M1100 /CHECK FOR INTERRUPT REQUEST AND USER FLAG
1136 7640 SZA CLA
1137 4523 ERROR /USER FLAG OR INT REQUEST NOT SET
1140 6234 RIB /READ THE INTERRUPT BUFFER
1141 1133 TAD M100
1142 7640 SZA CLA
1143 4523 ERROR /USER FLAG GOT CLEARED
1144 6202 TEST11A, CIF 00 /CHANGE INSTRUCTION FIELD TO FIELD 0
1145 7300 CLA CLL /CLEAR THE LINK
1146 6001 ION /TURN THE INTERRUPT ON
1147 6224 RIF /READ THE INSTRUCTION FIELD
1150 7440 SZA /IS IT ZERO
1151 7402 HLT /THE IF IS NON ZERO OR INTERRUPTED
1152 5353 JMP ,+1 /CLEAR INTERRUPT INHIBIT
1153 4503 ERROR /PROGRAM FAILED TO INTERRUPT
1154 6274 GTF /GET THE FLAGS
1155 1360 TAD ,+3 /CHECK FOR USER INTERRUPT REQUEST
1156 7640 SZA CLA
1157 4523 ERROR /INT REG NOT SET OR SAVE FIELD NON ZERO
1160 7000 NOP
1161 6234 RIB /READ THE INTERRUPT BUFFER
1162 7640 SZA CLA /IS THE SAVE FIELD 0?
1163 4533 ERROR /NO, SAVE FIELD OR USER FIELD NON ZERO
1164 7240 TEST11B, CLA CMA /SET A LOCATION TO ALL ONE'S TO CHECK THAT
1165 3374 DCA CUMS01 /THE JMS TO FIELD 7 DIDN'T JMS TO FIELD 0
1166 6272 CIF 70 /CHANGE INSTRUCTION FIELD TO FIELD 7
1167 6001 ION /SET INTERRUPT ENABLE
1170 6224 RIF /READ THE INSTRUCTION FIELD
1171 7440 SZA /IS IT STILL ZERO
1172 7402 HLT /THE IF IS NON ZERO OR IT INTERRUPTED
1173 4374 JMS ,+1 /CLEAR INTERRUPT INHIBIT
1174 7402 HLT /THIS LOCATION PRESET TO 1'S SHOULDN'T CHANGE
1175 4503 ERROR /PROGRAM FAILED TO INTERRUPT
1176 7360 CLA CLL CML CMA /SET AC AND LINK TO ALL ONES
1177 6004 GTF /GET THE FLAGS
1200 1374 TAD M5000 /CHECK FOR LINK, USER INTERRUPT REQUEST,
1201 1131 TAD M70 /AND SAVE FIELD REGISTER OF 70
1202 7640 SZA CLA
1203 4503 ERROR /GTF FAILED OR READ SOMETHING OTHER THAN ABOVE
1204 6234 RIB /READ THE INTERRUPT BUFFER
1205 1131 TAD M70 /IN THE SF SET TO I,S,F, 7 ONLY?
1206 7640 SZA CLA
1207 4503 ERROR /SAVE FIELD IS NOT EQUAL TO FIELD 7
    
```

1212	2777	ISZ	CJMS01	
1211	4503	ERROR		/CHECK THAT THE JMS DIDN'T GO TO FIELD 0
1212	7240	TST11C, CLA CMA		/THE JMS TO FIELD 7 WENT TO FIELD 0
1213	3224	DCA	CJMS02	/SET A LOCATION TO ALL ONE'S TO CHECK THAT A
1214	6254	SINT		/JMS TO FIELD 5 DIDN'T CHANGE FIELD 0
1215	4503	ERROR		/SKIP ON USER INTERRUPT REQUEST
1216	6252	CIF	50	/USER INTERRUPT F/F GOT CLEARED
1217	6001	ION		/CHANGE TO INSTRUCTION FIELD 5
1220	6224	RIF		/SET INTERRUPT ENABLE
1221	7440	SZA		/READ THE INSTRUCTION FIELD
1222	7402	HLT		/IS IT STILL ZERO
1223	4224	JMS	.*1	/THE IF IS NON ZERO OR IT INTERRUPTED
1224	7402	HLT		/CLEAR INTERRUPT INHIBIT AND INTERRUPT
1225	4503	ERROR		/THIS LOCATION PRESET TO 1'S SHOULDN'T CHANGE
1226	7340	CLA CLL CMA		/PROGRAM FAILED TO INTERRUPT
1227	6004	GTF		/SET THE AC TO ALL ONES
1230	1373	TAD	M1000	/GET THE FLAGS
1231	1125	TAD	M50	/CHECK FOR USER INTERRUPT REQUEST AND SAVE
1232	7640	SZA CLA		/FIELD REGISTER OF 50
1233	4503	ERROR		
1234	6234	RIB		/GTF FAILED OR READ SOMETHING OTHER THAN ABOVE
1235	1125	TAD	M50	/READ THE INTERRUPT BUFFER
1236	7640	SZA CLA		/CHECK THE INTERRUPT BUFFER FOR ISF 50
1237	4503	ERROR		
1240	2224	ISZ	CJMS02	/SAVE FIELD IS NOT EQUAL TO 1, F, 5
1241	4503	ERROR		/CHECK THAT JMS DIDN'T GO TO FIELD 0
1242	7240	TST11D, CLA CMA		/THE JMS TO 1, F, S, WENT TO FIELD 0
1243	3252	OCA	CJMS03	/SET A LOCATION TO ALL ONE'S TO CHECK THAT A JMS
1244	6222	CIF	20	/TO FIELD 2 DIDN'T CHANGE FIELD 0
1245	6001	ION		/CHANGE INSTRUCTION FIELD TO FIELD 2
1246	6224	RIF		/SET INTERRUPT ENABLE
1247	7440	SZA		/READ THE INSTRUCTION FIELD
1250	7402	HLT		/IS IT STILL EQUAL TO ZERO
1251	4252	JMS	.*1	/THE IF IS NON ZERO OR IT INTERRUPTED
1252	7402	HLT		/CLEAR INTERRUPT INHIBIT AND INTERRUPT
1253	4503	ERROR		/THIS LOCATION PRESET TO 1'S SHOULDN'T CHANGE
1254	7360	CLA CLL CML CMA		/PROGRAM FAILED TO INTERRUPT
1255	6004	GTF		/SET THE AC AND LINK TO 1'S
1256	1374	TAD	M5000	/GET THE FLAGS
1257	1120	TAD	M20	/CHECK FOR LINK AND USER INTERRUPT REQUEST
1260	7640	SZA CLA		/AND SAVE FIELD REGISTER OF 20
1261	4503	ERROR		
1262	6234	RIB		/GTF FAILED OR READ SOMETHING OTHER THAN ABOVE
1263	1120	TAD	M20	/READ THE INTERRUPT BUFFER
1264	7640	SZA CLA		
1265	4503	ERROR		/DOES THE INTERRUPT BUFFER CONTAIN 20
1266	2252	ISZ	CJMS03	/NO, ERROR SAVE FIELD IS NOT EQUAL TO 20
1267	4503	ERROR		/CHECK THAT JMS DIDN'T GO TO FIELD 0
1270	7240	TST11E, CLA CMA		/THE JMS TO FIELD 2 WENT TO FIELD 0
1271	3300	OCA	CJMS04	/SET A LOCATION TO ALL ONE'S TO CHECK THAT THE
1272	6212	CIF	10	/JMS TO FIELD 1 DIDN'T JMS TO FIELD 2
1273	6001	ION		/CHANGE INSTRUCTION FIELD TO FIELD 1.
1274	6224	RIF		/TURN THE INTERRUPT ON
1275	7440	SZA		/READ THE INSTRUCTION FIELD
1276	7402	HLT		/IS IT STILL ZERO
				/THE IF IS NON ZERO OR IT INTERRUPTED

1277	4300	JMS	.*1	
1300	7402	HLT		/CLEAR INTERRUPT INHIBIT AND INTERRUPT
1301	4503	ERROR		/THIS LOCATION PRESET TO ALL ONE'S SHOULDN'T CHANGE
1302	7340	CLA CLL CMA		/PROGRAM FAILED TO INTERRUPT
1303	6004	GTF		/SET THE AC TO ALL ONE'S
1304	1373	TAD	M1000	/GET THE FLAGS
1305	1116	TAD	M10	/CHECK FOR USER INTERRUPT REQUEST AND
1306	7640	SZA CLA		/SAVE FIELD OF 10
1307	4503	ERROR		
1310	6234	RIB		/GTF FAILED OR READ SOMETHING OTHER THAN ABOVE
1311	1116	TAD	M10	/READ THE INTERRUPT BUFFER
1312	7640	SZA CLA		
1313	4503	ERROR		/SAVE FIELD IS NOT EQUAL TO FIELD 10
1314	2300	ISZ	CJMS04	/CHECK THAT THE JMS DIDN'T GO TO FIELD 0
1315	4503	ERROR		/THE JMS TO FIELD 1 WENT TO FIELD 0
1316	7240	TST11F, CLA CMA		/SET A LOCATION TO ALL ONES TO CHECK THAT THE
1317	3326	OCA	CJMS05	/JMS TO FIELD 6 DIDN'T JMS TO FIELD 0
1320	6262	CIF	60	/CHANGE INSTRUCTION FIELD TO FIELD 6
1321	6001	ION		/TURN THE INTERRUPT ON
1322	6224	RIF		/READ THE INSTRUCTION FIELD
1323	7440	SZA		/IS IT STILL ZERO
1324	7422	HLT		/THE IF IS NON ZERO OR IT INTERRUPTED
1325	4326	JMS	.*1	/CLEAR INTERRUPT INHIBIT AND INTERRUPT
1326	7402	HLT		/THIS LOCATION SET TO ALL ONE'S, IT SHOULDN'T CHANGE
1327	4503	ERROR		/PROGRAM FAILED TO INTERRUPT
1330	7360	CLA CLL CML CMA		/SET THE AC AND LINK TO ALL ONE'S
1331	6004	GTF		/GET THE FLAG
1332	1374	TAD	M5000	/CHECK FOR LINK, USER INTERRUPT REQUEST
1333	1127	TAD	M60	/AND SAVE FIELD OF 60
1334	7640	SZA CLA		
1335	4503	ERROR		/GTF FAILED OR READ SOMETHING OTHER THAN ABOVE
1336	6234	RIB		/READ THE INTERRUPT BUFFER
1337	1127	TAD	M60	
1340	7640	SZA CLA		/SAVE FIELD IS NOT EQUAL TO FIELD 60
1341	4503	ERROR		/CHECK THAT THE JMS DIDN'T GO TO FIELD 0
1342	2326	ISZ	CJMS05	/THE JMS TO FIELD 6 WENT TO FIELD 0
1343	4503	ERROR		/SET A LOCATION TO ALL 1'S TO CHECK THAT THE
1344	7240	TST11G, CLA CMA		/JMS TO FIELD 3 DIDN'T JMS TO FIELD 0
1345	3354	OCA	CJMS06	/CHANGE INSTRUCTION FIELD TO FIELD 3
1346	6232	CIF	30	/TURN THE INTERRUPT ON
1347	6001	ION		/READ THE INSTRUCTION FIELD
1350	6224	RIF		/IS THE IF STILL ZERO
1351	7440	SZA		/THE IF IS NON ZERO OR IT INTERRUPTED
1352	7472	HLT	.*1	/CLEAR INTERRUPT INHIBIT AND INTERRUPT
1353	4354	JMS		/THIS LOCATION PRESET TO ALL ONES, IT SHOULDN'T CHANGE
1354	7402	HLT		/PROGRAM FAILED TO INTERRUPT
1355	4503	ERROR		/SET THE AC TO ALL ONE'S
1356	7340	CLA CLL CMA		/GET THE FLAGS
1357	6004	GTF		/CHECK FOR USER INTERRUPT REQUEST AND
1360	1373	TAD	M1000	/SAVE FIELD OF 30
1361	1375	TAD	M30	
1362	7640	SZA CLA		/GTF FAILED OR READ SOMETHING OTHER THAN ABOVE
1363	4503	ERROR		/READ THE INTERRUPT BUFFER
1364	6234	RIB		
1365	1375	TAD	M30	

1366	7642	SZA	CLA		
1367	4503	ERROR			/SAVE FIELD NOT EQUAL TO FIELD 3
1371	2354	ISZ	CJMS06		
1371	4503	ERROR			/JMS TO FIELD 3 WENT TO FIELD 0
1372	5776	JMP	TST11H		/GO TO NEXT SECTION
1373	7000	M1000,	-1000		
1374	3000	M5000,	-5000		
1375	7750	M30,	-30		
1376	1400				
1377	1174				
1400	7240	TST11H,	PAGE		
1401	3210	CLA	CMA		
1402	6240	DCA	CJMS07		/SET A LOCATION TO ALL ONES TO CHECK
1403	5001	CIF	40		/THAT A JMS TO FIELD 4 DIDN'T JMS TO FIELD 0
1404	6224	ION			/CHANGE INSTRUCTION FIELD TO FIELD 4
1405	7440	RIF			/SET INTERRUPT ENABLE
1406	7402	SZA			/READ THE INSTRUCTION FIELD
1407	4210	HLT			/IS THE IF STILL ZERO
1410	7402	JMS	.+1		/THE IF IS NON ZERO OR IT INTERRUPTED
1411	4503	HLT	CJMS07,		
1412	7360	ERROR			/THIS LOCATION PRESET TO ALL ONE'S
1413	5004	CLA	CLL	CMA	/PROGRAM FAILED TO INTERRUPT
1414	1261	GTF			/SET THE AC AND LINK TO 1'S
1415	1262	TAD	M5000		/GET THE FLAGS
1416	7640	TAD	M40		/CHECK FOR USER INTERRUPT REQUEST AND LINK
1417	4503	SZA	CLA		/AND SAVE FIELD OF 47
1420	6234	ERROR			/GTF FAILED OR READ SOMETHING OTHER THAN ABOVE
1421	1262	RIB			/READ THE INTERRUPT BUFFER
1422	7640	TAD	M40		
1423	4503	SZA	CLA		
1424	2210	ERROR			/SAVE FIELD NOT EQUAL TO 40
1425	4503	ISZ	CJMS07		
1426	7340	ERROR			
1427	3236	TST11I,	CLA	CLL	CMA
1430	6202	DCA	CJMS10		/JMS TO FIELD 4 WENT TO FIELD 0
1431	6001	CIF	40		/SETUP A LOCATION TO CHECK THAT A JMS TO
1432	6224	ION			/FIELD 0 GETS EXECUTED
1433	7440	RIF			/CHANGE INSTRUCTION FIELD TO FIELD 00
1434	7402	SZA			/TURN THE INTERRUPT ON
1435	4236	HLT			/READ THE INSTRUCTION FIELD
1436	7402	JMS	.+1		/IS THE IF STILL ZERO
1437	4503	HLT	CJMS10,		/THE IF IS NON ZERO OR IT INTERRUPTED
1440	5004	ERROR			/CLEAR INTERRUPT ENABLE AND INTERRUPT
1441	1242	GTF			/THIS LOCATION PREVIOUSLY SET TO 1'S
1442	7000	TAD	.+1		/PROGRAM FAILED TO INTERRUPT
1443	7640	NOP			/GET THE FLAGS
1444	4503	SZA	CLA		/CHECK FOR INTERRUPT REQUEST AND
1445	6234	ERROR			/SAVE FIELD OF 0
1446	7640	RIB			/GTF FAILED OR READ SOMETHING OTHER THAN ABOVE
1447	4503	SZA	CLA		/READ THE INTERRUPT BUFFER
1450	2236	ISZ	CJMS10		
1451	7610	SKP	CLA		/SAVE FIELD NON ZERO OR RIB FAILED
					/CHECK THAT THE JMS DID CHANGE LOCATION CJMS10

1452	4503	ERROR			
1453	6001	CAF			/JMS TO FIELD 7 FAILED TO STORE ITS PC IN CJMS10
1454	6004	GTF			/CLEAR ALL FLAGS INCLUDING USER INTERRUPT
1455	7640	SZA	CLA		/GET THE FLAGS
1456	4503	ERROR			
1457	4504	LOOP			/INIT FAILED TO CLEAR USER INTERRUPT F/F
1460	5510	JMP	I	PASEND	/LOOP ON TEST IF SR = 1000
					/END OF 1ST 1K SEGMENT
1461	3000	M5000,	-5000		
1462	7740	M40,	-40		
1600				PAGE	
1600	7000	ACTLIN,	C		
1601	1022	TAD	OP2SEL		
1602	7700	SMA	CLA		/IS THE PROGRAM RUNNING ON ACT LINE?
1603	5600	JMP	I	ACTLIN	/NO, RETURN
1604	1066	TAD	FLDLIM		/GET THE FIELD LIMIT
1605	1131	TAD	M70		
1606	7640	SZA	CLA		/IS THE FIELD LIMIT EQUAL TO FIELD 7?
1607	5600	JMP	I	ACTLIN	/NO, RETURN TO TEST
1610	1267	TAD	UPERLM		/GET THE UPPER ADDRESS LIMIT
1611	7001	IAC			/ADD 1 TO IT
1612	7640	SZA	CLA		/WAS IT 7777
1613	5600	JMP	I	ACTLIN	/NO, RETURN
1614	7352	CLA	CLL	CMA	PTR
1615	3067	DCA	UPERLM		/SET LAST ADDRESS = 5777
1616	5600	JMP	I	ACTLIN	/SAVE IT
					/RETURN TO PROGRAM
1617	1022	ENDPAS,	TAD	OP2SEL	
1620	7700	SMA	CLA		/CHECK FOR ACT LINE
1621	5230	JMP	ENDING		/IS THE PROGRAM RUNNING ON ACT LINE
1622	2236	ISZ	PRGPAS		/NO GO CHECK FOR SR 3 TO HALT AT END OF A PASS
1623	5230	JMP	ENDING		/CHECK 1/2 SECOND COUNT
1624	1377	TAD	(-144		/NOT 1/2 SECOND YET
1625	3236	DCA	PRGPAS		/RESET THE COUNTER
1626	6272	CIF	70		
1627	4500	JMS	I	GOODPS	/CHANGE INSTRUCTION FIELD TO 7
1630	4325	JMS	SWCHK		/SIGNAL THE PROM
1631	7076	RTL			/CHECK SR 3 TO HALT ON A PROGRAM PASS
1632	7004	RAL			
1633	7712	SPA			
1634	7432	HLT	CLA		
1635	5776	JMP	0200		/END OF A COMPLETE PROGRAM PASS
					/RESTART THE PROGRAM
1636	7634	PRGPAS,	-144		

1637	7010	POWVAL, PAR			
1642	3245	DCA	LINK		
1641	1000	TAD	INTSER		
1642	3246	DCA	PC		
1643	6103	CAL			
1644	4501	JMS I	AUTRST		/CLEAR AC LOW F/F
					/RETURN TO THE PROGRAM
1645	2000	LINK, 2			
1646	2000	PC, 2			
1647	2000	PRGRST, 2			
1652	6102	SPL			/SKIP ON AC LOW AS A LEVEL
1651	7610	SKP	CLA		
1652	5250	JMP	,=2		
1653	5502	JMP I	TEST		/RETURN TO TEST BEING EXECUTED AND START OVER
1654	2000	TESTAD, 2			
1655	7340	CLA	CLL CMA		
1656	1254	TAD	TESTAD		
1657	3102	DCA	TEST		
1660	1375	TAD	(PRGRST		
1661	3101	DCA	AUTRST		
1662	5654	JMP I	TESTAD		
1663	7402	BATEMT, HLT			/BATTERY IS EMPTY = GOOD = BYE
1664	5522	JMP I	TEST		/RETURN TO TEST IF OK
1665	2000	GOODBD, 2			
1666	1022	TAD	OP2SEL		/GET HARDWARE CONFIGURATION
1667	7723	SMA	CLA		/IS THE PROGRAM RUNNING ON ACT LINE
1670	5665	JMP I	GOODBD		/NO RETURN TO PROGRAM
1671	6272	CIF	70		/CHANGE INSTRUCTION FIELD TO FIELD 7
1672	4500	JMS I	GOODPS		/SIGNAL ACT LINE PROGRAM STILL RUNNING
1673	5665	JMP I	GOODBD		/RETURN TO PROGRAM
1674	2000	ERRORX, 2			/ERROR ROUTINE
1675	7300	CLA	CLL		
1676	1022	TAD	OP2SEL		/CHECK FOR ACT LINE
1677	7700	SMA	CLA		
1700	5312	JMP	CHKINH		
1701	1221	TAD	OP1SEL		
1702	144	AND	K200		
1703	7640	SEA	CLA		
1704	6160	CLRMOD			
1705	6002	IOF			/TURN THE INTERRUPT OFF
1706	7240	CLA	CMA		
1707	1274	TAD	ERRORX		
1710	6272	CIF	70		
1711	5477	JMP I	BADPAS		/GO TO ROM FOR ERROR
1712	4325	JMS	SWCHK		/CHECK FOR SR 0(1) TO INHIBIT ERROR HALT
1713	7710	SPA	CLA		/IS SR 0 SET TO A ONE

1714	5320	JMP	ERLPSW		/YES, GO CHECK SR 1 TO LOOP ON ERROR
1715	7340	CLA	CLL CMA		
1716	1274	TAD	ERRORX		
1717	7432	HLT			
1720	4325	ERLPSW, JMS	SWCHK		/SUBTRACT ONE FROM JMS ERROR PC
1721	7024	RAL			/AC CONTAINS THE ADDRESS WHERE THE ERROR
1722	7710	SPA			/WAS DETECTED BY THE PROGRAM, REFER
1723	5522	JMP I	TEST		/TO THE PROGRAM LISTING FOR ERROR
1724	5674	JMP I	ERRORX		/EXPLANATION AND THE TEST DESCRIPTION,
					/CHECK THE SWITCH REGISTER TO LOOP ON ERROR
1725	2000	SWCHK, 2			/IS SR 1 SET TO A ONE TO LOOP ON TEST
1726	7300	CLA	CLL		/YES GO LOOP ON THE TEST
1727	1221	TAD	OP1SEL		/NO, RETURN TO THE PROGRAM
1730	7722	SMA	CLA		
1731	5334	JMP	,+3		/GET THE HARDWARE STATUS WORD
1732	7624	LAS			/IS THE HARDWARE FRONT PANEL SELECTED
1733	5725	JMP I	SWCHK		/NO, USE THE PSEUDO SWITCH REGISTER
1734	1020	TAD	SWITCH		/RETURN
1735	5725	JMP I	SWCHK		/THE PSEUDO SWITCH REGISTER
					/RETURN
1736	200	TSTLDP, 2			/ROUTINE TO CHECK SR 2 TO LOOP ON TEST
1737	4325	JMS	SWCHK		/GO GET THE SWITCH REGISTER
1740	7006	RTL			
1741	7700	SMA	CLA		
1742	7736	JMP I	TSTLDP		/GO TO NEXT TEST
1743	5502	JMP I	TEST		/LOOP ON SAME TEST
1744	2000	ACLBAT, 2			
1745	2000	ISZ	INTSER		
1746	5432	JMP I	INTSER		
1775	1647				
1776	200				
1777	7634				
2000		PAGE			
2000					

7200	11111111	11111111	11111111	11100000	00000000	00000000	00111111	11111111
7100	11111111	11111111	11111111	11111111	11111111	00000000	00000000	00000000
7200	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111
7300	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111101
7400	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111
7500	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111
7600	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111
7700	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111
1000	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111
1100	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111
1200	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111
1300	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111
1400	11111111	11111111	11111111	11111111	11111111	11111111	11100000	00000000
1500	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
1600	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111
1700	11111111	11111111	11111111	11111111	11111110	00000000	00000000	00000000

2000
2100

2200
2300

2400
2500

2600
2700

3000
3100

3200
3300

3400
3500

3600
3700

4000
4100

4200
4300

4400
4500

4600
4700

5000
5100

5200
5300

5400
5500

5600
5700

6000
6100

6200
6300

6400
6500

6600
6700

7000
7100

7200
7300

7400
7500

7600
7700

ACLBAT	1744	K7757	0372	RMF	6244
ACTLIN	1600	K7774	0146	RTF	6005
ADDONT	1076	LINK	1645	RX8E	0024
AUTRST	0101	LODRG2	6152	SAVESZ	0065
RADPAS	0077	LODRG3	6153	SAVWFU	0075
RATEMT	1663	LOOP	4504	SBE	6101
07707	0375	M1	0111	SCOPLP	4505
CAF	6007	M10	0116	SJNT	6254
CAL	6103	M100	0133	SKON	6000
CDF	6201	M1000	0603	SKPEMA	6166
CDFCHK	0062	M11	0117	SPL	6102
CHKCDF	0063	M1100	0136	SUP	6274
CHKINF	1712	M125	0134	SWCHK	1725
CIF	6202	M152	0135	SWITCH	0020
CIFCDF	6203	M2	0112	TEST	0102
CINT	6204	M20	0120	TEST1	0201
CJMS01	1174	M25	0121	TEST10	1060
CJMS02	1224	M30	1375	TEST11	1123
CJMS03	1252	M300	0403	TEST2	0342
CJMS04	1300	M33	0122	TEST3	0434
CJMS05	1326	M4	0113	TEST4	0476
CJMS06	1354	M40	1462	TEST5	0532
CJMS07	1410	M4100	0602	TEST6	0604
CJMS10	1436	M43	0123	TEST7	0654
CLREMA	6154	M44	0124	TEST8	0713
CLRM00	6160	M5	0114	TEST9	1003
CLRSIM	6150	M50	0125	TESTAD	1654
CUF	6264	M5000	1374	TST11A	1144
DATPAT	1071	M5100	0137	TST11B	1164
DATREC	0064	M55	0126	TST11C	1212
ENDING	1630	M60	0127	TST11D	1242
ENDPAS	1617	M66	0133	TST11E	1270
ERLPSW	1720	M7	0115	TST11F	1316
ERROR	4503	M70	0131	TST11G	1344
ERRORX	1674	M77	0132	TST11H	1400
EXECUT	6164	M1000	1373	TST11I	1426
FLDLIN	0066	M30	0373	TST2CN	0404
GOODBD	1665	M40	0374	TSTLOP	1736
GOODPS	0100	M5000	1461	UPERLM	0067
STF	6004	OP1SEL	0021	WRKADD	0072
HGHLIN	0073	OP21K1	0000	WRKFLD	0070
HLT	7402	OP2SEL	0022	XBAT	0107
INTSER	0000	PASEND	0110	XPWRFL	0106
K10	0141	PC	1646		
K200	0144	POWFAL	1637		
K400	0145	PRGPAS	1636		
K4100	0147	PRGRST	1647		
K6201	0074	RDF	6214		
K7	0140	REDEMA	6155		
K73	0142	RIB	6234		
K7677	0402	RIF	6224		
K77	0143	RK8E	0023		

ERRORS DETECTED: 0
 LINKS GENERATED: 4
 RUN-TIME: 19 SECONDS
 2K CORE USED

/KMS-A OPTION TEST 2 MAINDEC-08-DJKMA-B-L 1K PART 2
/
/COPYRIGHT (C) 1974, 1975 DIGITAL EQUIPMENT CORPORATION
/
/PROGRAMMER: BRUCE HANSEN
/

////////////////////////////////////
/THE FOLLOWING LISTING WILL CORRESPOND TO THE PAPER TAPE LABELED MAINDEC-08-DJKMA-B-PM2,
/1K PART 2, THIS PAPER TAPE AND LISTING WILL BE THE SECOND OF FOUR 1K SEGMENTED
/PAPER TAPES AND LISTINGS FOR COMPUTERS WITH LESS THAN 4K OF MEMORY,
////////////////////////////////////

/KMS-A OPTION TEST 2 MAINDEC-08-DJKMA-B-L 1K PART 2
/
/COPYRIGHT 1974, 1975 DIGITAL EQUIPMENT CORP., MAYNARD, MASS., 01754
/
/POP-8A OPTION TEST 2 TESTS THE MEMORY EXTENSION/TIME SHARE CONTROL,
/POWER FAIL/A TO RESTART, AND BOOTSTRAP LOADERS

6002 SKD=6002
6007 CAF=6007
7402 HLT=7402

/SWITCH REGISTER SETTINGS
/SR1=1 INHIBIT ERROR HALT
/SR1=1 LOOP ON ERROR
/SR2=1 LOOP ON TEST
/SR3=1 HALT AT COMPLETION OF A PROGRAM PASS

/MEMORY EXTENSION/TIME SHARE INSTRUCTIONS

6204 RTF=6204 /GET FLAGS, READS THE FOLLOWING MACHINE STATES
/INTO THE INDICATED BITS OF THE AC1
/AC0 LINE
/AC2 INTERRUPT REQUEST
/AC4 INTERRUPT ENABLE F/F
/AC5 USER FLAG
/AC6-11 SAVE FIELD REGISTER

6005 RTF=6005 /RESTORE THE FLAGS, RTF LOADS THE LINK FROM AC0.
/LOADS THE USER BUFFER F/F, INSTRUCTION BUFFER AND
/DATA FIELD WITH AC0, AC6-8, AC 9-11 AND INHIBITS
/PROCESSOR INTERRUPTS UNTIL NEXT JMP OR JMS INSTRUCTION,
/AT THE END OF THE JMP OR JMS, THE CONTENTS OF THE U.B. + I.B.
/ARE LOADED INTO USER FIELD F/F, AND THE I.F., INTERRUPT ENABLE
/IS SET AND INTERRUPT INHIBIT AS CLEARED

6234 RIB=6234 /READ THE INTERRUPT BUFFER

6244 RNF=6244 /RESTORES MEMORY FLAGS

6204 CINT=6224 /CLEAR USER INTERRUPT FLIP-FLOP

6254 SINT=6254 /SKIP ON USER INTERRUPT FLIP-FLOP

6264 CUF=6264 /CLEAR USER BUFFER FLIP-FLOP

6274 SJF=6274 /SET USER BUFFER FLIP-FLOP (ENTER TIME SAME MODE) AND
/INHIBITS PROCESSOR INTERRUPTS UNTIL THE NEXT JMP OR
/JMS INSTRUCTION, AT THE END OF THE JMP OR JMS
/INSTRUCTION, THE USER BUFFER IS LOADED INTO THE USER
/FIELD F/F,

6231 CDF=6231 /CHANGE DATA FIELD


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6202 CIF=6202 /CHANGE INSTRUCTION FIELD
6214 RDF=6214 /READ THE DATA FIELD INTO AC BITS 6=8
6224 RIF=6224 /READ THE INSTRUCTION FIELD INTO AC BITS 6=8
6203 CIFCDF=6203 /PERFORMS THE CIF AND CDF FUNCTIONS

/POWER FAIL INSTRUCTIONS
6102 SPL=6102 /SKIP ON AC LOW FLIP-FLOP
6103 CAL=6103 /CLEAR AC LOW FLIP-FLOP
6101 SBE=6101 /SKIP ON BATTERY EMPTY FLIP-FLOP

/OPTION BOARD 2 SIMULATOR IOT'S
6150 CLRSIM=6150 /CLEAR CONTROL REGISTERS
6152 LODRG2=6152 /LOAD CONTROL REGISTER 2
6153 LODRG3=6153 /LOAD CONTROL REGISTER 3
6154 CLREMA=6154 /CLEAR EMA CATCHER LOGIC
6155 REDEMA=6155 /READ EMA CATCHER REGISTER
6160 CLRMOD=6160 /CLEAR TEST MODULE LOGIC
6164 EXECUT=6164 /EXECUT AND CONTROL WORD 3 BIT 7 =1 ISSUE A POWER ON PULSE
6166 SKPEMA=6166 /EXECUT AND CONTROL WORD 3 BIT 7 =0 ISSUE A SWITCH SW PULSE
/ SKPEMA AND CONTROL WORD 3 BIT 3 =1 EMA INTERRUPT AND SKIP ENABLE
/ SKPEMA AND CONTROL WORD 3 BIT 3 =0 EMA INTERRUPT AND SKIP DISABLE

/OPTION BOARD2 SIMULATOR CONTROL WORD 2 BIT ASSIGNMENTS
/
/BITS 2 = 1 NOT USED
/BITS 2 = 8 BOOT STRAP PROGRAM SELECT
/BITS 9 = 11 AUTO-RESTART ADDRESS SELECT

/OPTION BOARD 2 SIMULATOR CONTROL WORD 3 BIT ASSIGNMENTS
/
/BIT 0 TIME SHARE 0=ENABLED 1=DISABLED
/BIT 1 BATT EMPTY 1=BATT EMPTY PULLED LOW 0=FREE STATE
/BIT 2 AC LOW (L) 1=PULLED LOW 0=FREE STATE
/BIT 3 1=EMA INTERRUPT/SKIP ENABLE 0=EMA INTERRUPT SKIP DISABLE
/BITS 4 = 6 NOT USED
/BIT 7 1=POWER ON PULSE WITH EXECUT 0=SWITCH SW PULSE WITH EXECUT
/BIT 8 1=DISABLES BOOTSTRAP WHILE RUNNING 0=ENABLES BOOTSTRAP WHILE RUNNING
/BIT 9 = 11 AUTO-RESTART/BOOT STRAP ENABLE CODE
    
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0000 *0
0000 0000 INTSER, 0 /JMS I AUTRST PLACED HERE FOR SIMULATOR AUTO RESTART
0001 0000 OCA DATREC
0002 6102 SPL /SKIP ON AC LOW
0003 7410 SKP
    
```

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0004 5506 JMP I XPWRF /POWER GOING DOWN
0005 6101 SBE /SKIP ON BATTERY EMPTY
0006 7410 SKP
0007 5507 JMP I XBAT /GO HALT THE COMPUTER ,ITS ALL OVER
0010 6224 RIF /READ THE INSTRUCTION FIELD
0011 7642 SZA CLA
0012 4503 ERROR /I,F, IS NOT 0 AFTER A INTERRUPT
0013 6214 RDF /READ THE DATA FIELD
0014 7642 SZA CLA
0015 4503 ERROR /D,F, IS NOT 0 AFTER A INTERRUPT
0016 0000 ISZ INTSER /ADD 1 TO THE INTERRUPTED PC
0017 5402 JMP I INTSER /RET RN TO THE PROGRAM

0020 *00
0020 0000 SWITCH, 0 /PSEUDO SWITCH REGISTER IF BIT 0=0 OF OP1SEL
0021 1000 OP1SEL, 1000
/ BIT 0=0 USE LOC 20 AS A PSEUDO S,R,
/ BIT 0=1 USE HARDWARE FRONT PANEL S,R,
/ BIT 1=1 HAS 8A OPTION 1
/ BIT 2=1 HAS 8A OPTION 2
/ BIT 3=1 HAS 8A CPU SIMULATOR
/ BIT 4=1 HAS 8A OPTION 1 + 2 TEST MODULE
/ BIT 5=1 PROGRAM ON 8A XOR
/ BIT 6=1 HAS POP=8E TYPE CPU
/ BITS 7-11 MEMORY SIZE = 0'S = 1K, 37=32K,
/ MEMORY SIZE CAN BE INCREASED IN 1K INCREMENTS
/ BY ADDING A 1 TO THE NUMBER IN BITS 7-11,

0022 0000 OP2SEL, 0
/ RKB BOOT STRAP WILL LOAD INTO THE FOLLOWING LOCATIONS

0023 7402 RXBE, HLT /2200
0024 7402 RXBE, HLT /6745
0025 7402 HLT /0023
0026 7402 HLT /7642
0027 7402 HLT /5024
0030 7402 HLT /6733
0031 7402 HLT /5031
0032 7402 HLT /TERMINATOR

0062 *62
0062 0000 OPCHK, 0
0063 0000 CHKCOF, 0
0064 0000 DATREC, 0
0065 0000 SAVESZ, 0
0066 0000 FLDLIN, 0
0067 0000 UPERLN, 0
0070 0000 WRKFLD, 0
0071 0000 DATPAT, 0
0072 0000 WRKADD, 0
0073 0000 HGHLIN, 0
0074 6201 <6201, 6271
    
```

0075 1000 SAVWFD, 7
 0076 0000 ADDCNT, 0
 0077 6520 RADPAS, 6520
 0100 6500 GOOUPS, 6500
 0101 1647 AJTRST, PRGRST
 0102 0000 TEST, 7

/SCOPE LOOP AND TEST LOOP ADDRESS

0103 4503 ERROR= JMS I ,
 1674 , ERRORX
 4504 LOOP= JMS I ,
 0104 1736 , TSTLOP
 4505 SCOPLP= JMS I ,
 0105 1654 , TESTAD
 0106 1637 XPWRFL, POWFAL
 0107 1663 XBAT, RATEMT
 0110 1617 PASEMD, ENDPAS

/CONSTANTS USED BY THE PROGRAM

0111 7777 M1, -1
 0112 7776 M2, -2
 0113 7774 M4, -4
 0114 7773 M5, -5
 0115 7771 M7, -7
 0116 7770 M10, -10
 0117 7767 M11, -11
 0120 7760 M20, -20
 0121 7753 M25, -25
 0122 7745 M33, -33
 0123 7735 M43, -43
 0124 7734 M44, -44
 0125 7732 M50, -50
 0126 7723 M55, -55
 0127 7720 M60, -60
 0130 7712 M66, -66
 0131 7710 M70, -70
 0132 7701 M77, -77
 0133 7700 M100, -100
 0134 7653 M120, -120
 0135 7626 M152, -152
 0136 6700 M1100, -1100
 0137 2700 M5100, -5100
 0140 0007 K7, 7
 0141 0010 K10, 10
 0142 0070 K70, 70
 0143 0077 K77, 77
 0144 0200 K200, 200
 0145 0400 K400, 400
 0146 7774 K7774, 7774
 0147 4100 K4100, 4100
 0200 *200

 /TEST 12 = CHECKS THAT A CIF AND ODF WILL LOAD THE APPROPRIATE
 /SAVE FIELD REGISTERS, A DCA INDIRECT IS CHECKED NOT TO CHANGE
 /A LOCATION IN FIELD 0 WHEN THE DATA FIELD IS NON ZERO, A
 /JMS I IS CHECKED NOT TO CHANGE A LOCATION IN FIELD ZERO WHEN
 /THE INSTRUCTION FIELD IS NON ZERO.

0202 4505 TEST12, SCOPLP /SETUP TEST AND SCOPE LOOPING ADDRESS
 0201 6007 CAF /CLEAR ALL FLAGS
 0202 6001 ION /TURN THE INTERRUPT ON
 0203 6274 SUF /SET USER BUFFER FLIP=FL0P
 0204 5205 JMP ,+1 /ENTER TIME SHARE MODE
 0205 7402 HLT /PROGRAM FAILED TO ENTER USER MODE
 0206 5206 JMP , /HLT FAILED TO TRAP
 0207 6254 SINT /SKIP ON USER INTERRUPT
 0210 4503 ERROR /SINT FAILED OR USER INTERRUPT NOT SET
 0211 6004 STF /GET THE FLAGS
 0212 1136 TAD M1100 /CHECK FOR USER INTERRUPT AND USER FLAG
 0213 7640 SZA CLA
 0214 4503 ERROR /GTF READ SOMETHING DIFFERENT THAN ABOVE
 0215 7340 TST12A, CLA CLL CMA /SET THE AC TO ALL ONES
 0216 3362 DCA CDFCHK /STORE IT TO CHECK THAT THE DATA FIELD CHANGED
 0217 7347 CLA CLL CMA /SET THE AC TO ALL ONES
 0220 3227 DCA CKJMS1 /SAVE IT TO CHECK THE JMS TO ANOTHER FIELD
 0221 6261 ODF 63 /CHANGE DATA FIELD TO FIELD 6
 0222 6212 CIF 10 /CHANGE INSTRUCTION FIELD TO FIELD 1
 0223 3463 DCA I CHKODF /CHANGE EMA LINES TO CHECK THAT THE
 /DCA WENT TO ANOTHER FIELD THAN FIELD 0
 /TURN THE INTERRUPT ON
 0224 6001 ION /CLEAR INTERRUPT INHIBIT AND INTERRUPT
 0225 4626 JMS I ,+1
 0226 227 CKJMS1
 0227 7402 HLT /THIS LOCATION PRESET TO ONE/S TO CHECK MS TO ANOTHER FIELD
 0230 4503 ERROR /PROGRAM FAILED TO INTERRUPT
 0231 6004 STF /GET THE FLAGS
 0232 1361 TAD M1016 /CHECK FOR INT REQ, ISF OF 10 AND OSF OF 6
 0233 7640 SZA CLA /IF SAVE FIELD REGISTER
 0234 4503 ERROR /SAVE FIELD NOT EQUAL TO ABOVE
 0235 6234 RIB /READ THE INTERRUPT BUFFER
 0236 1370 TAD M16 /CHECK FOR ISF OF 10 AND OSF OF 6
 0237 7640 SZA CLA
 0240 4503 ERROR /RIB FAILED OR SAVE FIELD NOT EQUAL TO 16
 0241 2062 ISZ CDFCHK /CHECK THAT THE DCA WENT TO ANOTHER FIELD
 0242 4503 ERROR /DCA I WENT TO FIELD 2 INSTEAD OF FIELD 6
 0243 2227 ISZ CKJMS1 /CHECK THAT JMS I WENT TO ANOTHER FIELD
 0244 4503 ERROR /JMS I WENT TO FIELD 0 INSTEAD OF FIELD 1
 0245 7340 TST12B, CLA CLL CMA /SET LOCATION CDFCHK AND CKJMS2 TO ONES
 0246 3362 DCA CDFCHK /TO CHECK DCA I AND JMS I WENT TO
 0247 7340 CLA CLL CMA /ANOTHER FIELD THAN FIELD 0
 0250 3257 DCA CKJMS2
 0251 6211 ODF 10 /CHANGE DATA FIELD TO FIELD 1
 0252 6262 CIF 63 /CHANGE INSTRUCTION FIELD TO FIELD 6
 0253 3463 DCA I CHKODF /CHANGE EMA LINES TO FIELD 1

0254	6001	ION		/CDFCHK SHOULD NOT CHANGE IN FIELD 0
0255	4656	JMS I	,+1	/TURN THE INTERRUPT ON
0256	2257	CKJMS2		/CLEAR INTERRUPT INHIBIT
0257	7402	CKJMS2,	HLT	/INDIRECT ADDRESS
0260	4503	ERROR		/THIS LOCATION PRESET TO ONE'S TO CHECK JMS TO FIELD 6
0261	7340	CLA CLL CMA		/PROGRAM FAILED TO INTERRUPT
0262	6004	GTF		/SET THE AC TO ALL ONES
0263	1362	TAD	M1061	/GET THE FLAGS
0264	7640	SZA CLA		/CHECK FOR INT REQ, ISF OF 6 AND DSF OF 1
0265	4503	ERROR		
0266	6234	RIB		/THE SAVE FIELD NOT EQUAL TO ABOVE
0267	1367	TAD	M61	/READ THE INTERRUPT BUFFER
0270	7640	SZA CLA		/CHECK FOR I,S,F, OF 6 AND I,D,F, OF 1
0271	4503	ERROR		
0272	2062	ISZ	CDFCHK	/THE SAVE FIELD NOT EQUAL TO ABOVE
0273	4503	ERROR		/CHECK THAT DCA I WENT TO ANOTHER FIELD
0274	2257	ISZ	CKJMS2	/DCA I WENT TO FIELD 0 INSTEAD OF FIELD 1
0275	4503	ERROR		/CHECK THAT JMS I WENT TO ANOTHER FIELD
0276	7340	TST120,	CLA CLL CMA	/JMS I WENT TO FIELD 0 INSTEAD OF FIELD 16.
0277	3062	DCA	CDFCHK	/SET LOCATIONS CDFCHK AND CKJMS3 TO ONE'S
0300	7340	CLA CLL CMA		/TO CHECK THAT DCA I AND JMS I WENT
0301	3310	DCA	CKJMS3	/TO ANOTHER FIELD THAN FIELD 0
0302	6232	CIF	30	
0303	6241	CDF	40	/CHANGE INSTRUCTION FIELD TO FIELD 3
0304	3463	DCA I	CHKCDF	/CHANGE DATA FIELD TO FIELD 4
0305	6001	ION		/CHANGE EMA LINES TO FIELD 4
0306	4707	JMS I	,+1	/TURN THE INTERRUPT ON
0307	2310	CKJMS3		/CLEAR INTERRUPT INHIBIT
0310	7402	CKJMS3,	HLT	/INDIRECT ADDRESS
0311	4503	ERROR		/THIS LOCATION PRESET TO ONES TO CHECK JMS TO FIELD 3
0312	7340	CLA CLL CMA		/PROGRAM FAILED TO INTERRUPT
0313	6004	GTF		/SET THE AC TO ALL ONES
0314	1363	TAD	M1034	/GET THE FLAGS
0315	7640	SZA CLA		/CHECK FOR INT REG, ISF OF 3 AND DSF OF 4
0316	4503	ERROR		
0317	6234	RIB		/THE SAVE FIELD REGISTER NOT EQUAL TO ABOVE
0320	1365	TAD	M34	/READ THE INTERRUPT BUFFER
0321	7640	SZA CLA		/CHECK FOR ISF OF 3 AND DSF OF 4
0322	4503	ERROR		
0323	2062	ISZ	CDFCHK	/THE SAVE FIELD REGISTER NOT EQUAL TO ABOVE
0324	4503	ERROR		
0325	2310	ISZ	CKJMS3	/DCA I WENT TO FIELD 0 INSTEAD OF FIELD 4
0326	4503	ERROR		
0327	7340	TST120,	CLA CLL CMA	/JMS I WENT TO FIELD 0 INSTEAD OF FIELD 3
0330	3062	DCA	CDFCHK	/SET LOCATIONS CDFCHK AND CKJMS4 TO ONES,
0331	7340	CLA CLL CMA		/TO CHECK THAT DCA I OR JMS I TO ANOTHER
0332	3341	DCA	CKJMS4	/FIELD DOESN'T GO TO FIELD 0
0333	6252	CIF	50	
0334	6221	CDF	20	/CHANGE INSTRUCTION FIELD TO FIELD 5
0335	3463	DCA I	CHKCDF	/CHANGE DATA FIELD TO FIELD 2
0336	6001	ION		/CHANGE EMA LINES TO FIELD 2
0337	4740	JMS I	,+1	/TURN THE INTERRUPT ON
0340	2341	CKJMS4		/CLEAR INTERRUPT INHIBIT
0341	7402	CKJMS4,	HLT	/INDIRECT ADDRESS
				/THIS LOCATION PRESET TO ONES TO CHECK JMS TO FIELD 5

0342	4503	ERROR		/PROGRAM FAILED TO INTERRUPT
0343	7340	CLA CLL CMA		/SET THE AC TO ALL ONES
0344	6004	GTF		/GET THE FLAGS
0345	1364	TAD	M1052	/CHECK FOR INT, REQ,, ISF OF 5, AND DSF OF 2
0346	7640	SZA CLA		
0347	4503	ERROR		
0350	6234	RIB		/THE SAVE FIELD REGISTER NOT EQUAL TO ABOVE
0351	1366	TAD	M52	/READ THE INTERRUPT BUFFER
0352	7640	SZA CLA		/CHECK FOR ISF OF 5 AND DSF OF 2
0353	4503	ERROR		
0354	2262	ISZ	CDFCHK	/SAVE FIELD NOT EQUAL TO ABOVE
0355	4503	ERROR		
0356	2341	ISZ	CKJMS4	/DCA I TO FIELD 2 WENT TO FIELD 7
0357	4503	ERROR		
0360	5777	JMP	TST12E	/JMS I TO FIELD 5 WENT TO FIELD 7
0361	6762	M1016,	-1216	
0362	6717	M1061,	-1261	
0363	6744	M1034,	-1034	
0364	6726	M1052,	-1052	
0365	7744	M34,	-34	
0366	7726	M52,	-52	
0367	7717	M61,	-61	
0370	7762	M16,	-16	
0377	4435			
	7402	PAGE		
0400	7200	NOP		
0401	6753	M1025,	-1025	
0402	6735	M1043,	-1043	
0403	6710	M1070,	-1070	
0404	6771	M1007,	-1007	
0405	7340	TST12E,	CLA CLL CMA	/SET UP LOCATIONS CDFCHK AND CKJMS5 TO ONES
0406	3062	DCA	CDFCHK	/TO CHECK THAT DCA I OR JMP I TO ANOTHER
0407	7240	CLA CMA		/FIELD DOESN'T GO TO FIELD 0
0410	3217	DCA	CKJMS5	
0411	6251	CDF	50	
0412	6222	CIF	20	/CHANGE DATA FIELD TO FIELD 5
0413	3463	DCA I	CHKCDF	/CHANGE INSTRUCTION FIELD TO 2
2414	6001	ION		/CHANGE EMA LINES TO 5 (OF 04)
0415	4616	JMS I	,+1	/TURN INTERRUPT ENABLE ON
0416	417	CKJMS5		/CLEAR INTERRUPT INHIBIT
0417	7402	CKJMS5,	HLT	/INDIRECT ADDRESS
0420	4503	ERROR		/THIS LOCATION PRESET TO ONES TO CHECK JMS TO FIELD 2
0421	7340	CLA CLL CMA		/PROGRAM FAILED TO INTERRUPT
0422	6234	GTF		/SET THE AC TO ALL ONES
0423	1201	TAD	M1025	/GET THE FLAGS
0424	7640	SZA CLA		/CHECK FOR INT, REQ,, ISF=2 AND DSF=5
0425	4503	ERROR		
0426	6234	RIB		/THE SAVE FIELD REGISTER NOT EQUAL TO ABOVE
0427	1121	TAD	M25	/READ THE INTERRUPT BUFFER
0430	7640	SZA CLA		/CHECK FOR ISF OF 2 AND DSF=5
0431	4503	ERROR		
0432	2262	ISZ	CDFCHK	/SAVE FIELD REGISTER NOT EQUAL TO ABOVE

0432	4503	ERROR		/DCA I TO FIELD 5 WENT TO FIELD 7
0434	2217	ISZ	CKJMS5	
0435	4503	ERROR		/JMS I TO FIELD 2 WENT TO FIELD 0
0436	7340	TST12F, CLA CLL	CMA	/SET LOCATIONS CDFCHK AND CKJMS6 TO
0437	3062	DCA	CDFCHK	/ONES TO CHECK THAT DCA I AND JMS I
0440	7240	CLA CMA		/TO ANOTHER FIELD DOESN'T GO TO FIELD 0
0441	3250	DCA	CKJMS6	
0442	6231	CDF	00	/CHANGE DATA FIELD TO FIELD 3
0443	6242	CIF	40	/CHANGE INSTRUCTION FIELD TO FIELD 4
0444	3463	DCA I	CHKCDF	/CHANGE EMA LINES TO 3
0445	6001	ION		/TURN THE INTERRUPT ON
0446	4647	JMS I	,+1	/CLEAR INTERRUPT INHIBIT
0447	4450	CKJMS6		/INDIRECT ADDRESS
0450	7402	HLT		/THIS LOCATION PRESET TO ONES TO CHECK JMS TO FIELD 4
0451	4503	ERROR		/PROGRAM FAILED TO INTERRUPT
0452	7340	CLA CLL	CMA	/SET THE AC TO ALL ONE'S
0453	6004	GTF		/GET THE FLAGS
0454	1202	TAD	M1043	/CHECK FOR INT, REQ,, ISF OF 4 AND DSF OF 3,
0455	7640	SZA CLA		
0456	4503	ERROR		/SAVE FIELD NOT EQUAL TO ABOVE
0457	6234	RIB		/READ THE INTERRUPT BUFFER
0460	1123	TAD	M43	/CHECK FOR ISF OF 4 AND DSF OF 3
0461	7640	SZA CLA		
0462	4503	ERROR		/SAVE FIELD NOT EQUAL TO ABOVE
0463	2062	ISZ	CDFCHK	
0464	4503	ERROR		/DCA I WENT TO FIELD 0 INSTEAD OF FIELD 3
0465	2250	ISZ	CKJMS6	
0466	4503	ERROR		/JMS I WENT TO FIELD 0 INSTEAD OF FIELD 4
0467	7340	TST12G, CLA CLL	CMA	/SET CDFCHK AND CKJMS7 TO ONES TO
0470	3062	DCA	CDFCHK	/CHECK FOR DCA I TO ANOTHER FIELD AND A
0471	7240	CLA CMA		/JMS I TO ANOTHER FIELD
0472	3301	DCA	CKJMS7	
0473	6271	CDF	70	/CHANGE DATA FIELD TO FIELD 7
0474	6242	CIF	00	/CHANGE INSTRUCTION FIELD TO FIELD 0
0475	4463	DCA I	CHKCDF	/CHANGE EMA LINES TO 7
0476	6001	ION		/TURN INTERRUPT ON
0477	4700	JMS I	,+1	/CLEAR INTERRUPT INHIBIT
0500	4501	CKJMS7		/INDIRECT ADDRESS
0501	7402	HLT		/THIS LOCATION WAS SET TO ONE'S BUT SHOULD CHANGE
0502	4503	ERROR		/PROGRAM FAILED TO INTERRUPT
0503	7340	CLA CLL	CMA	
0504	6004	GTF		/GET THE FLAGS
0505	1204	TAD	M1007	/CHECK FOR INT, REQ,, ISF=0, DSF=7
0506	7640	SZA CLA		
0507	4503	ERROR		/SAVE FIELD NOT EQUAL TO ABOVE
0510	6234	RIB		/READ THE INTERRUPT BUFFER
0511	1115	TAD	M7	/CHECK FOR DSF OF 7
0512	7640	SZA CLA		
0513	4503	ERROR		/SAVE FIELD NOT EQUAL TO DSF OF 7
0514	2062	ISZ	CDFCHK	
0515	4503	ERROR		/DCA I WENT TO FIELD 0 INSTEAD OF FIELD 7
0516	2301	ISZ	CKJMS7	
0517	7410	SKP		
0520	4503	ERROR		/JMS I TO FIELD 7 WENT TO ANOTHER FIELD
0521	7340	TST12H, CLA CLL	CMA	/SET UP CDFCHK TO ONES TO CHECK THAT

0522	3062	DCA	CDFCHK	/DCA I TO FIELD 2 WILL CLEAR IT AND SET
0523	7340	CLA CLL	CMA	/LOCATION CKJMS8 TO 1'S TO CHECK THAT
0524	3333	DCA	CKJMS8	/JMS I TO FIELD 7 WON'T CLEAR IT
0525	6201	CDF	00	/CHANGE DATA FIELD TO FIELD 0
0526	6272	CIF	70	/CHANGE INSTRUCTION FIELD TO FIELD 7
0527	3463	DCA I	CHKCDF	/CLEAR LOCATION CDFCHK IF EMA LINES WENT TO ZERO
0530	6001	ION		/TURN THE INTERRUPT ON
0531	4732	JMS I	,+1	/CLEAR INTERRUPT INHIBIT
0532	4533	CKJMS8		/INDIRECT ADDRESS
0533	7402	HLT		/THIS LOCATION PRESET TO 1'S, IT SHOULD NOT CHANGE
0534	4503	ERROR		/PROGRAM FAILED TO INTERRUPT
0535	7340	CLA CLL	CMA	/SET THE AC TO ALL ONES
0536	6004	GTF		/GET THE FLAGS
0537	1203	TAD	M1070	/CHECK FOR INT, REQ,, ISF=7 AND DSF=0
0540	7640	SZA CLA		
0541	4523	ERROR		/SAVE FIELD REGISTER NOT EQUAL TO ABOVE
0542	6234	RIB		/READ THE INTERRUPT BUFFER
0543	1131	TAD	M70	/CHECK SAVE FIELDS FOR ISF OF 7 AND DSF OF 0
0544	7640	SZA CLA		
0545	4523	ERROR		/SAVE FIELD NOT EQUAL TO ABOVE
0546	2062	ISZ	CDFCHK	
0547	7410	SKP		
0550	4503	ERROR		/DCA I TO FIELD 2 WENT TO ANOTHER FIELD
0551	2333	ISZ	CKJMS5	
0552	4503	ERROR		/JMS I TO FIELD 7 WENT TO FIELD 7
0553	7240	TST12I, CLA CMA		/SETUP CDFCHK AND CKJMS9 TO ONES TO
0554	3062	DCA	CDFCHK	/CHECK THAT DCA I AND JMS I TO FIELD 0
0555	7340	CLA CLL	CMA	/WILL CHANGE THESE LOCATIONS
0556	3365	DCA	CKJMS9	
0557	6201	CDF	00	/CHANGE DATA FIELD TO FIELD 0
0560	6202	CIF	00	/CHANGE INSTRUCTION FIELD TO FIELD 0
0561	3463	DCA I	CHKCDF	/CLEAR LOCATION CDFCHK
0562	6001	ION		/SET INTERRUPT ENABLE
0563	4764	JMS I	,+1	/CLEAR INTERRUPT INHIBIT
0564	2565	CKJMS9		/INDIRECT ADDRESS
0565	7402	HLT		/THIS LOCATION PRESET TO ONES, SHOULD CHANGE
0566	4503	ERROR		/PROGRAM FAILED TO INTERRUPT
0567	7340	CLA CLL	CMA	/SET THE AC TO ALL ONE'S
0570	6004	GTF		/GET THE FLAGS
0571	1372	TAD	,+1	/CHECK FOR INTERRUPT REQUEST
0572	7000	NOP		
0573	7640	SZA CLA		
0574	4503	ERROR		/SAVE FIELD NOT EQUAL TO ABOVE
0575	6234	RIB		/READ THE INTERRUPT BUFFER
0576	7640	SZA CLA		/IS THE SAVE FIELD EQUAL TO 2
0577	4503	ERROR		/SAVE FIELD NOT EQUAL TO ZERO
0600	2062	ISZ	CDFCHK	
0601	7410	SKP		
0602	4503	ERROR		/DCA I TO FIELD 2 DID NOT GO TO FIELD 0
0603	2777	ISZ	CKJMS7	
0604	7410	SKP		
0605	4523	ERROR		/JMS I TO FIELD 2 DID NOT GO TO FIELD 4
0606	1371	TAD	K7737	/CHECK THE INCLUSIVE OR OF RIF WITH AC
0607	6224	RIF		
0610	1142	TAD	K73	

0611 7040
0612 7640
0613 4533
0614 6254
0615 4503
0616 6007
0617 6254
0620 7410
0621 4503
0622 4504

CMA
SZA CLA
ERROR
SINT
ERROR
CAF
SINT
SKP
ERROR
LOOP

/THE INCLUSIVE OR OF IF WITH AC FAILED
/SKIP ON USER INTERRUPT
/USER INTERRUPT FLIP-FLOP GOT CLEARED
/CLEAR ALL FLAGS
/SKIP ON USER INTERRUPT

/INIT FAILED TO CLEAR USER INTERRUPT F/F
/LOOP ON TEST IF SR = 1000

/TEST 13 - CHECKS THE MICRO PROGRAM INSTRUCTIONS CDF CIF (62X3). A DCA I
/AND JMS ARE ALSO ISSUED TO CHECK THAT THESE INSTRUCTIONS DO NOT DESTROY
/LOCATIONS IN FIELD 2. THE USER INTERRUPT F/F IS USED TO CAUSE INTERRUPTS.

0623 4525
0624 6007
0625 6222
0626 5201
0627 5230
0630 5201
0631 6274
0632 5233
0633 7402
0634 5234
0635 6254
0636 4503
0637 6234
0640 1133
0641 7640
0642 4503
0643 7240
0644 3062
0645 7240
0646 3253
0647 6273
0650 3463
0651 6001
0652 4253
0653 7402
0654 4523
0655 6234
0656 1132
0657 7640
0660 4503
0661 2062
0662 4503
0663 2253
0664 4503
0665 6254
0666 4503
0667 7240
0670 3062

TEST13, SCOPLP
CAF
CIF 00
CDF 00
JMP +1
ION
SUF
JMP +1
HLT
JMP
SINT
ERROR
RIB
TAD M100
SZA CLA
ERROR
TST13A, CLA CMA
DCA CDFCHK
CLA CMA
DCA JMSCK1
CIFCDF 73
DCA I CHKCDF
ION
JMS JMSCK1
HLT
ERROR
RIB
TAD M77
SZA CLA
ERROR
ISZ CDFCHK
ERROR
ISZ JMSCK1
ERROR
SINT
TST13B, CLA CMA
DCA CDFCHK

/SETUP TEST AND SCOPE LOOPING ADDRESS
/CLEAR ALL FLAGS
/INITIALIZE THE IF AND DF TO FIELD 0
/
/LOAD THE IF BY A JMP
/TURN THE INTERRUPT ON
/SET THE USER BUFFER F/F
/ENTER USER MODE
/PROGRAM FAILED TO TRAP
/HALT FAILED TO TRAP
/SKIP ON USER INTERRUPT FLIP-FLOP
/USER INTERRUPT FLIP-FLOP NOT SET
/READ THE INTERRUPT BUFFER

/USER FLAG NOT SET OR SAVE FIELD NON ZERO
/SETUP TWO LOCATIONS TO CHECK THAT A CIF,CDF
/WENT TO ANOTHER FIELD BY DOING A DCA I AND JMS

/CHANGE IF AND DF TO FIELD 7
/TRY TO CLEAR CDFCHK IN FIELD 7
/SET INTERRUPT ENABLE
/CLEAR INTERRUPT INHIBIT AND INTERRUPT
/THIS LOCATION PRESET TO 7777
/PROGRAM FAILED TO INTERRUPT
/READ THE INTERRUPT BUFFER
/CHECK SAVE FIELD FOR ISF OF 7 AND DSF OF 7

/CIFCDF TO FIELD 7 FAILED OR SAVE FIELD NOT=TO 77
/DCA I TO FIELD 7 WENT TO FIELD 7

/JMS TO FIELD 7 WENT TO FIELD 0
/SKIP ON USER INTERRUPT F/F
/USER INTERRUPT F/F GOT CLEARED
/SETUP TWO LOCATIONS TO CHECK THAT CIFCDF 20
/WENT TO ANOTHER FIELD THAN FIELD 3

0671 7240
0672 3277
0673 6223
0674 7463
0675 6001
0676 4277
0677 7402
0700 4503
0701 6234
0702 1372
0703 7640
0704 4503
0705 2062
0706 4503
0707 2277
0710 4503
0711 7240
0712 3062
0713 7240
0714 3321
0715 6253
0716 3463
0717 6001
0720 4321
0721 7402
0722 4503
0723 6234
0724 1120
0725 7640
0726 4503
0727 2062
0730 4503
0731 3321
0732 4503
0733 6254
0734 4503
0735 7240
0736 3062
0737 7240
0740 3345
0741 6243
0742 3463
0743 6001
0744 4345
0745 7402
0746 4503
0747 6234
0750 1124
0751 7640
0752 4503
0753 2062
0754 4503
0755 2345
0756 4503
0757 6254

CLA CMA
DCA JMSCK2
CIFCDF 20
DCA I CHKCDF
ION
JMS JMSCK2
HLT
ERROR
RIB
TAD M22
SZA CLA
ERROR
ISZ CDFCHK
ERROR
ISZ JMSCK2
ERROR
TST13C, CLA CMA
DCA CDFCHK
CLA CMA
DCA JMSCK3
CIFCDF 50
DCA I CHKCDF
ION
JMS JMSCK3
HLT
ERROR
RIB
TAD M55
SZA CLA
ERROR
ISZ CDFCHK
ERROR
ISZ JMSCK3
ERROR
SINT
TST13D, CLA CMA
DCA CDFCHK
CLA CMA
DCA JMSCK4
CIFCDF 40
DCA I CHKCDF
ION
JMS JMSCK4
HLT
ERROR
RIB
TAD M44
SZA CLA
ERROR
ISZ CDFCHK
ERROR
ISZ JMSCK4
ERROR
SINT

/CHANGE INSTRUCTION FIELD AND DATA FIELD TO 2
/TRY TO CLEAR CDFCHK IN FIELD 2
/SET INTERRUPT ENABLE
/CLEAR INTERRUPT INHIBIT AND INTERRUPT
/THIS LOCATIONS PRESET TO 7777
/PROGRAM FAILED TO INTERRUPT
/READ THE INTERRUPT BUFFER
/CHECK SAVE FIELD FOR ISF=2 + DSF=2

/SAVE FIELD NOT EQUAL TO CIFCDF 20 FAILED
/DCA I TO FIELD 2 WENT TO FIELD 2

/JMS TO FIELD 2 WENT TO FIELD 0
/SETUP TWO LOCATIONS TO CHECK THAT CIFCDF 50
/WENT TO ANOTHER FIELD THAN FIELD 3

/CHANGE INSTRUCTION FIELD AND DATA FIELD TO FIELD 5
/TRY TO CLEAR CDFCHK IN FIELD 5
/SET INTERRUPT ENABLE
/CLEAR INTERRUPT INHIBIT AND INTERRUPT
/THIS LOCATIONS PRESET TO 7777
/PROGRAM FAILED TO INTERRUPT
/READ THE INTERRUPT BUFFER
/CHECK FOR ISF OF 5 AND DSF OF 5

/SAVE FIELD NOT EQUAL TO ISF,DSF OF 5
/DCA I TO FIELD 5 WENT TO FIELD 2

/JMS TO FIELD 5 WENT TO FIELD 0
/SKIP ON USER INTERRUPT F/F
/USER INTERRUPT F/F GOT CLEARED
/SETUP TWO LOCATIONS TO ONE'S TO CHECK
/THAT CIFCDF TO FIELD 4 WENT TO ANOTHER
/FIELD THAN FIELD 2

/CHANGE INSTRUCTION FIELD AND DATA FIELD TO FIELD 4
/TRY TO CLEAR CDFCHK IN FIELD 4
/SET INTERRUPT ENABLE
/CLEAR INTERRUPT INHIBIT AND INTERRUPT
/THIS LOCATION PRESET TO ONE'S
/PROGRAM FAILED TO INTERRUPT
/READ THE INTERRUPT BUFFER
/CHECK ISF FOR 4 AND DSF FOR 4

/SAVE FIELD NOT EQUAL TO 44
/DCA I TO FIELD 4 WENT TO FIELD 0

/JMS TO FIELD 4 WENT TO FIELD 0
/SKIP ON USER INTERRUPT F/F

0760	4503		ERROR		/USER INTERRUPT F/F GOT CLEARED
0761	7340	TST13E,	CLA CLL CMA		/SETUP TWO LOCATIONS TO CHECK THAT CIFCDF 30
0762	3062		DCA	CDFCHK	/WENT TO ANOTHER FIELD THAN FIELD 0
0763	7240		CLA CMA		
0764	3776		DCA	JMSCK5	
0765	6233		CIFCDF	30	/CHANGE INSTRUCTION AND DATA FIELD TO FIELD 3
0766	3463		DCA I	CHKCDF	/TRY TO CLEAR CDFCHK IN FIELD 3
0767	6001		ION		/SET INTERRUPT ENABLE
0770	4776		JMS	JMSCK5	/CLEAR INTERRUPT INHIBIT AND INTERRUPT
0771	7707	K77.17,	7707		
0772	7756	M22,	-22		
0776	1000				
0777	0565				
	1000		PAGE		
1000	7402	JMSCK5,	HLT		/THIS LOCATION PRESET TO ONES
1001	4503		ERROR		/PROGRAM FAILED TO INTERRUPT
1002	6234		RIB		/READ THE INTERRUPT BUFFER
1003	1122		TAD	M33	/CHECK FOR ISF OF 3 AND DSF OF 3
1004	7640		SZA CLA		
1005	4503		ERROR		/SAVE FIELD NOT EQUAL TO ABOVE OR CIFCDF 30 FAILED
1006	2062		ISZ	CDFCHK	
1007	4503		ERROR		/DCA I TO FIELD 3 WENT TO FIELD 0
1010	2200		ISZ	JMSCK5	
1011	4503		ERROR		/JMS TO FIELD 3 WENT TO FIELD 0
1012	6254		SINT		/SKIP ON USER INTERRUPT F/F
1013	4503		ERROR		/USER INTERRUPT F/F GOT CLEARED
1014	7240	TST13F,	CLA CMA		/SETUP TWO LOCATIONS TO CHECK THAT
1015	3062		DCA	CDFCHK	/CIFCDF 60 WENT TO ANOTHER FIELD
1016	7240		CLA CMA		/THEN FIELD ZERO
1017	3224		DCA	JMSCK6	
1020	6263		CIFCDF	60	/CHANGE INSTRUCTION AND DATA FIELD TO FIELD 6,
1021	3463		DCA I	CHKCDF	/TRY TO CLEAR CDFCHK IN FIELD 6
1022	6001		ION		/SET INTERRUPT ENABLE
1023	4224		JMS	JMSCK6	/CLEAR INTERRUPT INHIBIT AND INTERRUPT
1024	7402	JMSCK6,	HLT		/THIS LOCATIONS PRESET TO ONES
1025	4503		ERROR		/PROGRAM FAILED TO INTERRUPT
1026	6234		RIB		/READ THE INTERRUPT BUFFER
1027	1130		TAD	M66	/CHECK FOR ISF OF 6 AND DSF OF 6
1030	7640		SZA CLA		
1031	4503		ERROR		/SAVE FIELD NOT EQUAL ABOVE OR CIFCDF 60 FAILED
1032	2062		ISZ	CDFCHK	
1033	4503		ERROR		/DCA I TO FIELD 6 WENT TO FIELD 0
1034	2224		ISZ	JMSCK6	
1035	4503		ERROR		/JMS TO FIELD 6 WENT TO FIELD 0
1036	6254		SINT		/SKIP ON USER INTERRUPT F/F
1037	4503		ERROR		/USER INTERRUPT GOT CLEARED
1040	7240	TST13G,	CLA CMA		/SETUP 2 LOCATIONS TO CHECK THAT
1041	3062		DCA	CDFCHK	/CIFCDF 10 WENT TO ANOTHER FIELD
1042	7240		CLA CMA		/THAN FIELD 0
1043	3250		DCA	JMSCK7	
1044	6213		CIFCDF	10	/CHANGE INSTRUCTION FIELD + DATA FIELD TO FIELD 1

1245	3463		DCA I	CHKCDF	/TRY TO CLEAR CDFCHK IN FIELD 1
1246	6001		ION		/SET INTERRUPT ENABLE
1247	4250		JMS	JMSCK7	/CLEAR INTERRUPT INHIBIT AND INTERRUPT
1250	7402	JMSCK7,	HLT		/THIS LOCATION PRESET TO ONES
1251	4503		ERROR		/PROGRAM FAILED TO INTERRUPT
1252	6234		RIB		/READ THE INTERRUPT BUFFER
1253	1117		TAD	M11	/CHECK FOR ISF OF 1 AND DSF OF 1
1254	7640		SZA CLA		
1255	4503		ERROR		/SAVE FIELD NOT EQUAL ABOVE OR CIFCDF 10 FAILED
1256	2062		ISZ	CDFCHK	
1257	4503		ERROR		/DCA I TO FIELD 1 WENT TO FIELD 0
1260	2250		ISZ	JMSCK7	
1261	4503		ERROR		/JMS TO FIELD 1 WENT TO FIELD 0
1262	6254		SINT		/SKIP ON USER INTERRUPT F/F
1263	4503		ERROR		/USER INTERRUPT F/F GOT CLEARED
1264	7240	TST13H,	CLA CMA		/SETUP 2 LOCATIONS TO CHECK THAT
1265	3062		DCA	CDFCHK	/CIFCDF 00 WENT TO FIELD 0 INSTEAD
1266	7240		CLA CMA		/OF ANOTHER FIELD
1267	3274		DCA	JMSCK8	
1270	6233		CIFCDF	00	/CHANGE INSTRUCTION AND DATA FIELD TO 2
1271	3463		DCA I	CHKCDF	/CLEAR CDFCHK IN FIELD 2
1272	6001		ION		/SET INTERRUPT ENABLE
1273	4274		JMS	JMSCK8	/CLEAR INTERRUPT INHIBIT AND INTERRUPT
1274	7402	JMSCK8,	HLT		/THIS LOCATIONS PRESET TO ONES
1275	4503		ERROR		/PROGRAM FAILED TO INTERRUPT
1276	6234		RIB		/READ THE INTERRUPT BUFFER
1277	7640		SZA CLA		
1102	4503		ERROR		/SAVE FIELD IS NOT EQUAL TO 0
1101	2062		ISZ	CDFCHK	
1102	7410		SKP		
1103	4503		ERROR		/DCA I FAILED TO CLEAR CDFCHK IN FIELD 0
1104	2274		ISZ	JMSCK8	
1105	7410		SKP		
1106	4503		ERROR		/JMS FAILED TO CHANGE JMSCK8 IN FIELD 2
1107	6234		SINT		/CLEAR USER INTERRUPT F/F
1110	6254		SINT		/SKIP ON USER INTERRUPT F/F
1111	7410		SKP		
1112	4503		ERROR		/CINT FAILED TO CLEAR USER INTERRUPT F/F
1113	4524		LOOP		/LOOP ON TEST IF SR 2 = 1000

 /TEST 14 - CHECKS THAT RTF CAN LOAD THE IF AND DF AND THAT RMF CAN
 /RELOAD IT.

1114	4525	TEST14,	SCOPLP		/SETUP SCOPE AND TEST LOOPING ADDRESS
1115	6027		CAF		/CLEAR ALL FLAGS
1116	6001		ION		/SET INTERRUPT ENABLE
1117	6274		SUF		/SET USER BUFFER
1120	5321		JMP	+1	/LOAD THE UB INTO THE IF
1121	7402		HLT		/HALT SHOULD TRAP
1122	5322		JMP		/HLT FAILED TO TRAP
1123	6254		SINT		/SKIP ON USER INTERRUPT
1124	4503		ERROR		/USER INTERRUPT NOT SET
1125	6234		RIB		/READ THE INTERRUPT BUFFER

1126	1133	TAD	M100	
1127	7640	SZA	CLA	/CHECK FOR USER FLAG
1130	4503	ERROR		/USER FLAG OR INT REQ NOT SET
1131	1125	0125		
1132	1331	TST14A, TAD	,=1	
1133	6005	RTF		/LOAD THE UB, IB, + DF WITH USER FLAG, IF OF 2 + DF OF 5
1134	7300	CLA CLL		/AND SET INTERRUPT ENABLE
1135	5214	RDF		/READ THE DATA FIELD TO CHECK THAT FIELD 5 GOT LOADED
1136	1125	TAD	M50	
1137	7640	SZA CLA		
1142	7402	HLT		/RTF FAILED TO LOAD DATA FIELD TO 5
1141	5342	JMP	,+1	/ENTER USER MODE, CLEAR INT INHIBIT, AND INTERRUPT
1142	4503	ERROR		/FAILED TO INTERRUPT, RTF OR JMP FAILED
1143	6254	SINT		/SKIP ON USER INTERRUPT F/F
1144	4503	ERROR		/SINT FAILED OR USER INTERRUPT F/F CLEARED
1145	6234	RIB		/CHECK FOR USER FLAG, ISF OF 2 AND DSF OF 5
1146	1134	TAD	M125	
1147	7640	SZA CLA		
1150	4503	ERROR		/SAVE FIELD NOT EQUAL TO ABOVE
1151	6244	RMF		/LOAD THE UB, IB, + DF FROM THE SAVE FIELD
1152	6214	RDF		/READ THE DATA FIELD
1153	1125	TAD	M50	/CHECK THAT RMF LOADED THE DF
1154	7640	SZA CLA		
1155	4503	ERROR		/RMF FAILED TO LOAD DF TO FIELD 5
1156	6001	ION		/SET INTERRUPT ENABLE
1157	5360	JMP	,+1	/LOAD THE IF, CLEAR INTERRUPT INHIBIT, ENTER USER MODE
1160	4503	ERROR		/FAILED TO INTERRUPT OR RMF JMP FAILED
1161	6254	SINT		/SKIP ON USER INTERRUPT FLIP=FLOP
1162	4503	ERROR		/USER INTERRUPT FLIP=FLOP NOT SET
1163	6234	RIB		/READ THE INTERRUPT BUFFER
1164	1134	TAD	M125	/CHECK FOR USER FLAG, ISF OF 2 AND DSF OF 5
1165	7640	SZA CLA		
1166	4503	ERROR		/RMF FAILED TO LOAD THE ABOVE
1167	0152	0152		
1170	1367	TST14B, TAD	,=1	
1171	6005	RTF		/LOAD THE UB, IB, + DF WITH UF, ISF OF 5 AND DSF OF 2
1172	7300	CLA CLL		/AND SET INTERRUPT ENABLE
1173	6214	RDF		/READ THE DATA FIELD
1174	1120	TAD	M20	/CHECK FOR A DF SET TO FIELD 2
1175	7640	SZA CLA		
1176	7402	HLT		/RTF FAILED TO LOAD DF WITH 2
1177	7000	NOP		
1200	5201	JMP	,+1	/ENTER USER MODE CLEAR INTERRUPT INHIBIT
1201	4503	ERROR		/FAILED TO INTERRUPT
1202	6254	SINT		/SKIP ON USER INTERRUPT
1203	4503	ERROR		/USER INTERRUPT NOT SET
1204	6234	RIB		/READ THE INTERRUPT BUFFER
1205	1135	TAD	M152	/CHECK FOR USER FLAG, ISF OF 5 AND DSF OF 2
1206	7640	SZA CLA		
1207	4503	ERROR		/SAVE FIELD NOT EQUAL TO ABOVE
1210	6244	RMF		/RESTORE MEMORY FIELDS
1211	6214	RDF		/READ THE DATA FIELD
1212	1120	TAD	M20	/CHECK THAT RMF LOADED DF TO FIELD 2
1213	7640	SZA CLA		
1214	4503	ERROR		/RMF FAILED TO LOAD DF TO FIELD 2

1215	7000	NOP		
1216	6001	ION		/SET INTERRUPT ENABLE
1217	5220	JMP	,+1	/CLEAR INTERRUPT INHIBIT, LOAD IF, ENTER USER MODE
1220	4503	ERROR		/FAILED TO INTERRUPT
1221	6254	SINT		/SKIP ON USER INTERRUPT
1222	4503	ERROR		/USER INTERRUPT NOT SET
1223	6234	RIB		/READ THE INTERRUPT BUFFER
1224	1135	TAD	M152	/CHECK SF FOR USER FLAG, ISF OF 5 AND DSF OF 2
1225	7640	SZA CLA		
1226	4503	ERROR		/RMF FAILED TO LOAD THE ABOVE
1227	6254	TST14C, SINT		/SKIP ON USER INTERRUPT FLIP=FLOP
1230	4503	ERROR		/USER INTERRUPT FLIP=FLOP GOT CLEARED,
1231	1143	TAD	K77	/LOAD DATA FIELD AND IB TO FIELD 7
1232	6005	RTF		/RESTORE THE FLAGS AND SET INTERRUPT ENABLE
1233	7300	CLA CLL		
1234	6214	RDF		/READ THE DATA FIELD
1235	1131	TAD	M73	/CHECK FOR DATA FIELD SET TO FIELD 7
1236	7640	SZA CLA		
1237	7402	HLT		/RTF FAILED TO SET DF TO FIELD 7
1240	5241	JMP	,+1	/CLEAR INTERRUPT INHIBIT AND INTERRUPT
1241	4503	ERROR		/PROGRAM FAILED TO INTERRUPT ON USER INTERRUPT
1242	6234	RIB		/READ THE INTERRUPT BUFFER
1243	1132	TAD	M77	/CHECK FOR UF=0, ISF=7 AND DSF=7
1244	7640	SZA CLA		
1245	4503	ERROR		/SAVE FIELD NOT EQUAL TO ABOVE
1246	6254	SINT		/SKIP ON USER INTERRUPT
1247	4503	ERROR		/USER INTERRUPT GOT CLEARED
1250	6244	RMF		/RESTORE MEMORY FIELDS
1251	6214	RDF		/CHECK THAT RMF RESTORED THE DF
1252	1131	TAD	M72	
1253	7640	SZA CLA		
1254	4503	ERROR		/RMF FAILED TO LOAD DF TO 7
1255	6224	RIF		/CHECK INSTRUCTION FIELD TO BE SET 3
1256	7640	SZA CLA		
1257	4503	ERROR		/IF IS NON ZERO AFTER A RMF
1260	6001	ION		/SET INTERRUPT ENABLE
1261	5262	JMP	,+1	/CLEAR INTERRUPT INHIBIT AND INTERRUPT
1262	4503	ERROR		/PROGRAM FAILED TO INTERRUPT,
1263	6234	RIB		/READ THE INTERRUPT BUFFER
1264	1132	TAD	M77	/CHECK FOR ISF AND DSF = TO 7
1265	7640	SZA CLA		
1266	4503	ERROR		/RMF FAILED TO RESTORE IF AND DF TO 7
1267	6254	TST14D, SINT		/SKIP ON USER INTERRUPT FLIP=FLOP
1270	4503	ERROR		/USER INTERRUPT CLEARED
1271	6005	RTF		/RESTORE THE FLAGS, SET IB+DF TO ZERO
1272	5273	JMP	,+1	/CLEAR INTERRUPT INHIBIT AND INTERRUPT
1273	4503	ERROR		/PROGRAM FAILED TO INTERRUPT
1274	6234	RIB		/READ THE INTERRUPT BUFFER
1275	7640	SZA CLA		
1276	4503	ERROR		/THE ISF OR DSF IS NON ZERO
1277	6244	RMF		/RESTORE MEMORY FIELDS
1300	6001	ION		/SET INTERRUPT ENABLE
1301	5302	JMP	,+1	/CLEAR INTERRUPT INHIBIT AND INTERRUPT
1302	4503	ERROR		/PROGRAM FAILED TO INTERRUPT
1303	6234	RIB		/READ THE INTERRUPT BUFFER

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1304 7640 SZA CLA
1305 4503 ERROR /RMF FAILED TO RELOAD IF AND DF TO ZERO
1306 6204 CINT /CLEAR USER INTERRUPT FLIP=FLOP
1307 6254 SINT /SKIP ON USER INTERRUPT FLIP=FLOP
1312 7610 SKP CLA
1311 4503 ERROR /CINT FAILED TO CLEAR USER INTERRUPT
1312 4504 LOOP /LOOP ON TEST IF SR = 1000
    
```

 /TEST 15 = SETS THE UB TO A 1, THE IF AND DF TO FIELD 6, THE PROGRAM
 /THEN ISSUES AND, TAD, ISZ, AND DCA INDIRECTS TO CHECK THAT THE
 /PROGRAM DOESN'T INTERRUPT UNTIL A JUMP INSTRUCTION IS ISSUED.

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1313 4505 TEST15, SCOPLP /SETUP SCOPE AND TEST LOOPING ADDRESS
1314 6007 CAF /CLEAR ALL FLAGS
1315 6203 CIFICDF /CHANGE DATA AND INSTRUCTION FIELD TO 0
1316 5317 JMP ,+1 /CLEAR INTERRUPT INHIBIT
1317 6264 CUF /CLEAR USER FLAG
1322 6204 CINT /CLEAR USER INTERRUPT FLIP=FLOP
1321 6001 ION /SET INTERRUPT ENABLE
1322 6274 SUF /SET USER BUFFER FLIP=FLOP
1323 5324 JMP ,+1 /CLEAR INTERRUPT INHIBIT
1324 7402 HLT /FAILED TO ENTER USER MODE
1325 5325 JMP /HLT FAILED TO TRAP
1326 6254 SINT /SKIP ON USER INTERRUPT FLIP=FLOP
1327 4503 ERROR /USER INTERRUPT FLIP=FLOP NOT SET
1327 6234 RIB /READ THE INTERRUPT BUFFER
1331 1133 TAD M100 /CHECK FOR USER FLAG
1332 7640 SZA CLA
1333 4503 ERROR /USER FLAG NOT SET
1334 6263 CIFICDF 60 /CHANGE IB AND DF TO FIELD 6 AND SET INTERRUPT INHIBIT
1335 6001 ION /SET INTERRUPT ENABLE, THE PROGRAM
    /SHOULDN'T INTERRUPT UNTIL A JMP OR JMS IS ISSUED,
    /CHECK THAT PROGRAM DOESN'T INTERRUPT
1336 7000 NOP
1337 7410 SKP
1342 7402 HLT /PROGRAM INTERRUPTED BEFORE A JMP WAS ISSUED
1341 3742 DCA I ,+1 /DO A DCA I TO NEXT LOCATIONS
1342 7410 SKP
1343 7402 HLT /PROGRAM INTERRUPTED BEFORE A JMP WAS ISSUED
1344 1745 TAD I ,+1 /DO A TAD I TO NEXT LOCATION
1345 7410 SKP
1346 7402 HLT /PROGRAM INTERRUPTED BEFORE A JMP WAS ISSUED
1347 -750 AND I ,+1 /DO A AND I TO THE NEXT LOCATION
1352 7410 SKP
1351 7402 HLT /PROGRAM INTERRUPTED BEFORE A JMP WAS ISSUED
1352 2753 ISZ I ,+1 /DO A ISZ I TO THE NEXT LOCATION
1353 7410 SKP
1354 7402 HLT /PROGRAM INTERRUPTED BEFORE A JMP WAS ISSUED
1355 5356 JMP ,+1 /CLEAR INTERRUPT INHIBIT AND INTERRUPT
1356 4503 ERROR /PROGRAM FAILED TO INTERRUPT
1357 6234 RIB /READ THE INTERRUPT BUFFER
1360 1130 TAD M66 /CHECK FOR ISF AND USE OF 6
1361 7640 SZA CLA
1362 4503 ERROR /SAVE FIELD NOT EQUAL TO 66
    
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1363 6254 SINT /SKIP ON USER INTERRUPT F/F
1364 4503 ERROR /USER INTERRUPT F/F NOT SET
1365 7300 CLA CLL /CLEAR AC AND LINK
1366 6203 CIFICDF /SET IB AND DF TO 7
1367 6001 ION /SET INTERRUPT ENABLE
1372 5371 JMP ,+1 /CLEAR INTERRUPT INHIBIT
1371 4503 ERROR /PROGRAM FAILED TO INTERRUPT
1372 6254 SINT /SKIP ON USER INTERRUPT
1373 4503 ERROR /USER INTERRUPT NOT SET
1374 6204 CINT /CLEAR USER INTERRUPT
1375 7340 CLA CLL CMA /SET THE AC TO ONES AND LINK TO 2
1376 6004 GTF /GET THE FLAGS
1377 7640 SZA CLA
1402 4503 ERROR /THE LINK, INT REQ, OR SAVE FIELD NON ZERO
1401 4504 LOOP /LOOP ON TEST IF SR = 1000
    
```

 /TEST 16 = IS A DATA TEST TO CHECK THAT DATA CAN BE DEPOSITED INTO EACH
 /SELECTED EXTENDED FIELD, DATA IS DEPOSITED INTO THE LAST ADDRESS OF
 /EACH 1K MEMORY SEGMENT IN THE EXTENDED MEMORY FIELD, THE USER INTERRUPT
 /IS SET FOR THIS TEST, THE PROGRAM CHANGES THE DATA FIELD TO THE NEW FIELD
 /CHECKS, IT THEN TURNS THE INTERRUPT ON AND DOES A DCA I TO THE LAST
 /ADDRESS IN A 1K MEMORY SEGMENT OF THAT FIELD, THE PROGRAM THEN DOES THE
 /SAME AS ABOVE, ONLY DOING A TAD I TO THE LAST ADDRESS OF A 1K MEMORY
 /SEGMENT, THE DATA THAT IS PUT INTO THE LAST ADDRESS OF EACH EXTENDED
 /1K MEMORY SEGMENT CONTAINS THE FIELD IN BITS 6-8 AND THE 1K SEGMENT IN
 /BITS 9-11,

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1402 4505 TEST16, SCOPLP /SETUP TEST AND SCOPE LOOPING ADDRESS
1403 6007 CAF /CLEAR ALL FLAGS
1404 6001 ION /TURN THE INTERRUPT ON
1405 1021 TAD OP1SEL /GET MEMORY SIZE FROM LOCATION 21
1406 1371 AND K37 /MASK OFF THE MEMORY BITS
1407 7104 CLL RAL /ROTATE BITS LEFT ONCE TO SETUP FOR FIELD
1411 3065 DCA SAVESZ /LIMIT AND LAST ADDRESS IN LAST FIELD
1411 1065 TAD SAVESZ /GET THE NUMBER
1412 142 AND K70 /MASK OFF BITS 6-8 FOR FIELD LIMIT
1413 3266 DCA FLDLIM /SAVE THE NUMBER AS THE LAST SELECTED FIELD
1414 1065 TAD SAVESZ /GET THE ROTATED NUMBER
1415 140 AND K7 /MASK OFF ADDRESS BITS
1416 7112 CLL RTR /ROTATE THE NUMBER 4 PLACES TO THE RIGHT
1417 7012 RTR
1422 1372 TAD K1777 /ADD 1K TO THE NUMBER
1421 3267 DCA LPERLM /SAVE THIS NUMBER AS THE LAST ADDRESS IN LAST FIELD
1422 1066 TAD FLDLIM /GET THE FIELD LIMIT
1423 7650 SNA CLA /IS THE LAST FIELD = TO FIELD 2
1424 5510 JMP I PASEND /END OF 2ND 1K SEGMENT
1425 4777 JMS ACTLIN /CHECK FOR ACT LINE AND 32K OF MEMORY
1426 6001 ION /TURN THE INTERRUPT ON
1427 6274 SUF /SET USER BUFFER F/F
1432 5231 JMP ,+1 /SHOULD TRAP HERE
1431 7402 HLT /HALT FAILED TO TRAP
1432 5232 JMP
    
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1433	6254	SINT			
1434	4503	ERROR			/SKIP ON USER INTERRUPT
1435	7340	CLA CLL CMA			/USER INTERRUPT NOT SET
1436	6004	GTF			/SET THE AC TO ALL ONES
1437	1136	TAD	M1100		/GET THE FLAGS
1440	7640	SZA	CLA		/CHECK FOR USER FLAG AND INT REQ
1441	4503	ERROR			
1442	3070	DCA	WRKFLD		/SAVE FIELD NOT EQUAL TO ABOVE
1443	3071	DCA	DATPAT		/CLEAR WORKING FIELD
1444	1372	REGT16, TAD	K1777		/CLEAR DATA PATTERN
1445	3072	DCA	WRKADD		/GET UPPER ADDRESS OF 1K FIELD
1446	1070	TAD	WRKFLD		/SET FIRST ADDRESS EQUAL TO 1777
1447	1141	TAD	K10		/GET THE WORKING FIELD
1450	3070	DCA	WRKFLD		/ADD A FIELD TO IT
1451	1070	TAD	WRKFLD		
1452	7041	CIA			/GET THE WORKING FIELD
1453	1066	TAD	FLDLIM		/NEGATE IT
1454	7510	SPA			/COMPARE IT TO THE FIELD LIMIT
1455	5363	JMP	ENDTST		/IS THE NEW FIELD GREATER THAN FIELD LIMIT
1456	7640	SZA	CLA		/YES END OF TEST
1457	7240	CLA	CMA		/IS NEW FIELD EQUAL TO LAST FIELD
1460	7450	SNA			/NO, THE LAST ADDRESS IN THIS FIELD WILL BE 7777
1461	1067	TAD	UPERLM		/YES, THE LAST ADDRESS WILL BE EQUAL TO UPERLM
1462	3073	DCA	HGHLIM		
1463	1073	TAD	HGHLIM		/SAVE THE LAST ADDRESS IN THIS FIELD
1464	7040	CMA			/GET THE HIGH LIMIT
1465	7106	CLL	RTL		/COMPLEMENT IT
1466	7004	RAL			/ROTATE 3 PLACES TO THE RIGHT
1467	1146	TAD	K7774		/
1470	3076	DCA	ADDCNT		/ADD IN 4K ADDRESS CONSTANT
1471	1070	TAD	WRKFLD		/SAVE IT
1472	7001	IAC			/GET THE NEW FIELD
1473	3071	DCA	DATPAT		/ADD 1 TO IT
1474	6254	T16LCD, SINT			/SAVE THE WORD AS THE DATA PATTERN
1475	4503	ERROR			/SKIP ON USER INTERRUPT
1476	1070	TAD	WRKFLD		/USER INTERRUPT GOT CLEARED
1477	1074	TAD	K6201		/GET THE NEW FIELD
1500	3301	DCA	.+1		/GET THE CDF INSTRUCTION
					/PUT CDF TO NEW FIELD IN NEXT ADDRESS
1501	7402	COFNEW, HLT/COF			
1502	6214	RDF			/CHANGE DATA FIELD TO NEW FIELD
1503	7041	CIA			/READ THE DATA FIELD
1504	1070	TAD	WRKFLD		/NEGATE IT
1505	7640	SZA	CLA		/GET THE NEW FIELD
1506	4503	ERROR			
1507	1071	TAD	DATPAT		/CDF TO NEW FIELD FAILED
1510	6001	ION			/GET THE DATA PATTERN
1511	3472	DCA	I WRKADD		/TURN THE INTERRUPT ON
1512	4503	ERROR			/PUT THE WORD UP IN NEW FIELD AND INTERRUPT
1513	1070	TAD	WRKFLD		/PROGRAM FAILED TO INTERRUPT
1514	7112	CLL	RTR		
1515	7040	RAR			
1516	3075	DCA	SAVWFD		
1517	6234	RIB			/SAVE THE WORKING FIELD IN BITS 9-11
1520	7041	CIA			/READ THE INTERRUPT BUFFER
					/NEGATE IT

1521	1075	TAD	SAVWFD		
1522	7640	SZA	CLA		/GET THE EXPECTED WORKING SAVE FIELD
1523	4503	ERROR			
1524	6254	SINT			/SAVE FIELD NOT EQUAL TO EXPECTED FIELD
1525	4503	ERROR			/SKIP ON USER INTERRUPT F/F
1526	1301	TAD	COFNEW		/USER INTERRUPT GOT CLEARED
1527	3330	DCA	.+1		/GET THE CDF INSTRUCTION TO THE NEW FIELD
1530	7402	HLT/COF			/PUT IT IN THE NEXT LOCATION
1531	6214	RDF			/CDF TO NEW FIELD
1532	7041	CIA			/READ THE DATA FIELD
1533	1070	TAD	WRKFLD		/NEGATE IT
1534	7640	SZA	CLA		/GET THE WORKING FIELD
1535	4503	ERROR			
1536	6001	ION			/CDF TO NEW FIELD FAILED
1537	1472	TAD	I WRKADD		/TURN THE INTERRUPT ON
1540	4503	ERROR			/GET DATA PATTERN FROM NEW FIELD
1541	6234	RIB			/PROGRAM FAILED TO INTERRUPT
1542	7041	CIA			/READ THE INTERRUPT BUFFER
1543	1075	TAD	SAVWFD		/NEGATE IT
1544	7640	SZA	CLA		/GET THE EXPECTED SAVE FIELD
1545	4503	ERROR			/ARE THEY EQUAL
1546	1071	TAD	DATPAT		/NO, EXPECTED SAVE FIELD NOT EQUAL TO FIELD READ
1547	7041	CIA			/GET THE DATA PATTERN
1550	1064	TAD	DATREC		/NEGATE IT
1551	7640	SZA	CLA		/GET THE WORD RECEIVED
1552	4503	ERROR			/ARE THEY EQUAL?
1553	2076	ISZ	ADDCNT		/NO, DATA ERROR IN WRKFLD
1554	7610	SKP	CLA		/GET NEXT ADDRESS IN THIS FIELD?
1555	5244	JMP	BEGT16		/YES
1556	7332	CLA CLL	CML RTR		/NO, GO GET NEXT FIELD IF ANY LEFT
1557	1072	TAD	WRKADD		/ADD 1K
1560	3072	DCA	WRKADD		/GET THE WORKING ADDRESS
1561	2071	ISZ	DATPAT		/SAVE NEW 1K UPPER ADDRESS BOUNDARY
1562	5274	JMP	T16LCD		/ADD ANOTHER 1K TO DATA WORD
1563	6204	ENDTST, CINT			/GO LOAD AND COMPARE THIS ADDRESS
1564	6254	SINT			/CLEAR USER INTERRUPT
1565	7610	SKP	CLA		/SKIP ON USER INTERRUPT
1566	4503	ERROR			
1567	4504	LOOP			/CINT FAILED TO CLEAR USER INTERRUPT
1570	5510	JMP	I PASEND		/LOOP ON TEST IF SR = 1000
1571	1037	K37, 37			
1572	1777	K1777, 1777			
1577	1600				
	1600	PAGE			
1600	0000	ACTLIN, 0			
1601	1022	TAD	OP2SEL		
1602	7700	SMA	CLA		/IS THE PROGRAM RUNNING ON ACT LINE?
1603	5600	JMP	I ACTLIN		/NO, RETURN
1604	1066	TAD	FLDLIM		/GET THE FIELD LIMIT
1605	1131	TAD	M73		
1606	7640	SZA	CLA		/IS THE FIELD LIMIT EQUAL TO FIELD 7?

1607	5600	JMP	I	ACTLIN	/NO, RETURN TO TEST
1610	1067	TAD		UPERLM	/GET THE UPPER ADDRESS LIMIT
1611	7001	IAC			/ADD 1 TO IT
1612	7640	SZA		CLA	/WAS IT 7777
1613	5600	JMP	I	ACTLIN	/NO, RETURN
1614	7392	CLA	CLL	CMA RTR	/SET LAST ADDRESS = 5777
1615	3067	DCA		UPERLM	/SAVE IT
1616	5600	JMP	I	ACTLIN	/RETURN TO PROGRAM
1617	1022	ENDPAS,	TAD	OP2SEL	/CHECK FOR ACT LINE
1620	7700	SMA		CLA	/IS THE PROGRAM RUNNING ON ACT LINE
1621	5230	JMP		ENDING	/NO GO CHECK FOR SR 3 TO HALT AT END OF A PASS
1622	2236	ISZ		PRGPAS	/CHECK 1/2 SECOND COUNT
1623	5230	JMP		ENDING	/NOT 1/2 SECOND YET
1624	1377	TAD		(=144	/RESET THE COUNTER
1625	3236	DCA		PRGPAS	
1626	6272	CIF		70	/CHANGE INSTRUCTION FIELD TO 7
1627	4500	JMS	I	GOODPS	/SIGNAL THE PROM
1630	4325	ENDING,	JMS	SWCHK	/CHECK SR 3 TO HALT ON A PROGRAM PASS
1631	7006	RTL			
1632	7004	RAL			
1633	7710	SPA		CLA	
1634	7402	HLT			/END OF A COMPLETE PROGRAM PASS
1635	5776	JMP		0200	
1636	7634	PRGPAS,		-144	
1637	7010	POWFAL,	RAR		
1640	3245	DCA		LINK	
1641	1020	TAD		INTSER	
1642	3246	DCA		PC	
1643	6103	CAL			/CLEAR AC LOW F/F
1644	4501	JMS	I	AUTRST	/RETURN TO THE PROGRAM
1645	0000	LINK,		0	
1646	0000	PC,		0	
1647	0000	PRGRST,		0	
1650	6102	SPL			/SKIP ON AC LOW AS A LEVEL
1651	7610	SKP		CLA	
1652	5250	JMP		,=2	
1653	5502	JMP	I	TEST	/RETURN TO TEST BEING EXECUTED AND START OVER
1654	0000	TESTAD,		0	
1655	7340	CLA	CLL	CMA	
1656	1254	TAD		TESTAD	
1657	3102	DCA		TEST	
1660	1375	TAD		(PRGRST	
1661	3101	DCA		AUTRST	
1662	5654	JMP	I	TESTAD	

1663	7402	BATEMT,	HLT		/BATTERY IS EMPTY - GOOD - BYE
1664	5502	JMP	I	TEST	/RETURN TO TEST IF OK
1665	0000	GOODPS,		0	
1666	1022	TAD		OP2SEL	/GET HARDWARE CONFIGURATION
1667	7700	SMA		CLA	/IS THE PROGRAM RUNNING ON ACT LINE
1670	5665	JMP	I	GOODPS	/NO RETURN TO PROGRAM
1671	6272	CIF		70	/CHANGE INSTRUCTION FIELD TO FIELD 7
1672	4500	JMS	I	GOODPS	/SIGNAL ACT LINE PROGRAM STILL RUNNING
1673	5665	JMP	I	GOODPS	/RETURN TO PROGRAM
1674	0000	ERRORX,		0	/ERROR ROUTINE
1675	7300	CLA		CLL	
1676	1022	TAD		OP2SEL	/CHECK FOR ACT LINE
1677	7700	SMA		CLA	
1700	5312	JMP		CHKINH	
1701	1021	TAD		OP1SEL	
1702	0144	AND		K200	
1703	7640	SZA		CLA	
1704	6160	CLRMOD			
1705	6002	IOF			/TURN THE INTERRUPT OFF
1706	7240	CLA		CMA	
1707	1274	TAD		ERRORX	
1710	6272	CIF		70	
1711	5477	JMP	I	BADPAS	/GO TO ROM FOR ERROR
1712	4325	JMS	I	SWCHK	/CHECK FOR SR 0(1) TO INHIBIT ERROR HALT
1713	7710	SPA		CLA	/IS SR 0 SET TO A ONE
1714	5320	JMP		ERLPSW	/YES, GO CHECK SR 1 TO LOOP ON ERROR
1715	7340	CLA	CLL	CMA	
1716	1274	TAD		ERRORX	/SUBTRACT ONE FROM JMS ERROR PC
1717	7422	HLT			/AC CONTAINS THE ADDRESS WHERE THE ERROR
1720	4325	ERLPSW,	JMS	SWCHK	/CHECK THE SWITCH REGISTER TO LOOP ON ERROR
1721	7004	RAL			
1722	7710	SPA		CLA	/IS SR 1 SET TO A ONE TO LOOP ON TEST
1723	5502	JMP	I	TEST	/YES GO LOOP ON THE TEST
1724	5674	JMP	I	ERRORX	/NO, RETURN TO THE PROGRAM
1725	0000	SWCHK,		0	
1726	7300	CLA		CLL	/GET THE HARDWARE STATUS WORD
1727	1021	TAD		OP1SEL	/IS THE HARDWARE FRONT PANEL SELECTED
1730	7700	SMA		CLA	/NO, USE THE PSEUDO SWITCH REGISTER
1731	5334	JMP		,+3	
1732	7604	LAS			
1733	5725	JMP	I	SWCHK	/RETURN
1734	1020	TAD		SWCHK	/THE PSEUDO SWITCH REGISTER
1735	5725	JMP	I	SWCHK	/RETURN
1736	0000	TSTLCP,		0	/ROUTINE TO CHECK SR 2 TO LOOP ON TEST

1737	4325	JMS	SWCHK	/GO GET THE SWITCH REGISTER
1742	7006	RTL		
1741	7700	SMA	CLA	
1742	5736	JMP	I TSTLOP	/GO TO NEXT TEST
1743	5502	JMP	I TEST	/LOOP ON SAME TEST

1744	0000	ACLBAT, ?		
1745	2000	ISZ	INTSER	
1746	5400	JMP	I INTSER	

1775	1647			
1776	2000			
1777	7634			

2000	*200
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5

1300	11111111	11111111	11111111	11100000	00000000	00000000	10111111	11111111
1310	11111111	11111111	11111111	11111111	11111111	00000000	00000000	00000000
1320	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111
1330	11111111	11111111	11111111	11111111	11111111	11111111	11111111	10000001
1400	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111
1500	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111
1600	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111
1700	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11100011
1800	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111
1900	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111
1200	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111
1300	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111
1400	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111
1500	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11100001
1600	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111
1700	11111111	11111111	11111111	11111111	11111111	00000000	00000000	00000000
2000								
2100								
2200								
2300								
2400								
2500								
2600								
2700								
3200								
3100								
3200								
3300								
3400								
3500								
3600								
3700								

4200
4300
4400
4500
4600
4700

5300
5100

5200
5300

5400
5500

5600
5700

6200
6100

6200
6300

6400
6500

6600
6700

7300
7100

7200
7300

7400
7500

7600
7700

ACLBAT	1744	JMSCK7	1050	M70	0131	TST13G	1040
ACTLIM	1670	JMSCK8	1074	M77	0132	TST13H	1064
ADDCHT	1076	K10	0141	DP1SEL	0021	TST14A	1132
AJTRST	1101	K1777	1572	DP21K2	0030	TST14B	1170
ADDPAS	277	K200	0144	DP2SEL	0022	TST14C	1227
BATEMT	1665	K37	1571	PASEND	0110	TST14D	1267
REGT16	1444	K420	0145	PC	1646	TSTLDP	1736
CAF	6007	K4100	0147	PJWFAL	1637	JPERLM	2067
CAL	6103	K6201	0074	PRGPAS	1636	WRKADD	0072
CDF	6201	K7	0143	PRGRST	1647	WRKFLD	0070
CDPCHK	0262	K70	0142	PDF	6214	XBAT	0137
CDPNEW	1531	K77	0143	PEDEPA	6155	XPWRFL	0146
CHKCDF	1063	K7707	0771	PIB	6234		
CHKINH	1712	K7774	0146	PIF	6224		
CIF	6272	LINK	1645	PK8E	0023		
CIFCDF	6203	LODRG2	6152	PIF	6244		
CINT	6204	LODRG3	6153	PTF	6005		
CKJMS1	1227	LOOP	4574	PK8E	0024		
CKJMS2	1257	M1	0111	SAVES4	0065		
CKJMS3	1310	M10	0116	SAVAFD	0075		
CKJMS4	1341	M100	0133	SBE	6131		
CKJMS5	1417	M1007	0404	SCOPLP	4505		
CKJMS6	1450	M1216	0361	SINT	6254		
CKJMS7	1501	M1225	0401	SKON	6000		
CKJMS8	1533	M1034	0363	SKPEPA	6166		
CKJMS9	1565	M1043	0402	SPL	6102		
CLREMA	6154	M1052	0364	SUF	6274		
CLRMOD	6160	M1061	0362	SWCHK	1725		
CLRSIM	6150	M1070	0403	SWTCH	0020		
CUF	6264	M11	0117	T16LCD	1474		
DATPAT	271	M1100	0136	TEST	0102		
DATREC	1264	M120	0134	TEST12	0210		
ENDING	1632	M152	0135	TEST13	0623		
ENDPAS	1617	M16	0373	TEST14	1114		
ENDTST	1563	M2	0112	TEST15	1313		
ERLPSW	1720	M20	0120	TEST16	1402		
ERROR	4503	M22	0772	TESTAU	1654		
ERRORX	1674	M25	0121	TST12A	0215		
EXECUT	6164	M33	0122	TST12B	0245		
FLDLIM	0266	M34	0365	TST12C	0276		
GOODRD	1665	M4	0113	TST12D	0327		
ROODPS	1102	M43	0123	TST12E	0405		
RTF	6004	M44	0124	TST12F	0436		
SGHLIM	0273	M5	0114	TST12G	0467		
SLT	7402	M50	0125	TST12H	0521		
TITSER	0000	M5100	0137	TST12I	0553		
JMSCK1	0653	M52	0366	TST17A	0643		
JMSCK2	0677	M55	0126	TST13B	0667		
JMSCK3	0721	M60	0127	TST13C	0711		
JMSCK4	0745	M61	0367	TST13D	0735		
JMSCK5	1000	M66	0130	TST13E	0761		
JMSCK6	1024	M7	0115	TST13F	1014		

ERRORS DETECTED: 0
LINKS GENERATED: 6
RUN-TIME: 19 SECONDS
2K CORE USED

/KMB-A OPTION TEST 2 MAINDEC-08-DJKMA-B-L 1K PART 3 PAL10 V142A 6-JUN-75 15142 PAGE 1
/KMB-A OPTION TEST 2 MAINDEC-08-DJKMA-B-L 1K PART 3
/COPYRIGHT (C) 1974, 1975 DIGITAL EQUIPMENT CORPORATION
/PROGRAMMER: BRUCE HANSEN

////////////////////////////////////
/THE FOLLOWING LISTING WILL CORRESPOND TO THE PAPER TAPE LABELED MAINDEC-08-DJKMA-B-PM3,
/1K PART 3, THIS PAPER TAPE AND LISTING WILL BE THE THIRD OF FOUR 1K SEGMENTED
/PAPER TAPES AND LISTINGS FOR COMPUTERS WITH LESS THAN 4K OF MEMORY.
////////////////////////////////////

/KMS-A OPTION TEST 2 MAINDEC-08-DJKMA-B-L 1K PART 3
 /COPYRIGHT 1974, 1975 DIGITAL EQUIPMENT CORP., MAYNARD, MASS., 01754
 /PDP-8A OPTION TEST 2 TESTS THE MEMORY EXTENTION/TIME SHARE CONTROL,
 /POWER FAIL/AUTO RESTART, AND BOOTSTRAP LOADERS

6000 SKON=6000
 6007 CAF=6007
 7402 HLT=7402

/SWITCH REGISTER SETTINGS

/SR0=1 INHIBIT ERROR HALT
 /SR1=1 LOOP ON ERROR
 /SR2=1 LOOP ON TEST
 /SR3=1 HALT AT COMPLETION OF A PROGRAM PASS

/MEMORY EXTENTION/TIME SHARE INSTRUCTIONS

6004 GTF=6004 /GET FLAGS, READS THE FOLLOWING MACHINE STATES
 /INTO THE INDICATED BITS OF THE AC1
 /AC0 LINE
 /AC2 INTERRUPT REQUEST
 /AC4 INTERRUPT ENABLE F/F
 /AC5 USER FLAG
 /AC6-11 SAVE FIELD REGISTER

6005 RTF=6005 /RESTORE THE FLAGS, RTF LOADS THE LINK FROM AC0,
 /LOADS THE USER BUFFER F/F, INSTRUCTION BUFFER AND
 /DATA FIELD WITH AC5, AC6-8, AC 9-11 AND INHIBITS
 /PROCESSOR INTERRUPTS UNTIL NEXT JMP OR JMS INSTRUCTION,
 /AT THE END OF THE JMP OR JMS, THE CONTENTS OF THE U,B, + I,B,
 /ARE LOADED INTO USER FIELD F/F, AND THE I.F., INTERRUPT ENABLE
 /IS SET AND INTERRUPT INHIBIT AS CLEARED

6234 RIB=6234 /READ THE INTERRUPT BUFFER

6244 RMF=6244 /RESTORES MEMORY FLAGS

6204 CINT=6204 /CLEAR USER INTERRUPT FLIP=FLOP

6254 SINT=6254 /SKIP ON USER INTERRUPT FLIP=FLOP

6264 CUF=6264 /CLEAR USER BUFFER FLIP=FLOP

6274 SUF=6274 /SET USER BUFFER FLIP=FLOP (ENTER TIME SAME MODE)AND
 /INHIBITS PROCESSOR INTERRUPTS UNTIL THE NEXT JMP OR
 /JMS INSTRUCTION, AT THE END OF THE JMP OR JMS
 /INSTRUCTION, THE USER BUFER IS LOADED INTO THE USER
 /FIELD F/F,

6201 CDF=6201 /CHANGE DATA FIELD

6202 CIF=6202 /CHANGE INSTRUCTION FIELD
 6214 RDF=6214 /READ THE DATA FIELD INTO AC BITS 6-8
 6224 RIF=6224 /READ THE INSTRUCTION FIELD INTO AC BITS 6-8
 6203 CIFCDF=6203 /PERFORMS THE CIF AND CDF FUNCTIONS

/POWER FAIL INSTRUCTIONS

6102 SPL=6102 /SKIP ON AC LOW FLIP=FLOP

6103 CAL=6103 /CLEAR AC LOW FLIP=FLOP

6101 SBE=6101 /SKIP ON BATTERY EMPTY FLIP=FLOP

/OPTION BOARD 2 SIMULATOR IOT'S

6150 CLRSIM=6150 /CLEAR CONTROL REGISTERS
 6152 LDRG2=6152 /LOAD CONTROL REGISTER 2
 6153 LDRG3=6153 /LOAD CONTROL REGISTER 3
 6154 CLREMA=6154 /CLEAR EMA CATCHER LOGIC
 6155 REDEMA=6155 /READ EMA CATCHER REGISTER
 6160 CLRMOD=6160 /CLEAR TEST MODULE LOGIC
 6164 EXECUT=6164 /EXECUT AND CONTROL WORD 3 BIT 7 =1 ISSUE A POWER ON PULSE
 /EXECUT AND CONTROL WORD 3 BIT 7 =0 ISSUE A SWITCH SW PULSE
 6166 SKPEMA=6166 /SKPEMA AND CONTROL WORD 3 BIT 3 =1 EMA INTERRUPT AND SKIP ENABLE
 /SKPEMA AND CONTROL WORD 3 BIT 3 =0 EMA INTERRUPT AND SKIP DISABLE

/OPTION BOARD2 SIMULATOR CONTROL WORD 2 BIT ASSIGNMENTS

/BITS 0 - 1 NOT USED
 /BITS 2 - 8 ROOT STRAP PROGRAM SELECT
 /BITS 9 - 11 AUTO-RESTART ADDRESS SELECT

/OPTION BOARD 2 SIMULATOR CONTROL WORD 3 BIT ASSIGNMENTS

/BIT 0 TIME SHARE 0=ENABLED 1=DISABLED
 /BIT 1 BATT EMPTY 1=BATT EMPTY PULLED LOW 0=FREE STATE
 /BIT 2 AC LOW (L) 1=PULLED LOW 0=FREE STATE
 /BIT 3 1=EMA INTERRUPT/SKIP ENABLE 0=EMA INTERRUPT SKIP DISABLE
 /BITS 4 - 6 NOT USED
 /BIT 7 1=POWER ON PULSE WITH EXECUT 0=SWITCH SW PULSE WITH EXECUT
 /BIT 8 1=DISABLES BOOTSTRAP WHILE RUNNING 0=ENABLES BOOTSTRAP WHILE RUNNING
 /BIT 9 - 11 AUTO-RESTART/BOOT STRAP ENABLE CODE

0000 #0

0000 0000 INTSER, 0 /JMS I AUTRST PLACED HERE FOR SIMULATOR AUTO RESTART
 0001 3064 DCA DATREC
 0002 6102 SPL /SKIP ON AC LOW
 0003 7410 SKP

0004	5506	JMP	I	XPWRFL
0005	6101	SBE		
0006	7410	SKP		
0007	5507	JMP	I	XBAT
0010	6224	RIF		
0011	7640	SZA	CLA	
0012	4503	ERROR		
0013	6214	RDF		
0014	7640	SZA	CLA	
0015	4503	ERROR		
0016	2000	ISZ		INTSER
0017	5400	JMP	I	INTSER

/POWER GOING DOWN
/SKIP ON BATTERY EMPTY

/GO HALT THE COMPUTER ,ITS ALL OVER
/READ THE INSTRUCTION FIELD

/I.F. IS NOT 0 AFTER A INTERRUPT
/READ THE DATA FIELD

/D.F. IS NOT 0 AFTER A INTERRUPT
/ADD 1 TO THE INTERRUPTED PC
/RETURN TO THE PROGRAM

0020	0000	*20		
0020	0000	SWITCH, 0		
0021	1000	OP1SEL, 1000		

/PSEUDO SWITCH REGISTER IF BIT 0=0 OF OP1SEL

/BIT 0=0 USE LOC 20 AS A PSEUDO S,R.
/BIT 0=1 USE HARDWARE FRONT PANEL S,R.
/BIT 1=1 HAS 8A OPTION 1
/BIT 2=1 HAS 8A OPTION 2
/BIT 3=1 HAS 8A CPU SIMULATOR
/BIT 4=1 HAS 8A OPTION 1 + 2 TEST MODULE
/BIT 5=1 PROGRAM ON 8A XOR
/BIT 6=1 HAS PDP-8E TYPE CPU
/BITS 7=11 MEMORY SIZE = 0'S = 1K, 37=32K,
/MEMORY SIZE CAN BE INCREASED IN 1K INCREMENTS
/BY ADDING A 1 TO THE NUMBER IN BITS 7=11.

0022	0000	OP2SEL, 0		
		/RK8E BOOT STRAP WILL LOAD INTO THE FOLLOWING LOCATIONS		

0023	7402	RK8E,	HLT	/2200
0024	7402	RK8E,	HLT	/6745
0025	7402		HLT	/0023
0026	7402		HLT	/7640
0027	7402		HLT	/5024
0030	7402		HLT	/6733
0031	7402		HLT	/5031
0032	7402		HLT	/TERMINATOR

0062	*62			
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0062	0000	CDPCHK, 0		
0063	0062	CHKCDF, CDPCHK		
0064	0000	DATREC, 0		
0065	0000	SAVESZ, 0		
0066	0000	FLDLIM, 0		
0067	0000	UPERLM, 0		
0070	0000	WRKFLD, 0		
0071	0000	DATPAT, 0		
0072	0000	WRKADD, 0		
0073	0000	HGHLIM, 0		
0074	6201	K6201, 6201		

0075	0000	SAVWFD, 0		
0076	0000	ADDGNT, 0		
0077	6520	BADPAS, 6520		
0100	6500	GOODPS, 6500		
0101	1653	AUTRST, PRGRST		
0102	0000	TEST, 0		

/SCOPE LOOP AND TEST LOOP ADDRESS

0103	4503	ERROR=	JMS	I	ERRORX
	1710				
	4504	LOOP=	JMS	I	TSTLOP
0104	1752				
	4505	SCOPLP=	JMS	I	TESTAD
0105	1660				

0106	1643	XPWRFL,	POWFAL		
0107	1667	XBAT,	BATEXT		
0110	1617	PASEND,	ENDPAS		

/CONSTANTS USED BY THE PROGRAM

0111	7777	M1,	-1		
0112	7776	M2,	-2		
0113	7774	M4,	-4		
0114	7773	M5,	-5		
0115	7771	M7,	-7		
0116	7770	M10,	-10		
0117	7767	M11,	-11		
0120	7760	M20,	-20		
0121	7753	M25,	-25		
0122	7745	M33,	-33		
0123	7735	M43,	-43		
0124	7734	M44,	-44		
0125	7730	M50,	-50		
0126	7723	M55,	-55		
0127	7720	M60,	-60		
0130	7712	M66,	-66		
0131	7710	M70,	-70		
0132	7701	M77,	-77		
0133	7700	M100,	-100		
0134	7653	M125,	-125		
0135	7626	M152,	-152		
0136	6700	M1100,	-1100		
0137	2700	M5100,	-5100		
0140	0007	K7,	7		
0141	0010	K10,	10		
0142	0070	K70,	70		
0143	0077	K77,	77		
0144	0200	K200,	200		
0145	0400	K400,	400		
0146	7774	K7774,	7774		
0147	4100	K4100,	4100		

0200	*200			
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/*****
/TEST 18 IS ONLY EXECUTED WHEN THE SIMULATOR IS SELECTED (BIT 4 OF LOCATION 21 SET TO A 1).
/TEST 18 CHECKS THAT THE EMA IS LOADED ONTO THE BUS DURING A DCA I FOLLOWING
/A CDF 10; CDF 20; CDF 40. THE SIMULATOR IS USED TO CAUSE AN INTERRUPT
/FOLLOWING A EMA CHANGE ON THE BUS, THE SIMULATOR STORES THE EMA INTO A
/EMA CATCHER REGISTER AND THEN THE PROGRAM READS AND COMPARES IT.
/*****

0200 7000      NOP/JMS I ATRST      /THIS LOCATION USED FOR AUTO-RESTARTS
0201 4505      TEST18, SCOPLP      /SETUP TEST AND SCOPE LOOPING ADDRESS
0202 6007      CAF          /CLEAR ALL FLAGS
0203 1021      TAD          OP1SEL      /CHECK BIT 4 OF LOCATION 21 FOR SIMULATOR SELECT
0204 2144      AND          K200      /
0205 7650      SNA          CLA        /WAS THE SIMULATOR SELECTED ?
0206 5510      JMP I       PASEND      /NO, END OF ONE PROGRAM PASS
0207 4211      JMS          EMACLR      /LOAD CONTROL WORD AND CLEAR EMA REGISTER
0208 5225      JMP          TST18A     /GO TO FIRST TEST
0209 0200      EMACLR, 7      /ROUTINE TO LOAD CONTROL WORD AND CLEAR EMA CATCHER REGISTER
0210 0200      TAD          K400      /
0211 1145      LODRGS      /LOAD CONTROL REGISTER 3 FOR INT AND SKIP ENABLE
0212 6153      CLREMA      /CLEAR EMA CATCHER REGISTER
0213 6154      SKPEMA      /SKIP ON EMA CATCHER REGISTER SET
0214 7610      SKP          CLA        /CLREMA FAILED TO CLEAR CATCHER F/F
0215 4503      ERROR      /READ THE EMA CATCHER REGISTER
0216 6155      REDEMA      /CLEARING THE REGISTER SET IT TO 7
0217 1115      TAD          M7        /IS THE REGISTER SET TO 7 ?
0218 7640      SZA          CLA        /NO, CLREMA FAILED TO SET REGISTER TO 7
0219 4503      ERROR      /
0220 5611      JMP I       EMACLR      /CHANGE DATA FIELD TO FIELD 10
0221 6211      TST18A, CDF 10      /TURN THE INTERRUPT ON
0222 6001      ION          /CHANGE THE EMA LINES TO 1 AND INTERRUPT
0223 3630      DCA I       ,+1      /SIMULATOR FAILED TO INT, OR EMA DIDN'T CHANGE
0224 7402      HLT          /SKIP ON EMA REGISTER SET
0225 6166      SKPEMA      /SIMULATOR EMA CATCHER REGISTER NOT SET
0226 4503      ERROR      /READ THE INTERRUPT BUFFER
0227 6234      RIB          /
0228 1111      TAD          M1        /IS THE SAVE FIELD EQUAL TO 1 ?
0229 7640      SZA          CLA        /NO, SAVE FIELD NOT EQUAL TO 1
0230 4503      ERROR      /READ THE SIMULATOR EMA CATCHER REGISTER
0231 6155      REDEMA      /
0232 1111      TAD          M1        /IS THE EMA CATCHER REGISTER = 1 ?
0233 7640      SZA          CLA        /NO, EMA LINES OTHER THAN EMA2 MUST HAVE BEEN SET
0234 4503      ERROR      /LOAD CONTROL WORD AND CLEAR EMA CATCHER REGISTER
0235 4211      JMS          EMACLR      /CHANGE DATA FIELD TO FIELD 2
0236 6221      TST18B, CDF 20      /TURN THE INTERRUPT ON
0237 6001      ION          /CHANGE THE EMA LINES TO 2 AND INTERRUPT
0238 3647      DCA I       ,+1      /PROGRAM FAILED TO INTERRUPT OR EMA DID NOT CHANGE
0239 7402      HLT          /SKIP ON EMA REGISTER SET
0240 6166      SKPEMA      /EMA CATCHER REGISTER NOT SET
0241 4503      ERROR      /READ THE EMA CATCHER REGISTER
0242 6155      REDEMA      /
0243 1111      TAD          M2        /
0244 7640      SZA          CLA        /
0245 4503      ERROR      /
0246 4211      JMS          EMACLR      /
0247 6221      TST18B, CDF 20      /
0248 6001      ION          /
0249 3647      DCA I       ,+1      /
0250 7402      HLT          /
0251 6166      SKPEMA      /
0252 4503      ERROR      /
0253 6155      REDEMA      /
0254 1111      TAD          M2        /

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0254 7640      SZA          CLA        /DID THE DF SET EMA1 ON TO THE BUS
0255 4503      ERROR      /NO, EMA REGISTER NOT EQUAL TO 2
0256 4211      JMS          EMACLR      /LOAD CONTROL WORD CLEAR EMA REGISTER
0257 6241      TST18C, CDF 40      /CHANGE DATA FIELD TO FIELD 4
0258 6001      ION          /TURN THE INTERRUPT ON
0259 3662      DCA I       ,+1      /CHANGE EMA LINES TO 4 AND INTERRUPT
0260 7402      HLT          /PROGRAM FAILED TO INTERRUPT OR EMA DID NOT CHANGE
0261 6166      SKPEMA      /SKIP ON EMA CATCHER REGISTER SET
0262 4503      ERROR      /EMA CATCHER F/F NOT SET
0263 6155      REDEMA      /READ THE EMA CATCHER REGISTER
0264 1111      TAD          M4        /
0265 7640      SZA          CLA        /DID THE DF SET EMA0 ONTO THE BUS
0266 4503      ERROR      /NO, EMA CATCHER REGISTER NOT EQUAL TO 4
0267 4672      JMS I       ,+1      /LOAD CONTROL WORD AND CLEAR EMA CATCHER REGISTER
0268 4211      JMS          EMACLR      /
0269 6155      CLRSIM      /CLEAR SIMULATOR CONTROL WORD
0270 4504      LOOP          /LOOP ON TEST IF SR = 1000

/*****
/TEST 19 IS A CONTINUATION OF TEST 18 ONLY TESTING THAT THE CIF
/INSTRUCTION LOADS THE APPROPRIATE EMA LINE, THE TEST WILL BE FOR CIF 10;
/CIF 20; AND CIF 40. THE SIMULATOR IS USED FOR INTERRUPTS AND TO READ
/THE EMA LINES.
/*****

0275 4505      TEST19, SCOPLP      /SETUP TEST AND SCOPE LOOPING ADDRESS
0276 6007      CAF          /CLEAR ALL FLAGS
0277 6160      CLRMOD      /CLEAR SIMULATOR MODULE
0278 4211      CDF          10        /CHANGE DATA FIELD TO FIELD 1
0279 3761      DCA I       EMA1      /CLEAR THE FIRST TEST LOCATION
0280 6221      CDF          20        /CHANGE DATA FIELD TO FIELD 2
0281 3762      DCA I       EMA2      /
0282 6241      CDF          40        /CHANGE DATA FIELD TO FIELD 4
0283 3763      DCA I       EMA3      /CLEAR A LOCATION IN FIELD 4
0284 6201      CDF          00        /CHANGE DATA FIELD BACK TO FIELD 0
0285 4760      JMS I       CLRERG      /LOAD CONTROL WORD AND CLEAR EMA CATCHER REGISTER
0286 6212      TST19A, CIF 10      /CHANGE INSTRUCTION FIELD TO 1
0287 6001      ION          /TURN THE INTERRUPT ON
0288 5312      EMAIF1, JMP      /CLEAR INT INHIBIT AND INTERRUPT
0289 7402      HLT          /PROGRAM FAILED TO INTERRUPT
0290 6166      SKPEMA      /SKIP ON EMA CATCHER F/F SET
0291 4503      ERROR      /EMA CATCHER F/F NOT SET
0292 6234      RIB          /READ THE INTERRUPT BUFFER
0293 1116      TAD          M10       /IS THE SAVE FIELD EQUAL TO IF OF 1
0294 7640      SZA          CLA        /SAVE FIELD NOT EQUAL TO IF OF 1
0295 4503      ERROR      /READ THE EMA CATCHER REGISTER
0296 6155      REDEMA      /
0297 1111      TAD          M1        /IS THE EMA CATCHER REGISTER EQUAL TO 1
0298 7640      SZA          CLA        /NO, EMA CATCHER REGISTER NOT EQUAL TO 1
0299 4503      ERROR      /LOAD CONTROL WORD, CLEAR EMA CATCHER REGISTER
0300 4760      TST19B, JMS I   CLRERG      /CHANGE INSTRUCTION FIELD TO FIELD 2
0301 6222      CIF          20        /TURN THE INTERRUPT ON
0302 6001      ION          /CLEAR INT INHIBIT AND INTERRUPT
0303 5331      EMAIF2, JMP      /PROGRAM FAILED TO INTERRUPT OR EMA DID NOT CHANGE
0304 7402      HLT          /

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0333 6166 SKPEMA /SKIP ON EMA CATCHER F/F SET
0334 4503 ERROR /EMA CATCHER REGISTER NOT SET
0335 6155 REDEMA /READ THE EMA CATCHER REGISTER
0336 1112 TAD M2
0337 7640 SZA CLA
0340 4503 ERROR /IS THE EMA CATCHER REGISTER EQUAL TO 2
0341 4760 TST19C, JMS I CLRERG /NO, EMA WASN'T SET TO 2
0342 6242 CIF 40 /LOAD CONTROL WORD, CLEAR EMA REGISTER
0343 6001 ION /CHANGE INSTRUCTION FIELD TO FIELD 4
0344 5344 EMAIF3, JMP /TURN THE INTERRUPT ON
0345 7402 HLT /CLEAR INTERRUPT INHIBIT AND INTERRUPT
0346 6166 SKPEMA /PROGRAM FAILED TO INTERRUPT
0347 4503 ERROR /SKIP ON EMA CATCHER F/F SET
0350 6155 REDEMA /EMA CATCHER REGISTER NOT SET
0351 1113 TAD M4 /READ THE EMA CATCHER REGISTER
0352 7640 SZA CLA
0353 4503 ERROR /IS THE EMA CATCHER REGISTER SET TO 4
0354 4760 JMS I CLRERG /NO, EMA WASN'T SET TO 4
0355 6150 CLRSIM /LOAD CONTROL WORD CLEAR CATCHER F/F'S
0356 4504 LOOP /CLEAR SIMULATOR CONTROL WORDS
0357 5777 JMP TEST20 /LOOP ON TEST IF SR = 1000
/GO TO THE NEXT TEST

0360 0211 CLRERG, EMACLR
0361 0312 EMA1, EMAIF1
0362 0331 EMA2, EMAIF2
0363 0344 EMA3, EMAIF3

0377 0402
0400 0400
0400 5601 PAGE
0401 0642 JMP I ,+1 /SIMULATOR COMES HERE AFTER A BOOTSTRAP
BOTRT1

```

 /TEST 20 - IS EXECUTED WHEN THE SIMULATOR IS SELECTED, TEST 20 CHECKS
 /THAT THE TIME SHARE LOGIC CAN BE DISABLED, THIS IS DONE WITH THE
 /SIMULATOR BY PULLING KMTS TIME SHARE DISA, L LOW, THE PROGRAM THEN
 /TRIES TO LOAD THE USER BUFFER AND THEN DOES A IOT, LAS, OSR AND CHECKS
 /THAT THE PROGRAM DIDN'T INTERRUPT.

```

0402 4505 TEST20, SCOPLP /SETUP TEST AND SCOPE LOOPING ADDRESS
0403 6007 CAF /CLEAR ALL FLAGS
0404 6160 CLRMOD /CLEAR SIMULATOR LOGIC
0405 7330 CLA CLL CML RAR /SET BIT 0 TO A ONE
0406 6153 LODRG3 /LOAD CONTROL REGISTER 3 WITH TIME SHARE DISABLE
0407 7300 CLA CLL
0410 6001 ION /TURN THE INTERRUPT ON
0411 6274 SUF /TRY TO SET USER BUFFER
0412 5213 JMP ,+1 /TRY TO ENTER TIME SHARE MODE
0413 7404 OSR /SHOULD TRAP HERE IF TIME SHARE NOT DISABLED
0414 7410 SKP
0415 4503 ERROR /TIME SHARE NOT DISABLED=PROGRAM INTERRUPTED
0416 7604 LAS /SHOULD TRAP HERE IF TIME SHARE NOT DISABLED
0417 7410 SKP

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0420 4503 ERROR /LAS TRAPPED WITHOUT TIME SHARE ENABLED
0421 6001 ION /ISSUE A IOT
0422 7610 SKP CLA
0423 4503 ERROR /IOT TRAPPED WITHOUT TIME SHARE ENABLED
0424 6007 CAF /CLEAR ALL FLAGS
0425 7610 SKP CLA
0426 4503 ERROR /CAF TRAPPED
0427 6150 CLRSIM /CLEAR THE SIMULATOR CONTROL REGISTERS
0430 6001 ION /TURN INTERRUPT ENABLE ON
0431 6274 SUF /SET THE USER BUFFER F/F
0432 5233 JMP ,+1 /ENTER TIME SHARE MODE
0433 7402 HLT /SHOULD TRAP HERE
0434 5234 JMP /HALT FAILED TO TRAP IN USER MODE
0435 6254 SINT /SKIP ON USER INTERRUPT F/F SET
0436 4503 ERROR /USER INTERRUPT F/F NOT SET
0437 6007 CAF /CLEAR USER INTERRUPT F/F
0440 4504 LOOP /LOOP ON TEST IF SR = 1000
0441 5642 JMP I ,+1
0442 0600 TEST21

```

/THE FOLLOWING LOCATIONS CONTAIN THE CONTENTS OF THE TAPE CASSETTE BOOTSTRAP

```

0443 4000 TABADD, 4000 /BOOTSTRAP WILL START LOADING INTO THIS ADDRESS
0444 7740 TABCMP, TABCMP-TABEND-1
0445 1237 TABCMP, 1237
0446 1206 1206
0447 6704 6704
0450 6706 6706
0451 6703 6703
0452 5204 5204
0453 7264 7264
0454 6702 6702
0455 7610 7610
0456 3211 3211
0457 3636 3636
0460 1205 1205
0461 6704 6704
0462 6706 6706
0463 6701 6701
0464 5216 5216
0465 7002 7002
0466 7430 7430
0467 1636 1636
0470 7022 7022
0471 3636 3636
0472 7420 7420
0473 2236 2236
0474 2235 2235
0475 5215 5215
0476 7346 7346
0477 7002 7002
0500 3235 3235
0501 5201 5201

```

```

0502 7737          7737
0503 3557          3557
0504 7730      TABEND, 7730
0505 0000          0000          /TERMINATOR
    
```

```

0506 1304      BOOTTB, PTPADD
0507 1346          DSKADD
0510 1443          TABADD
0511 1526          RXBADD
0512 1514          RKBADD
0513 0000          0
    
```

/THE FOLLOWING LOCATIONS CONTAIN THE CONTENTS OF THE RKB BOOTSTRAP

```

0514 0023      RKBADD, 0023          /BOOTSTRAP WILL LOAD INTO THIS ADDRESS
0515 7771          RKBEND, 7771      /NUMBER OF LOCATIONS TO COMPARE
0516 2200      RKBAMP, 2200
0517 6745          6745
0520 0023          0023
0521 7640          7640
0522 5024          5024
0523 6743          6743
0524 5031      RKBEND, 5031
0525 0000          0000          /TERMINATOR
    
```

/THE FOLLOWING LOCATIONS CONTAIN THE CONTENTS OF THE RXB BOOTSTRAP

```

0526 0024      RXBADD, 0024
0527 7742          RXBAMP, 7742      RXBAMP=RXBEND=1
0530 7126      RXBAMP, 7126
0531 1060          1060
0532 6751          6751
0533 7201          7201
0534 4053          4053
0535 4053          4053
0536 7104          7104
0537 6755          6755
0540 5054          5054
0541 6754          6754
0542 7450          7450
0543 7610          7610
0544 5046          5046
0545 1060          1060
0546 7041          7041
0547 1061          1061
0550 3060          3060
0551 5024          5024
0552 6751          6751
0553 4053          4053
0554 3002          3002
0555 2050          2050
    
```

```

0556 5047          5047
0557 0000          0000
0560 6753          6753
0561 5033          5033
0562 6752          6752
0563 5453          5453
0564 7024          7024
0565 6030      RXBEND, 6030
0566 0000          0000

0600          PAGE
    
```

 /THE FOLLOWING TEST CHECKS THE BOOTSTRAP TO LOAD AND TO COMPARE CORRECTLY

```

0600 4505      TEST21, SCOPLP          /SETUP TEST COUNT AND SCOPE LOOPING ADDRESS
0601 1377          TAD          (JMS I AURST /SETUP LOCATIONS 0 AND 200
0602 3000          DCA          INTSER
0603 1377          TAD          (JMS I AURST
0604 3776          DCA          TEST10=1
0605 1375          TAD          (NOBOOT          /SET UP A LOCATION IN CASE LOGIC DID A AUTO RESTART
0606 3101          DCA          AURST          /SAVE IT
0607 5212          JMP          +3
0610 0000      NOBOOT, 0
0611 4503          ERROR          /PROGRAM DID A AUTO-RESTART INSTEAD OF A BOOT
0612 6160          CLRMOD          /CLEAR SIMULATOR TEST LOGIC
0613 4774          JMS          SETUP          /GO SETUP FOR BOOTSTRAPS
0614 1373      NXTBOT, TAD          (BOTSEL          /GET THE ADDRESS OF THE BOOT SELECT TABLE
0615 1320          TAD          SIMBOT          /GET THE BOOTSTRAP TO BE EXECUTED
0616 3322          DCA          CONTW2          /SAVE THE ADDRESS OF BOOTSTRAP SELECT
0617 1372          TAD          (BOTENA          /GET THE ADDRESS OF THE BOOTSTRAP ENABLE BITS
0620 3323          DCA          CONTW3          /SAVE THE ADDRESS OF BOOT ENABLE CODE
0621 7346          CLA          CMA RTL          /SETUP TO DO 3 BOOTSTRAP COMBINATIONS
0622 3325          DCA          RTSUBT          /SAVE SUB-TEST COUNT
0623 6160      BTST1, CLRMOD          /CLEAR SIMULATOR MODULE
0624 4771          JMS          CLEARB          /CLEAR BOOTSTRAP LOCATIONS IN MEMORY
0625 1022          TAD          OP2SEL          /CHECK FOR THE ACT LINE
0626 7710          SPA          CLA          /IS PROGRAM RUNNING ON ACT LINE?
0627 6305          DCA          6305          /YES, DISABLE ACT UNTIL BOOTSTRAP IS COMPLETED
0630 1722          TAD          I          CONTW2          /GET THE BOOTSTRAP SELECT ADDRESS
0631 6152          LDRG2          /LOAD SIMULATOR CONTROL REGISTER 2
0632 7300          CLA          CLL
0633 1326          TAD          ROOTR1          /GET BOOT STRAP RETURN ADDRESS FOR BOOT RETURN
0634 3724          DCA          I          ADD401          /PUT IT INTO LOCATION 401
0635 1723          TAD          I          CONTW3          /GET BOOTSTRAP ENABLING CODE
0636 6153          LDRG3          /LOAD SIMULATOR CONTROL REGISTER 3
0637 7300          CLA          CLL
0640 6164          EXECUT          /LOAD THE BOOTSTRAP
    
```

0641	5241	JMP	
0642	6160	BOTRT1, CLRMOD	
0643	7301	CLA CLL IAC	
0644	1022	TAD OP2SEL	
0645	7510	SPA	
0646	6305	6305	
0647	7300	CLA CLL	
0650	1320	TAD SIMBOT	
0651	4770	JMS BOTCMP+2	
0652	2323	ISZ CONTW3	
0653	2325	ISZ BTSUBT	
0654	5223	JMP BTYST1	
0655	4767	JMS GOODBD	
0656	1114	TAD M5	
0657	3325	DCA BTSUBT	
0660	6160	BTTST2, CLRMOD	
0661	4771	JMS CLEARB	
0662	1022	TAD OP2SEL	
0663	7710	SPA CLA	
0664	6305	6305	
0665	1722	TAD I CONTW2	
0666	6152	LDRG2	
0667	7300	CLA CLL	
0670	1327	TAD BOOTR2	
0671	3724	DCA I ADD401	
0672	1723	TAD I CONTW3	
0673	6153	LDRG3	
0674	7300	CLA CLL	
0675	6164	EXECUT	
0676	7602	HLT CLA	

/PROGRAM FAILED TO BOOTSTRAP ON 1 OF THE FOLLOWING CONDITIONS
 /0001 SW=SW ENABLE BOOT WHEN RUNNING
 /0003 SW=SW ENABLE BOOT WHEN RUNNING
 /0005 SW=SW ENABLE BOOT WHEN RUNNING
 /CLEAR SIMULATOR LOGIC
 /BOOTSTRAP SHOULD RETURN HERE VIA SIMULATOR
 /CHECK FOR THE ACT LINE
 /IS THE PROGRAM ON THE ACT LINE
 /YES, ENABLE THE ACT LINE

/GET THE BOOT BEING EXECUTED
 /GO COMPARE THE BOOT THAT WAS LOADED
 /ADD 1 TO THE BOOTSTRAP ENABLE ADDRESS
 /DONE WITH THIS SUB TEST?
 /NO, DO NEXT ENABLING CONDITION
 /SIGNAL ACT LINE IF SELECTED
 /SETUP TO DO NEXT SUB TEST 5 TIMES
 /SAVE SUB-TEST COUNT
 /CLEAR SIMULATOR MODULE
 /CLEAR BOOTSTRAP LOCATIONS IN MEMORY
 /CHECK FOR THE ACT LINE
 /IS IT ON THE ACT LINE
 /YES, DISABLE ACT LINE UNTIL BOOT IS DONE
 /GET THE BOOTSTRAP SELECT ADDRESS
 /LOAD CONTROL REGISTER 2

/GET BOOT RETURN ADDRESS FOR BOOT RETURN
 /PUT IT IN LOCATION 401
 /GET BOOT STRAP ENABLE CODE
 /LOAD CONTROL REGISTER 3

/LOAD THE BOOTSTRAP
 /IF PROGRAM HALTED IT FAILED TO DO 1 OF FOLLOWING
 /0011 SW=SW DISABLE BOOT WHEN RUNNING
 /0032 POWER ON DISABLE BOOT WHEN RUNNING
 /0013 SW=SW DISABLE BOOT WHEN RUNNING
 /0033 POWER ON DISABLE BOOT WHEN RUNNING
 /0015 SW=SW DISABLE BOOT WHEN RUNNING
 /CLEAR SIMULATOR LOGIC

0677	6160	BOTRT2, CLRMOD	
0700	7301	CLA CLL IAC	
0701	1022	TAD OP2SEL	
0702	7510	SPA	
0703	6305	6305	
0704	7300	CLA CLL	
0705	1320	TAD SIMBOT	
0706	4770	JMS BOTCMP+2	
0707	2323	ISZ CONTW3	
0710	2325	ISZ BTSUBT	
0711	5260	JMP BTYST2	
0712	4767	JMS GOODBD	
0713	2320	ISZ SIMBOT	
0714	2321	ISZ CNTBOT	
0715	5214	JMP NXTBOT	
0716	4504	LOOP	
0717	5766	JMP TEST22	

/GET THE BOOTSTRAP BEING EXECUTED
 /GO COMPARE THE BOOTSTRAP THAT WAS LOADED
 /ADD 1 TO BOOTSTRAP ENABLE ADDRESS
 /DONE WITH THE SUB-TEST ?
 /NO, DO NEXT ENABLING CODE
 /SIGNAL ACT LINE IF SELECTED
 /ADD 1 TO THE BOOTSTRAP SELECT
 /DONE ALL 5 BOOTSTRAPS?
 /NO, GO DO NEXT BOOTSTRAP
 /LOOP ON TEST IF SR = 1000
 /GO TO THE NEXT TEST

0720	0000	SIMBOT, 2	
0721	0000	CNTBOT, 2	
0722	0000	CONTW2, 2	
0723	0000	CONTW3, 2	
0724	401	ADD401, 2401	
0725	0000	BTSUBT, 2	

/BOOTSTRAP RETURN ADDRESSES

0726	0642	BOOTR1, BOTRT1	
0727	0677	BOOTR2, BOTRT2	
0730	7301	SET2K, CLA CLL IAC	
0731	3765	DCA AUTSEL	
0732	1377	TAD (JMS I ATRST	
0733	3764	DCA 2000	
0734	7325	CLA CLL CML IAC RAL	
0735	5763	JMP SETUP1	
0736	1377	SET3K, TAD (JMS I ATRST	
0737	3764	DCA 2000	
0740	1377	TAD (JMS I ATRST	
0741	3762	DCA 4200	
0742	7325	CLA CLL IAC RAL	
0743	5763	JMP SETUP1	

0762	4200		
0763	1527		
0764	2042		
0765	1134		
0766	1241		
0767	1701		
0772	1402		
0771	1463		
0772	1155		
0773	1150		
0774	1517		
0775	7610		
0776	1200		
0777	4501		
	1000		

PAGE

/THE CAPS8 CASSETTE BOOT STRAP WILL LOAD INTO THE FOLLOWING LOCATIONS,

1002	7402	CAPS8, HLT	/1237
1001	7402	HLT	/1206
1002	7402	HLT	/6704
1003	7402	HLT	/6706
1004	7402	HLT	/6703
1005	7402	HLT	/5204
1006	7402	HLT	/7264
1007	7402	HLT	/6702
1012	7402	HLT	/7610

1011	7402	HLT	/3211
1012	7402	HLT	/3636
1013	7402	HLT	/1205
1014	7402	HLT	/6704
1015	7402	HLT	/6706
1016	7402	HLT	/6701
1017	7402	HLT	/5216
1020	7402	HLT	/7002
1021	7402	HLT	/7430
1022	7402	HLT	/1636
1023	7402	HLT	/7022
1024	7402	HLT	/3636
1025	7402	HLT	/7420
1026	7402	HLT	/2236
1027	7402	HLT	/2235
1030	7402	HLT	/5215
1031	7402	HLT	/7346
1032	7402	HLT	/7002
1033	7402	HLT	/3235
1034	7402	HLT	/5201
1035	7402	HLT	/7737
1036	7402	HLT	/3557
1037	7402	HLT	/7730
1040	7402	HLT	/TERMINATOR

 /TEST 22 CHECKS THAT THE AUTO RESTART OCCURS AT THE APPROPRIATE ADDRESS, THIS
 /TEST USES THE SIMULATOR TO SELECT AND CAUSE A AUTO RESTART,

1041	4505	TEST22, SCOPLP	/SETUP TEST AND SCOPE LOOP ADDRESS
1042	1377	TAD (JMS I ATRST	/SETUP LOCATIONS 0 AND 200
1043	3000	DCA INTSER	/
1044	1377	TAD (JMS I ATRST	/
1045	3776	DCA TEST18=1	/
1046	1375	TAD (RSTAUT	/GET THE AUTO RESTART ADDRESS
1047	3101	DCA ATRST	/SAVE IT
1050	1374	TAD (NOAUTO	/GET BOOT STRAP ADDRESS
1051	3653	DCA I ,+2	
1052	5255	JMP ,+3	
1053	0401	0401	
1054	4503	NOAUTO, ERROR	/LOGIC DID A BOOT INSTEAD OF A AUTO RESTART
1055	4773	JMS SETUP	/GO SETUP FOR TEST
1056	6160	AUTST, CLRMOD	/CLEAR SIMULATOR MODULE
1057	1372	TAD (RESADD	/GET THE ADDRESS OF AUTO RESTART TABLE
1060	1334	TAD AUTSEL	/GET THE PROGRAM AUTO = RESTART TO BE EXECUTED
1061	3335	DCA ADDRES	/SAVE THE TABLE ADDRESS
1062	1371	TAD (SELAUT	/GET THE CONTROL WORD 2 TABLE ADDRESS
1063	1334	TAD AUTSEL	/ADD IN THE RESTART TO BE EXECUTED
1064	3336	DCA CONW2	/SAVE THIS ADDRESS TO GET THE CONTROL WORD
1065	1022	TAD OP2SEL	/CHECK TO SEE IF PROGRAM IS ON ACT LINE
1066	7710	SPA CLA	
1067	6305		/DISABLE ACT LINE UNTIL AUTO RESTART IS DONE

1070	1736	TAD I CONW2	/GET THE CONTROL WORD
1071	6152	LODRG2	/LOAD CONTROL REGISTER 2
1072	7300	CLA CLL	
1073	1347	TAD AUTENA	/GET THE ENABLE CONTROL WORD
1074	6153	LODRG3	/LOAD CONTROL REGISTER 3
1075	7300	CLA CLL	
1076	6164	EXECUT	/EXECUTE A AUTO RESTART
1077	7602	HLT CLA	/SHOULD DO A AUTO RESTART HERE-PRESS CONT FOR RETRY
1100	5256	JMP AUTST	/RETRY
1101	0000	RSTAUT, 0	/A AUTO RESTART SHOULD COME HERE
1102	6160	CLRMOD	/CLEAR SIMULATOR LOGIC
1103	7301	CLA CLL IAC	/SET BIT 11 TO A ONE
1104	1022	TAD OP2SEL	/CHECK FOR THE ACT LINE
1105	7510	SPA	/IS IT RUNNING ON ACT LINE
1106	6305	5305	/YES, ENABLE ACT LINE
1107	7340	CLA CLL CMA	/SET THE AC TO MINUS 1
1110	1301	TAD RSTAUT	/GET THE PC FROM THE AUTO RESTART
1111	7041	CIA	/NEGATE IT
1112	1735	TAD I ADDRES	/GET THE EXPECTED AUTO RESTART PC
1113	7650	SNA CLA	/ARE THEY EQUAL?
1114	5325	JMP GODAUT	/YES GO DO NEXT ADDRESS
1115	4503	ERROR	/EXPECTED AUTO RESTART ADDRESS NOT EQUAL TO /RETURN ADDRESS, PRESS CONT TO GET EXP AND ACT ADDRESS
1116	1735	TAD I ADDRES	/
1117	7402	HLT	/AC EQUALS EXPECTED AUTO RESTART ADDRESS
1120	7340	CLA CLL CMA	
1121	1301	TAD RSTAUT	/
1122	7402	HLT	/AC EQUALS ACTUAL AUTO RESTART ADDRESS
1123	7200	CLA	/
1124	5256	JMP AUTST	/DO SAME RESTART OVER AGAIN
1125	2334	GODAUT, ISZ AUTSEL	/ADD 1 TO PROGRAM SELECT RESTART
1126	2333	ISZ AUTCNT	/DONE ALL FOUR AUTO RESTARTS?
1127	5256	JMP AUTST	/NO, GO DO NEXT ONE
1130	4770	JMS GOODBD	/SIGNAL ACT LINE OF A GOOD PASS IF ON IT
1131	4504	LOOP	/LOOP ON TEST IF SR = 1000
1132	5767	JMP TEST23	
1133	0000	AUTCNT, 0	
1134	0000	AUTSEL, 0	
1135	0000	ADDRES, 0	
1136	0000	CONW2, 0	
1137	4200	RESADD, 4200	
1140	2000	2000	
1141	0200	0200	
1142	0000	0000	
1143	1256	SELAUT, 1256	/AUTO RESTART AT 4200
1144	1254	1254	/AUTO RESTART AT 2000
1145	1252	1252	/AUTO RESTART AT 200
1146	1250	1250	/AUTO RESTART AT 0000
1147	0037	AUTENA, 0037	/POWER ON TRIGGERED AUTO RESTART

/CONTROL WORD 2 BOOTSTRAP SELECT

1150	1672	BOTSEL, 1672	/HI=LOW PAPER TAPE SELECT
1151	0522	0522	/RF08/DF32D BOOTSTRAP SELECT
1152	0422	0422	/TABE CASSETTE BOOTSTRAP SELECT
1153	1132	1132	/R8X FLOPPY BOOTSTRAP SELECT
1154	1252	1252	/RK8=E BOOTSTRAP SELECT

/CONTROL WORD 3 BOOTSTRAP ENABLES (POWER ON OR SWITCH SW)

1155	0001	BOTENA, 0001	/SW=SW ENABLE BOOT WHEN RUNNING
1156	0003	0003	/SW=SW ENABLE BOOT WHEN RUNNING
1157	0007	0007	/SW=SW ENABLE BOOT WHEN RUNNING
1162	0011	0011	/SW=SW DISABLE BOOT WHEN RUNNING
1161	0032	0032	/POWER ON DISABLE BOOT WHEN RUNNING
1162	0013	0013	/SW=SW DISABLE BOOT WHEN RUNNING
1163	0033	0033	/POWER ON DISABLE BOOT WHEN RUNNING
1164	0017	0017	/SW=SW DISABLE BOOT WHEN RUNNING

1167 1201
1170 1701
1171 1143
1172 1137
1173 1517
1174 1054
1175 1101
1176 0200
1177 4501
1200

PAGE

/TEST 23= USES THE SIMULATOR TO CHECK THAT AC LOW AND BATTERY EMPTY F/F'S
/CAN SKIP AND INTERRUPT AND THAT THEY CAN BE CLEARED.

1200	4501	JMS I AURST	/AUTO RESTART HANDLER
1201	4505	TEST23, SCOPLP	/SETUP TEST AND SCOPE LOOP ADDRESS
1202	1377	TAD	(ACLBAT
1203	0101	DCA	AURST
1204	6007	CAF	
1205	6160	CLRMOD	/CLEAR ALL FLAGS
1206	6101	SBE	/CLEAR SIMULATOR MODULE
1207	7410	SKP	/SKIP ON BATTERY EMPTY
1210	4503	ERROR	
1211	6102	SPL	/BATTERY EMPTY IS SET
1212	7410	SKP	/SKIP ON AC LOW
1213	4503	ERROR	
1214	7332	CLA CLL CML RTR	/AC LOW F/F IS SET
1215	6153	LODRG3	/GET CONTROL BIT FOR BATTERY EMPTY
1216	6001	ION	/LOAD SIMULATOR REGISTER 3
1217	5220	JMP	/TURN THE INTERRUPT ON
1220	4503	ERROR	
1221	4503	ERROR	/BATTERY EMPTY NOT SET OR FAILED TO INTERRUPT

1222	6102	SPL	/SKIP ON AC LOW
1223	7410	SKP	
1224	4503	ERROR	
1225	1257	TAD	K1000
1226	6153	LODRG3	/AC LOW SET=SHOULD ONLY BE BAT EMPTY
1227	7200	CLA	/GET THE CONTROL BIT FOR AC LOW
1232	6153	LODRG3	/LOAD SIMULATOR REGISTER 3
1231	6001	ION	/NOW SET AC LOW HIGH TO CLEAR BAT EMPTY
1232	5233	JMP	/AND TO LEAVE AC LOW F/F SET
1233	4503	ERROR	/TURN THE INTERRUPT ON
1234	7610	SKP	/GO INTERRUPT ON AC LOW F/F
1235	4503	ERROR	/AC LOW F/F NOT SET OR FAILED TO INTERRUPT
1236	6102	SPL	/AC F/F NOT SET AND AC LOW FAILED TO CLEAR
1237	7410	SKP	/BATTERY EMPTY
1242	4503	ERROR	/SKIP ON AC LOW F/F
1241	6101	SBE	
1242	7610	SKP	/CAL IN INT SERVICE FAILED TO CLEAR AC F/F
1243	4503	ERROR	/SKIP ON BATTERY EMPTY
1244	1257	TAD	K1000
1245	6153	LODRG3	/AC LOW GOING HIGH FAILED TO CLEAR BAT EMPTY
1246	6007	CAF	/GET THE AC LOW BIT
1247	6102	SPL	/LOAD SIMULATOR
1250	4503	ERROR	/CLEAR ALL FLAGS
1251	6153	LODRG3	/SKIP ON AC LOW AS A LEVEL
1252	6102	SPL	/AC LOW AS A LEVEL FAILED TO SKIP
1253	7410	SKP	/RELEASE AC LOW
1254	4503	ERROR	/SKIP ON AC LOW
1255	4504	LOOP	/CAF FAILED TO CLEAR AC LOW
1256	5510	JMP I	/LOOP ON TEST IF SR = 1000
1257	1000	1000	/END OF PROGRAM

/TIMDIS = IS AN OPERATOR INTERVENTION TEST, THE OPERATOR MUST SET THE
/TIME SHARE ENABLE SWITCH TO THE TIME SHARE DISABLE POSITION, THE PROGRAM
/TRIES TO SET THE USER FLAG AND CHECKS THAT LAS, OSR, IOT, AND HALT
/DO NOT TRAP AND THAT HLT HALTS.

1260	4505	TIMDIS, SCOPLP	/SETUP TEST AND SCOPE LOOPING ADDRESS
1261	6007	CAF	/CLEAR ALL FLAGS
1262	6264	CUF	/CLEAR USER BUFFER F/F
1263	6204	CINT	/CLEAR USER INTERRUPT F/F
1264	6001	ION	/TURN THE INTERRUPT ON
1265	6274	SUF	/TRY TO SET THE USER BUFFER F/F
1266	5267	JMP	/TRY TO ENTER TIME SHARE MODE
1267	7404	OSR	/SHOULD TRAP HERE IF TIME SHARE NOT DISABLED
1270	7610	SKP	
1271	4503	ERROR	
1272	7604	LAS	/TIME SHARE NOT DISABLED=PROGRAM INTERRUPTED
1273	7610	SKP	/SHOULD TRAP HERE IF TIME SHARE NOT DISABLED
1274	4503	ERROR	
1275	6254	SINT	/LAS TRAPPED WITHOUT TIME SHARE ENABLED

```

1276 7610      SKP      CLA
1277 4503      ERROR
1300 7402      HLT
                /NOT TRAPPED OR USER INTERRUPT SET
                /PROGRAM SHOULD HALT HERE FOR COMPLETION
                /OF TIME SHARE DISABLE TEST

1301 7610      SKP      CLA
1302 4503      ERROR
1303 5260      JMP      TIMDIS
                /HLT TRAPPED
                /RETRY THE TEST
    
```

/THE FOLLOWING LOCATIONS CONTAINS THE CONTENTS OF THE HI-LOW PAPER TAPE
/BOOTSTRAP

```

1304 7737      PTPADD, 7737      /BOOTSTRAP WILL START LOADING INTO THIS ADDRESS
1305 7741      PTPCMP, PTPCMP=PTPEND=1 /NUMBER OF LOCATIONS TO COMPARE
1306 6014
1307 3376
1310 7326
1311 1337
1312 2376
1313 5341
1314 6011
1315 5356
1316 3361
1317 1361
1320 3371
1321 1345
1322 3357
1323 1345
1324 3367
1325 6032
1326 6031
1327 5357
1330 6036
1331 7106
1332 7006
1333 7510
1334 5374
1335 7006
1336 6031
1337 5367
1340 6034
1341 7420
1342 3776
1343 3376
1344 5356      PTPEND, 5356
1345 0000      /TERMINATOR
    
```

/THE FOLLOWING LOCATIONS CONTAINS THE CONTENTS OF THE RF08/DF32D BOOTSTRAP

```

1346 7750      DSKADD, 7750      /BOOTSTRAP WILL START LOADING INTO THIS ADDRESS
1347 7773      RFDPCP, RFDPCP=RDFDFED=1 /NUMBER OF LOCATIONS TO COMPARE
1350 7600
1351 6603
1352 6622
    
```

```

1353 5352      RFDPCP, 5352
1354 5752
1355 0000      /TERMINATOR

1377 1760      PAGE
1400 1400
    
```

```

/*****
/TO RUN THE OPERATOR INTERVENTION BOOT STRAP COMPARE TEST, DO THE FOLLOWING:
/1. RUN CLRBOOT TO CLEAR THE BOOTSTRAP LOCATIONS IN MEMORY
/2. DISABLE ALL OPTIONS ASSOCIATED WITH THE BOOTSTRAP
/3. SET THE APPROPRIATE SELECT AND ENABLE SWITCHES FOR THE BOOTSTRAP
/4. SET THE HALT KEY
/5. TOGGLE THE BOOT KEY OR SWITCH
/6. START THE BOOT COMPARE TEST (BOTCMP)
/7. THE PROGRAM WILL HALT
/8. SET THE APPROPRIATE SWITCH REGISTER OR PSEUDO SWITCH REGISTER
/   TO THE BOOTSTRAP TO COMPARE AND PRESS CONTINUE,
/   SR=0000=HI-LOW PAPER TAPE READER BOOTSTRAP
/   SR=0001=RF08/DF32D BOOTSTRAP
/   SR=0002=TABE CASSETTE BOOTSTRAP
/   SR=0003=RXAE FLOPPY BOOTSTRAP
/   SR=0004=RXBE BOOTSTRAP
/9. THE PROGRAM SHOULD HALT AT ADDRESS BOOTOK IF NO ERRORS
/*****
    
```

```

1400 7402      BOTCMP, HLT      /SET THE SR FOR THE APPROPRIATE BOOTSTRAP COMPARE
1401 5204      JMP      +3
1402 0000
1403 5213      JMP      +10
1404 1021      TAD      OP1SEL
1405 7700      SMA      CLA
1406 5211      JMP      +3
1407 7604      LAS
1410 7410      SKP
1411 1020      TAD      SWITCH
1412 0140      AND      K7
1413 1377      TAD      (BOOTTB
1414 3361      DCA      SAVSTR
1415 1761      TAD      I SAVSTR
1416 3362      DCA      BOTADD
1417 1762      TAD      I BOTADD
1420 3363      DCA      BOTSD
1421 2362      ISZ      BOTADD
1422 1762      TAD      I BOTADD
1423 3364      DCA      BOTCNT
1424 2362      ISZ      BOTADD
1425 1763      COMPAR, TAD      I BOTSD
1426 7041      CIA
1427 1762      TAD      I BOTADD
1430 7650      SNA      CLA
1431 5243      JMP      GOODCP
1432 4503      ERROR
                /SIMULATOR BOOTSTRAP CHECK ENTERS HERE
                /GET THE HARDWARE OPTIONS
                /IS THE HARDWARE SR BIT SET
                /NO, USE THE PSEUDO SWITCH REGISTER
                /USE THE HARDWARE SWITCH REGISTER
                /GET THE PSEUDO SWITCH REGISTER
                /MASK OFF BITS 9-11
                /ADD IT TO THE BOOTSTRAP TABLE ADDRESS
                /SAVE IT
                /GET THE ADDRESS FROM THE TABLE
                /SAVE IT
                /GET THE BOOTSTRAP STARTING ADDRESS
                /THIS IS THE BOOTSTRAP STARTING ADDRESS
                /GET THE WORD COUNT
                /SAVE IT
                /BOTADD IS THE STARTING ADDRESS OF BOOT COMPARE
                /GET THE CONTENTS THAT BOOTSTRAP LOADED
                /NEGATE IT
                /GET THE EXPECTED BOOTSTRAP CONTENTS
                /ARE THEY EQUAL
                /YES, GO GET NEXT WORD
                /BOOTSTRAP COMPARE ERROR, PRESS "CONT" TO
    
```

1433	1363	TAD		BOYSAD	/GET BAD PC, GOOD CONTENTS, AND BAD CONTENTS
1434	7402	HLT			/GET BOOTSTRAP ADDRESS THAT WAS BAD
1435	7200	CLA			/AC=THE ADDRESS THAT DIDN'T COMPARE
1436	1762	TAD	I	BOTADD	
1437	7402	HLT			
1440	7200	CLA			/AC=EXPECTED CONTENTS OF BOOTSTRAP
1441	1763	TAD	I	BOYSAD	
1442	7402	HLT			
1443	7300	CLA		CLL	/AC=ACTUAL CONTENTS OF BOOTSTRAP
1444	2363	ISZ		BOYSAD	
1445	7000	NOP			
1446	2362	ISZ		BOTADD	
1447	7000	NOP			
1450	2364	ISZ		BOTCNT	/END OF COMPARE
1451	5225	JMP		COMPAR	/NO, GO GET NEXT WORD
1452	1762	TAD	I	BOTADD	/CONTINUE FOR TCOB
1453	7440	SZA			
1454	5220	JMP		COMPAR=5	
1455	1021	TAD		OP1SEL	/GET HARDWARE OPTIONS
1456	0144	AND		K200	
1457	7640	SZA		CLA	
1460	5602	JMP	I	BOTCMP*2	/WAS THE SIMULATOR BEING USED
1461	7402	BOOTOK, HLT			/YES, RETURN TO SIMULATOR BOOTSTRAP CHECK
1462	5200	JMP		BOTCMP	/BOOT STRAP COMPARED OK
					/DO AGAIN

 /THE FOLLOWING SECTIONS WILL CLEAR THE LOCATIONS THAT THE BOOT STRAP WILL LOAD INTO,
 /THIS SHOULD BE DONE BEFORE EACH BOOTSTRAP IS ATTEMPTED,

1463	0000	CLEARB, 0			/SIMULATOR ENTERS HERE
1464	7610	SKP		CLA	
1465	4317	CLRBOT, JMS		SETUP	
1466	1360	TAD		BOTCLR	/GET MEMORY SIZE TO SEE WHAT BOOTS TO CLEAR
1467	1377	TAD		(BOOTTB	/GET THE NUMBER TO START CLEARING BOOT
1470	3361	DCA		SAVSTR	/GET THE ADDRESS OF BOOT STRAP TABLE
1471	1761	TAD	I	SAVSTR	/SAVE IT
1472	7450	SNA			/GET THE ADDRESS FROM TABLE
1473	5311	JMP		BOTEND	
1474	3362	DCA		BOTADD	/END OF CLEARING BOOTSTRAP LOCATIONS
1475	1762	TAD	I	BOTADD	/SAVE IT
1476	3363	DCA		BOYSAD	/GET THE BOOTSTRAP STARTING ADDRESS
1477	2362	ISZ		BOTADD	/SAVE IT
1500	1762	TAD	I	BOTADD	
1501	3364	DCA		BOTCNT	/GET THE WORD COUNT
1502	3763	DCA	I	BOYSAD	/SAVE IT
1503	2363	ISZ		BOYSAD	
1504	7000	NOP			
1505	2364	ISZ		BOTCNT	
1506	5302	JMP		.=4	
1507	2361	ISZ		SAVSTR	
1510	5271	JMP		CLRBOT*4	
1511	1021	BOTEND, TAD		OP1SEL	
1512	0144	AND		K200	

1513	7640	SZA		CLA	
1514	5663	JMP	I	CLEARB	/RETURN TO SIMULATOR BOOTSTRAP TEST
1515	7402	HLT			/END OF CLEARING BOOTSTRAPS
1516	5265	JMP		CLRBOT	/DO IT AGAIN

1517	0000	SETUP, 0			
1520	3776'	DCA		AUTSEL	
1521	3775'	DCA		SIMBOT	
1522	1021	TAD		OP1SEL	/GET THE HARDWARE CONFIGURATION
1523	7104	CLL		RAL	/MOVE FIELD BITS INTO BITS 6=8
1524	0142	AND		K70	/MASK OUT FIELD BITS
1525	7650	SNA		CLA	/IS MEMORY SIZE GREATER THAN 4K
1526	5341	JMP		SETUP2	/NO, GO GET THE MEMORY SIZE
1527	3775'	SETUP1, DCA		SIMBOT	/YES THAN DO ALL BOOT'S
1530	1775'	TAD		SIMBOT	/GET BOOTSTRAP SELECT
1531	1114	TAD		M5	/SUBTRACT 5
1532	3774'	DCA		CNTBOT	/SAVE IT
1533	1775'	TAD		SIMBOT	/GET BOOT NUMBER
1534	3360	DCA		BOTCLR	/SAVE IT
1535	1776'	TAD		AUTSEL	/GET AUTO RESTART SELECT
1536	1113	TAD		M4	
1537	3773'	DCA		AUTCNT	
1540	5717	JMP	I	SETUP	/SAVE THE NUMBER OF AUTO'S TO DO
1541	1021	SETUP2, TAD		OP1SEL	/RETURN TO DO BOOT OR AUTO=RESTART
1542	0365	AND		KK3	/GET THE HARDWARE CONFIGURATION
1543	7450	SNA			/MASK OFF FIELD 2 MEMORY SIZE
1544	5354	JMP		SET1K	/IS IT 1K OF MEMORY
1545	1111	TAD		M1	/YES, SETUP TO DO 2 BOOTS OR 2 AUTO=RESTART
1546	7450	SNA			/SUBTRACT 1
1547	5772'	JMP		SET2K	/IS IT 2K OF MEMORY
1550	1111	TAD		M1	/YES, DO TWO BOOTS AND 3 AUTO'S
1551	7650	SNA		CLA	/SUBTRACT 1
1552	5771'	JMP		SET3K	/IS IT 3K OF MEMORY
1553	5327	JMP		SETUP1	/YES, SETUP TO DO 3 BOOTS AND 4 AUTO'S
1554	7305	SET1K, CLA CLL		IAC RAL	/MUST BE 4K OF MEMORY=DO ALL
1555	3776'	DCA		AUTSEL	
1556	7325	CLA CLL		CML IAC RAL	
1557	5327	JMP		SETUP1	

1560	0000	BOTCLR, 0			
1561	0000	SAVSTR, 0			
1562	0000	BOTADD, 0			
1563	0000	BOYSAD, 0			
1564	0000	BOTCNT, 0			
1565	0003	KK3, 3			

1571	0736				
1572	0730				
1573	1133				
1574	0721				
1575	0720				

1576	1134				
1577	0506				
	1600		PAGE		
1600	0000	ACTLIN, 7			
1601	1022	TAD	OP2SEL		
1602	7700	SMA	CLA		/IS THE PROGRAM RUNNING ON ACT LINE?
1603	5600	JMP	I ACTLIN		/NO, RETURN
1604	1066	TAD	FLDLIM		/GET THE FIELD LIMIT
1605	1131	TAD	H70		
1606	7640	SZA	CLA		/IS THE FIELD LIMIT EQUAL TO FIELD 7?
1607	5600	JMP	I ACTLIN		/NO, RETURN TO TEST
1610	1067	TAD	UPERLM		/GET THE UPPER ADDRESS LIMIT
1611	7001	IAC			/ADD 1 TO IT
1612	7640	SZA	CLA		/WAS IT 7777
1613	5600	JMP	I ACTLIN		/NO, RETURN
1614	7352	CLA	CLL CMA RTR		/SET LAST ADDRESS = 5777
1615	3067	DCA	UPERLM		/SAVE IT
1616	5600	JMP	I ACTLIN		/RETURN TO PROGRAM
1617	1032	ENDPAS, TAD	OP2SEL		/CHECK FOR ACT LINE
1620	7700	SMA	CLA		/IS THE PROGRAM RUNNING ON ACT LINE
1621	5234	JMP	ENDING		/NO GO CHECK FOR SR 3 TO HALT AT END OF A PASS
1622	1021	TAD	OP1SEL		/GET THE HARDWARE CONFIGURATION
1623	0144	AND	K200		/CHECK FOR THE SIMULATOR
1624	7640	SZA	CLA		/WAS THE SIMULATOR SELECTED
1625	5234	JMP	ENDING		/YES, ALREADY NOTIFIED PROM OF GOOD PAS
1626	2242	ISZ	PRGPAS		/CHECK 1/2 SECOND COUNT
1627	5234	JMP	ENDING		/NOT 1/2 SECOND YET
1630	1377	TAD	(=144		/RESET THE COUNTER
1631	3242	DCA	PRGPAS		
1632	6272	CIF	70		/CHANGE INSTRUCTION FIELD TO 7
1633	4500	JMS	I GOODPS		/SIGNAL THE PROM
1634	4341	ENDING, JMS	I SWCHK		/CHECK SR 3 TO HALT ON A PROGRAM PASS
1635	7006	RTL			
1636	7004	RAL			
1637	7710	SPA	CLA		
1640	7402	HLT			/END OF A COMPLETE PROGRAM PASS
1641	5776	JMP	0201		/RESTART THE PROGRAM
1642	7634	PRGPAS, =144			
1643	7010	POWFAL, RAR			
1644	3251	DCA	LINK		
1645	1000	TAD	INTSER		
1646	3252	DCA	PC		
1647	6103	CAL			/CLEAR AC LOW F/F
1650	4501	JMS	I ATRST		/RETURN TO THE PROGRAM

1651	0000	LINK, 0			
1652	0000	PC, 0			
1653	0000	PRGRST, 0			
1654	6102	SPL			/SKIP ON AC LOW AS A LEVEL
1655	7610	SKP	CLA		
1656	5254	JMP	,=2		
1657	5502	JMP	I TEST		/RETURN TO TEST BEING EXECUTED AND START OVER
1660	0000	TESTAD, 7			
1661	7340	CLA	CLL CMA		
1662	1260	TAD	TESTAD		
1663	3102	DCA	TEST		
1664	1375	TAD	(PRGRST		
1665	3101	DCA	AUTRST		
1666	5660	JMP	I TESTAD		
1667	1102	BATEMT, TAD	TEST		/GET THE TEST
1670	7041	CIA			/NEGATE IT
1671	1374	TAD	(TEST23		
1672	7640	SZA	CLA		/WAS IT THE BATTERY EMPTY AND AC LOW TEST
1673	5277	JMP	DEAD		/NO, MACHINE GOING DONE STOP EVERYTHING
1674	2000	ISZ	INTSER		
1675	2000	ISZ	INTSER		
1676	5400	JMP	I INTSER		
1677	7402	DEAD, HLT			/ITS ALL OVER NOW = GOOD-BYE
1700	5502	JMP	I TEST		
1701	0000	GOODBD, 0			
1702	1022	TAD	OP2SEL		/GET HARDWARE CONFIGURATION
1703	7700	SMA	CLA		/IS THE PROGRAM RUNNING ON ACT LINE
1704	5701	JMP	I GOODBD		/NO RETURN TO PROGRAM
1705	6272	CIF	70		/CHANGE INSTRUCTION FIELD TO FIELD 7
1706	4500	JMS	I GOODPS		/SIGNAL ACT LINE PROGRAM STILL RUNNING
1707	5701	JMP	I GOODBD		/RETURN TO PROGRAM
1710	0000	ERRORX, 0			/ERROR ROUTINE
1711	7300	CLA	CLL		
1712	1022	TAD	OP2SEL		/CHECK FOR ACT LINE
1713	7700	SMA	CLA		
1714	5326	JMP	CHKINH		
1715	1021	TAD	OP1SEL		
1716	0144	AND	K200		
1717	7640	SZA	CLA		
1720	6160	CLRMOD			
1721	6002	IOF			/TURN THE INTERRUPT OFF
1722	7240	CLA	CMA		
1723	1310	TAD	ERRORX		
1724	6272	CIF	70		
1725	5477	JMP	I BADPAS		/GO TO ROM FOR ERROR
1726	4341	CHKINH, JMS	I SWCHK		/CHECK FOR SR 0(1) TO INHIBIT ERROR HALT
1727	7710	SPA	CLA		/IS SR 0 SET TO A ONE


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1730 5334 JMP ERLPSW
1731 7340 CLA CLL CMA
1732 1310 TAD ERRORX
1733 7402 HLT

1734 4341 ERLPSW, JMS SWCHK
1735 7004 RAL
1736 7710 SPA CLA
1737 5502 JMP I TEST
1740 5710 JMP I ERRORX

1741 0000 SWCHK, 0
1742 7300 CLA CLL
1743 1021 TAD OP1SEL
1744 7700 SMA CLA
1745 5350 JMP ,+3
1746 7604 LAS
1747 5741 JMP I SWCHK
1750 1020 TAD SWITCH
1751 5741 JMP I SWCHK

1752 0000 TSTLOP, 0
1753 4341 JMS SWCHK
1754 7006 RTL
1755 7700 SMA CLA
1756 5752 JMP I TSTLOP
1757 5502 JMP I TEST

```

```

/YES, GO CHECK SR 1 TO LOOP ON ERROR

/SUBTRACT ONE FROM JMS ERROR PC
/AC CONTAINS THE ADDRESS WHERE THE ERROR
/WAS DETECTED BY THE PROGRAM, REFER
/TO THE PROGRAM LISTING FOR ERROR
/EXPLANATION AND THE TEST DESCRIPTION,
/CHECK THE SWITCH REGISTER TO LOOP ON ERROR

/IS SR 1 SET TO A ONE TO LOOP ON TEST
/YES GO LOOP ON THE TEST
/NO, RETURN TO THE PROGRAM

/GET THE HARDWARE STATUS WORD
/IS THE HARDWARE FRONT PANEL SELECTED
/NO, USE THE PSEUDO SWITCH REGISTER

/RETURN
/THE PSEUDO SWITCH REGISTER
/RETURN

/ROUTINE TO CHECK SR 2 TO LOOP ON TEST
/GO GET THE SWITCH REGISTER

/GO TO NEXT TEST
/LOOP ON SAME TEST

```

```

1760 0000 ACLBAT, 0
1761 2000 ISZ INTSER
1762 5400 JMP I INTSER

1774 1201
1775 1653
1776 0201
1777 7634
2000 PAGE
*200

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0000 11111111 11111111 11111111 11100000 00000000 00000000 00111111 11111111
0100 11111111 11111111 11111111 11111111 11111111 11111111 00000000 00000000
0200 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111
0300 11111111 11111111 11111111 11111111 11111111 11111111 11110000 00000001
0400 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111
0500 11111111 11111111 11111111 11111111 11111111 11111111 11111110 00000000
0600 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111
0700 11111111 11111111 11111111 11111111 11110000 00000000 00111111 11111111

1000 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111
1100 11111111 11111111 11111111 11111111 11111111 11111111 11111001 11111111

1200 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111
1300 11111111 11111111 11111111 11111111 11111111 11111100 00000000 00000001

1400 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111
1500 11111111 11111111 11111111 11111111 11111111 11111111 11111110 11111111

1600 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111
1700 11111111 11111111 11111111 11111111 11111111 11111111 11100000 00001111

2000
2100

2200
2300

2400
2500

2600
2700

3000
3100

3200
3300

3400
3500

3600
3700

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4000
4100

4200
4300

4400
4500

4600
4700

5000
5100

5200
5300

5400
5500

5600
5700

6000
6100

6200
6300

6400
6500

6600
6700

7000
7100

7200
7300

7400
7500

7600
7700

ACLBAT 1760	DATREC 0064	M43 0123	SETUP 1517
ACTLIM 1600	DEAD 1677	M44 0124	SETUP1 1527
ADD401 2724	OSKADD 1346	M5 0114	SETUP2 1541
ADDCNT 0076	EMA1 0361	M50 0125	SIMBOT 0720
ADDRESS 1135	EMA2 0362	M5100 0137	SINT 6254
AUTCNT 1133	EMA3 0363	M55 0126	SKON 6000
AUTENA 1147	EMACLR 0211	M60 0127	SKPEMA 6166
AUTRST 0101	EMAIF1 0312	M66 0130	SPL 6102
AUTSEL 1134	EMAIF2 0331	M7 0115	SUF 6274
AUTTST 1056	EMAIF3 0344	M70 0131	SWCHK 1741
BADPAS 0077	ENDING 1634	M77 0132	SWITCH 0020
BATEMT 1667	ENDPAS 1617	NOAUTO 1094	TABADD 0443
ROOTOK 1461	ERLPSW 1734	NOBOOT 0610	TABCMP 0445
ROOTR1 0726	ERROR 4503	NXTBOT 0614	TABEND 0504
ROOTR2 2727	ERRORX 1710	OP1SEL 0021	TEST 0102
ROOTTB 0506	EXECUT 6164	OP21K3 0000	TEST18 0201
ROTADD 1562	FLDLIM 0066	OP2SEL 0022	TEST19 0275
ROTCLR 1560	GDAUT 1125	PASENU 0110	TEST20 0402
ROTCMP 1400	GOODBD 1701	PC 1652	TEST21 0600
ROTCNT 1564	GOODDCP 1443	POWFAL 1643	TEST22 1041
ROTENA 1155	GOODPS 0100	PRGPAS 1642	TEST23 1201
ROTEND 1511	GTF 6004	PRGRST 1653	TESTAD 1660
ROTRT1 0642	HGHLIM 0073	PTPADU 1304	TIMDIS 1260
ROTRT2 0677	HLT 7402	PTPCMP 1306	TST18A 0225
ROTSAD 1563	INTSER 0000	PTPEND 1344	TST18B 0244
ROTSSEL 1150	K10 0141	RF 6214	TST18C 0257
RTSURT 0725	K1000 1257	REDEMA 6155	TST19A 0310
RTTST1 0623	K200 0144	RESADD 1137	TST19B 0326
RTTST2 0660	K400 0145	RFDPCP 1350	TST19C 0341
CAF 6007	K4100 0147	RFDPEU 1354	TSTLOP 1752
CAL 6103	K6201 0074	RIB 6234	UPERLM 0067
CAPS8 1000	K7 0140	RIF 6224	WRKADD 0072
CDF 6201	K70 0142	RKBADD 0514	WRKFLD 0070
CDFCHK 0062	K77 0143	RKBGMP 0516	XBAT 0107
CHKCDF 0063	K7774 0146	RKBE 0023	XPWRFL 0106
CHKINH 1726	KK3 1565	RKBEND 0524	
CIF 6202	LINK 1651	RMF 6244	
CIFCDF 6203	LODRG2 6152	RSTAUT 1101	
CINT 6204	LODRG3 6153	RTF 6005	
CLEARB 1463	LOOP 4504	RXBADU 0520	
CLRBOT 1465	M1 0111	RXBGMP 0530	
CLREMA 6154	M10 0116	RXBE 0024	
CLRERC 0360	M100 0133	RXBEND 0565	
CLRMOD 6160	M11 0117	SAVES# 0065	
CLRSIM 6150	M1100 0136	SAVSTH 1561	
CNTBOT 0721	M125 0134	SAVWFU 0075	
COMPAR 1425	M152 0135	SBE 6101	
CONTW2 0722	M2 0112	SCOPLP 4505	
CONTW3 0723	M20 0120	SELAUT 1143	
CONW2 1136	M25 0121	SET1K 1554	
CUF 6264	M33 0122	SET2K 0730	
DATPAT 0071	M4 0113	SET3K 0736	

ERRORS DETECTED: 0
LINKS GENERATED: 32
RUN-TIME: 19 SECONDS
2K CORE USED

/KMB-A OPTION TEST 2 MAINDEC-08-DJKMA-B-L 1K PART 4
/
/COPYRIGHT (C) 1974, 1975 DIGITAL EQUIPMENT CORPORATION
/
/PROGRAMMER: BRUCE HANSEN
/

////////////////////////////////////
/THE FOLLOWING LISTING WILL CORRESPOND TO THE PAPER TAPE LABELED MAINDEC-08-DJKMA-B-PM4,
/1K PART 4, THIS PAPER TAPE AND LISTING WILL BE THE LAST OF FOUR 1K SEGMENTED
/PAPER TAPES AND LISTINGS FOR COMPUTERS WITH LESS THAN 4K OF MEMORY.
////////////////////////////////////

/KMB-A OPTION TEST 2 MAINDEC-08-DJKMA-B-L 1K PART 4
 /COPYRIGHT 1974, 1975 DIGITAL EQUIPMENT CORP., MAYNARD, MASS., 01754
 /PDP-8A OPTION TEST 2 TESTS THE MEMORY EXTENTION/TIME SHARE CONTROL,
 /POWER FAIL/AUTO RESTART, AND BOOTSTRAP LOADERS

6000 SKON=6000
 6007 CAF=6007
 7402 HLT=7402

/SWITCH REGISTER SETTINGS

/SR0=1 INHIBIT ERROR HALT
 /SR1=1 LOOP ON ERROR
 /SR2=1 LOOP ON TEST
 /SR3=1 HALT AT COMPLETION OF A PROGRAM PASS

/MEMORY EXTENTION/TIME SHARE INSTRUCTIONS

6004 GTF=6004 /GET FLAGS, READS THE FOLLOWING MACHINE STATES
 /INTO THE INDICATED BITS OF THE AC1
 /AC0 LINE
 /AC2 INTERRUPT REQUEST
 /AC4 INTERRUPT ENABLE F/F
 /AC5 USER FLAG
 /AC6-11 SAVE FIELD REGISTER

6005 RTF=6005 /RESTORE THE FLAGS, RTF LOADS THE LINK FROM AC0,
 /LOADS THE USER BUFFER F/F, INSTRUCTION BUFFER AND
 /DATA FIELD WITH AC5, AC6-8, AC 9-11 AND INHIBITS
 /PROCESSOR INTERRUPTS UNTIL NEXT JMP OR JMS INSTRUCTION,
 /AT THE END OF THE JMP OR JMS, THE CONTENTS OF THE U.B. + I.B,
 /ARE LOADED INTO USER FIELD F/F, AND THE I.F., INTERRUPT ENABLE
 /IS SET AND INTERRUPT INHIBIT AS CLEARED

6234 RIB=6234 /READ THE INTERRUPT BUFFER

6244 RHF=6244 /RESTORES MEMORY FLAGS

6204 CINT=6204 /CLEAR USER INTERRUPT FLIP=FLOP

6254 SINT=6254 /SKIP ON USER INTERRUPT FLIP=FLOP

6264 CUF=6264 /CLEAR USER BUFFER FLIP=FLOP

6274 SUF=6274 /SET USER BUFFER FLIP=FLOP (ENTER TIME SAME MODE)AND
 /INHIBITS PROCESSOR INTERRUPTS UNTIL THE NEXT JMP OR
 /JMS INSTRUCTION, AT THE END OF THE JMP OR JMS
 /INSTRUCTION, THE USER BUFER IS LOADED INTO THE USER
 /FIELD F/F,

6201 CDF=6201 /CHANGE DATA FIELD

6202 CIF=6202 /CHANGE INSTRUCTION FIELD
 6214 RDF=6214 /READ THE DATA FIELD INTO AC BITS 6=8
 6224 RIF=6224 /READ THE INSTRUCTION FIELD INTO AC BITS 6=8
 6203 CIFCDF=6203 /PERFORMS THE CIF AND CDF FUNCTIONS

/POWER FAIL INSTRUCTIONS

6102 SPL=6102 /SKIP ON AC LOW FLIP=FLOP

6103 CAL=6103 /CLEAR AC LOW FLIP=FLOP

6101 SBE=6101 /SKIP ON BATTERY EMPTY FLIP=FLOP

/OPTION BOARD 2 SIMULATOR IOT'S

6150 CLRSIM=6150 /CLEAR CONTROL REGISTERS
 6152 LODRG2=6152 /LOAD CONTROL REGISTER 2
 6153 LODRG3=6153 /LOAD CONTROL REGISTER 3
 6154 CLREMA=6154 /CLEAR EMA CATCHER LOGIC
 6155 REDEMA=6155 /READ EMA CATCHER REGISTER
 6160 CLRMOD=6160 /CLEAR TEST MODULE LOGIC
 6164 EXECUT=6164 /EXECUT AND CONTROL WORD 3 BIT 7 =1 ISSUE A POWER ON PULSE
 /EXECUT AND CONTROL WORD 3 BIT 7 =0 ISSUE A SWITCH SW PULSE
 /SKPEMA AND CONTROL WORD 3 BIT 3 =1 EMA INTERRUPT AND SKIP ENABLE
 /SKPEMA AND CONTROL WORD 3 BIT 3 =0 EMA INTERRUPT AND SKIP DISABLE

/OPTION BOARD2 SIMULATOR CONTROL WORD 2 BIT ASSIGNMENTS

/BITS 0 - 1 NOT USED
 /BITS 2 - 8 BOOT STRAP PROGRAM SELECT
 /BITS 9 - 11 AUTO-RESTART ADDRESS SELECT

/OPTION BOARD 2 SIMULATOR CONTROL WORD 3 BIT ASSIGNMENTS

/BIT 0 TIME SHARE 0=ENABLED 1=DISABLED
 /BIT 1 BATT EMPTY 1=BATT EMPTY PULLED LOW 2=FREE STATE
 /BIT 2 AC LOW (L) 1=PULLED LOW 0=FREE STATE
 /BIT 3 1=EMA INTERRUPT/SKIP ENABLE 0=EMA INTERRUPT SKIP DISABLE
 /BITS 4 - 6 NOT USED
 /BIT 7 1=POWER ON PULSE WITH EXECUT 0=SWITCH SW PULSE WITH EXECUT
 /BIT 8 1=DISABLES BOOTSTRAP WHILE RUNNING 2=ENABLES BOOTSTRAP WHILE RUNNING
 /BIT 9 - 11 AUTO-RESTART/BOOT STRAP ENABLE CODE

6000 *0

0000 0000 INTSER, 0 /JMS I AUTRST PLACED HERE FOR SIMULATOR AUTO RESTART
 0001 3064 DCA DATREC
 0002 6102 SPL /SKIP ON AC LOW
 0003 7410 SKP

0004	5506	JMP I	XPWRFL	/POWER GOING DOWN
0005	6101	SBE		/SKIP ON BATTERY EMPTY
0006	7410	SKP		
0007	5507	JMP I	XBAT	/GO HALT THE COMPUTER ,ITS ALL OVER
0010	6224	RIF		/READ THE INSTRUCTION FIELD
0011	7640	SZA	CLA	
0012	4503	ERROR		/I,F, IS NOT 0 AFTER A INTERRUPT
0013	6214	RDF		/READ THE DATA FIELD
0014	7640	SZA	CLA	
0015	4503	ERROR		/D,F, IS NOT 0 AFTER A INTERRUPT
0016	2000	ISZ	INTSER	/ADD 1 TO THE INTERRUPTED PC
0017	5400	JMP I	INTSER	/RETURN TO THE PROGRAM
0020	0000	*20		
0020	0000	SWITCH, 0		/PSEUDO SWITCH REGISTER IF BIT 0=0 OF OP1SEL
0021	1000	OP1SEL, 1000		
0022	0000	OP2SEL, 0		/BIT 0=0 USE LOC 20 AS A PSEUDO S,R, /BIT 0=1 USE HARDWARE FRONT PANEL S,R, /BIT 1=1 HAS 8A OPTION 1 /BIT 2=1 HAS 8A OPTION 2 /BIT 3=1 HAS 8A CPU SIMULATOR /BIT 4=1 HAS 8A OPTION 1 + 2 TEST MODULE /BIT 5=1 PROGRAM ON 8A XOR /BIT 6=1 HAS PDP-8E TYPE CPU /BITS 7=11 MEMORY SIZE = 0'S = 1K, 37=32K, /MEMORY SIZE CAN BE INCREASED IN 1K INCREMENTS /BY ADDING A 1 TO THE NUMBER IN BITS 7=11,
0023	7402	RK8E,	HLT	/2200
0024	7402	RX8E,	HLT	/6745
0025	7402		HLT	/0023
0026	7402		HLT	/7640
0027	7402		HLT	/5024
0030	7402		HLT	/6733
0031	7402		HLT	/5031
0032	7402		HLT	/TERMINATOR
0062	0000	*62		
0062	0000	CDPCHK, 0		
0063	0062	CHKCDF, CDPCHK		
0064	0000	DATREQ, 0		
0065	0000	SAVESZ, 0		
0066	0000	FLDLIM, 0		
0067	0000	UPERLM, 0		
0070	0000	WRKFLD, 0		
0071	0000	DATPAT, 0		
0072	0000	WRKADD, 0		
0073	0000	HGHLIM, 0		
0074	6201	K6201, 6201		

0075	0000	SAVWFD, 0		
0076	0000	ADDGNT, 0		
0077	6520	BADPAS, 6520		
0100	6500	GOODPS, 6500		
0101	0453	AUTRST, PRGRST		
0102	0000	TEST, 0		/SCOPE LOOP AND TEST LOOP ADDRESS
0103	4503	ERROR=	JMS I	ERRORX
0104	4504	LOOP=	JMS I	TSTLOP
0105	4505	SCOPLP=	JMS I	TESTAD
0106	0443	XPWRFL,	POWFAL	
0107	0467	XBAT,	BATEMT	
0110	0417	PASEND,	ENDPAS	
/CONSTANTS USED BY THE PROGRAM				
0111	7777	M1,	-1	
0112	7776	M2,	-2	
0113	7774	M4,	-4	
0114	7773	M5,	-5	
0115	7771	M7,	-7	
0116	7770	M10,	-10	
0117	7767	M11,	-11	
0120	7760	M20,	-20	
0121	7753	M25,	-25	
0122	7745	M33,	-33	
0123	7735	M43,	-43	
0124	7734	M44,	-44	
0125	7730	M50,	-50	
0126	7723	M55,	-55	
0127	7720	M60,	-60	
0130	7712	M66,	-66	
0131	7710	M70,	-70	
0132	7701	M77,	-77	
0133	7700	M100,	-100	
0134	7653	M125,	-125	
0135	7626	M152,	-152	
0136	6700	M1100,	-1100	
0137	2700	M5100,	-5100	
0140	0007	K7,	7	
0141	0010	K10,	10	
0142	0070	K70,	70	
0143	0077	K77,	77	
0144	0200	K200,	200	
0145	0400	K400,	400	
0146	7774	K7774,	7774	
0147	4100	K4100,	4100	
0200	0200	*200		

 /AUTO = IS AN OPERATOR INTERVENTION TEST TO CHECK POWER=FAIL/AUTO=RESTART.
 /WHEN THE PROGRAM IS STARTED, IT FILLS LOCATIONS 5200 TO 7777 (4K) OR 5200 TO 5777 (3K) WITH A
 /COMPLEMENTING DATA PATTERN (5252 = 2525), AND THEN HALTS, THE OPERATOR
 /AT THIS TIME MUST SET THE APPROPRIATE AUTO RESTART SWITCHES ON THE
 /MODULE, HE THEN MUST SIGNIFY TO THE PROGRAM VIA FRONT PANEL SWITCH
 /REGISTER OR THE PSEUDO SWITCH REGISTER, WHICHEVER IS SELECTED, THE
 /AUTO RESTART TO BE TESTED (0000=RESTART AT 4200; 0001=RESTART AT 2000;
 /0002=RESTART AT 0200; 0003=RESTART AT 0000), THE OPERATOR THEN PRESSES
 /"CONTINUE", THE PROGRAM THEN STARTS COMPARING DATA, WAITING FOR THE
 /OPERATOR TO PULL THE LINE CORD, WHEN THE AC LINE CORD IS PULLED, THE
 /PROGRAM SHOULD HALT AT LOCATION ACDOWN, THE OPERATOR SHOULD THEN PLUG
 /THE LINE CORD BACK IN, AT THIS TIME THE PROGRAM SHOULD DO A AUTO RESTART
 /TO THE ADDRESS SELECTED, THE PROGRAM THEN CHECKS FOR THE CORRECT
 /AUTO RESTART AND THEN GOES BACK TO COMPARING DATA, THE ABOVE SEQUENCE
 /OF UNPLUGGING AND PLUGGING LINE CORD SHOULD BE DONE SEVERAL TIMES FOR EACH
 /AUTO RESTART.
 ///WARNING=THE BATTERY SUPPLY SHOULD BE FULLY CHARGED////////

0200	7000	NOP/JMS	I	AUTRST	
0201	4505	AUTO,	SCOPLP		/SETUP TEST AND SCOPE LOOP ADDRESS
0202	6007	CAF			/CLEAR ALL FLAGS
0203	1021	TAD	OP1SEL		/GET THE HARDWARE CONFIGURATION
0204	1144	AND	K200		
0205	7640	SZA	CLA		
0206	6160	CLRMOD			/SIMULATOR SELECTED CLEAR TEST MODULE
0207	1377	TAD	(OPRINT		/GET THE ADDRESS FOR THE INTERRUPT ROUTINE
0210	3101	DCA	AUTRST		/SAVE IT
0211	1376	TAD	(BUFFER		/GET THE ADDRESS OF TEST BUFFER
0212	3302	DCA	FILLIT		/SAVE IT
0213	1303	TAD	BUFCNT		/GET THE NUMBER OF WORDS TO FILL THE BUFFER
0214	3304	DCA	CNTBUF		/SAVE IT
0215	1306	TAD	K5252		/THE FIRST WORD IN THE BUFFER WILL BE 5252
0216	3305	DCA	BUFPAT		/SAVE THE WORD
0217	1305	TAD	BUFPAT		/GET THE WORD
0220	3702	DCA	I FILLIT		/PUT IT IN THE BUFFER
0221	1305	TAD	BUFPAT		/GET THE WORD
0222	7040	CMA			/COMPLEMENT IT
0223	3305	DCA	BUFPAT		
0224	2302	ISZ	FILLIT		/INCREMENT BUFFER ADDRESS
0225	2304	ISZ	CNTBUF		/DONE?
0226	5217	JMP	,=7		/NO KEEP FILLING THE BUFFER
0227	7402	HLT			/SET THE SWITCH REGISTER OR PSEUDO S,R
					/TO THE AUTO-RESTART TO BE EXECUTED
0232	1021	TAD	OP1SEL		/GET THE HARDWARE CONFIGURATION
0231	7500	SMA			/IS THE HARDWARE S,R, BEING USED
0232	5235	JMP	,+3		/NO USE THE PSEUDO SWITCH REGISTER

0233	7604	LAS			
0234	7410	SKP			
0235	1020	TAD	SWITCH		
0236	1307	AND	K3		/MASK OFF BITS 12 AND 11
0237	1375	TAD	(RESADD		/ADD THE AUTO RESTART TABLE ADDRESS TO IT
0242	3310	DCA	MANRST		/SAVE IT
0241	1710	TAD	I MANRST		/GET THE AUTO RESTART TO BE EXECUTED
0242	3310	DCA	MANRST		/SAVE IT FOR COMPARISON AFTER RESTART
0243	1376	STRCMP,	(BUFFER		/GET THE BUFFER ADDRESS
0244	3302	DCA	FILLIT		/SAVE IT
0245	1303	TAD	BUFCNT		/GET THE BUFFER SIZE
0246	3304	DCA	CNTBUF		/SAVE IT
0247	1306	TAD	K5252		
0252	3305	DCA	BUFPAT		/SETUP INITIAL PATTERN
0251	6001	CMPBUF,	ION		/TURN THE INTERRUPT ON
0252	1702	TAD	I FILLIT		/GET THE WORD FROM BUFFER
0253	7041	CIA			/NEGATE IT
0254	1305	TAD	BUFPAT		/GET THE WORD EXPECTED
0255	7650	SNA	CLA		
0256	5272	JMP	BUFGOD		/WORD COMPARED GO INCREMENT COUNTER
0257	4503	ERROR			/DATA WORDS DID'NT COMPARE= PRESS
					/"CONT" FOR ADDRESS AND GOOD AND BAD DATA
0260	1302	TAD	FILLIT		/
0261	7402	HLT			/AC=BUFFER ADDRESS WHERE ERROR WAS DETECTED
0262	7300	CLA	CLL		
0263	1305	TAD	BUFPAT		
0264	7402	HLT			/AC = GOOD DATA WORD
0265	7300	CLA	CLL		
0266	1702	TAD	I FILLIT		
0267	7402	HLT			/AC = BAD DATA WORD = PRESS "CONT" TO
0270	7300	CLA	CLL		/RETRY THE COMPLETE TEST
0271	5502	JMP	I TEST		/DO THE TEST OVER
0272	1305	BUFGOD,	TAD	BUFPAT	/GET THE DATA PATTERN
0273	7040	CMA			/NEGATE IT
0274	3305	DCA	BUFPAT		/SAVE IT FOR NEXT COMPARE
0275	2302	ISZ	FILLIT		/INCREMENT ADDRESS TO COMPARE
0276	7000	NOP			/THIS IS NEEDED FOR ISZ OVERFLOW
0277	2304	ISZ	CNTBUF		/DONE COMPLETE BUFFER?
0300	5251	JMP	CMPBUF		/NO CONTINUE
0301	5243	JMP	STRCMP		/RE=INITIALIZE COMPARE LOOP AND COMPARE
0302	0000	FILLIT,	0		
0303	6600	BUFCNT,	-1200		
0304	0000	CNTBUF,	0		
0305	0000	BUFPAT,	0		
0306	5252	K5252,	5252		
0307	0003	K3,	3		
0310	0000	MANRST,	0		
0311	0000	OPRRET,	0		/PROGRAM COMES HERE FROM AN AUTO RESTART
0312	7340	CLA	CLL CMA		/GET THE ADDRESS FROM AUTO RESTART
0313	1311	TAD	OPRRET		
0314	7041	CIA			/NEGATE IT
0315	1310	TAD	MANRST		/GET EXPECTED RESTART
0316	7650	SNA	CLA		/ARE THEY EQUAL?

```

0317 5326      JMP      RESET
0320 4503      ERROR

0321 1310      TAD      MANRST
0322 7402      HLT
0323 7340      CLA      CLL CMA
0324 1311      TAD      OPRRET
0325 7402      HLT
0326 7300      RESET,  CLA      CLL
0327 1377      TAD      (OPRINT
0330 3101      DCA      AURST
0331 1774      TAD      PC
0332 3340      DCA      RETPRG
0333 1773      TAD      LINK
0334 7004      RAL
0335 1064      TAD      DATREC
0336 6001      ION
0337 5740      JMP      I RETPRG

0340 0000      RETPRG, 0

0341 0034      K34,   34
0342 0001      K1,    1

```

```

/YES RESET AC AND LINK AND RETURN TO COMPARE
/THE AUTO RESTART ADDRESS SELECTED BY
/OPERATOR DOES NOT COMPARE WITH AUTO
/AUTO RESTART THAT RETURNED, PRESS "CONT"
/FOR EXPECTED AND ACTUAL RETURN ADDRESS
/GET THE EXPECTED AUTO RESTART ADDRESS
/AC = EXPECTED AUTO RESTART ADDRESS

```

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/GET ACTUAL
/AC = ADDRESS RETURNED FROM AUTO RESTART

/SETUP RETURN ADDRESS FOR POWER FAIL
/SAVE IT

```

```

/GET THE LINK
/PUT IT IN THE LINK
/GET THE AC
/TURN THE INTERRUPT ON

```

```

0343 0000      OPRINT, 0
0344 1372      TAD      (JMS I AURST
0345 3000      DCA      INTSER
0346 1372      TAD      (JMS I AURST
0347 3200      DCA      AUTO-1
0350 1371      TAD      (OPRRET
0351 3101      DCA      AURST
0352 7402      ACDOWN, HLT
0353 5502      JMP      I TEST

0354 4200      RESADD, 4200
0355 2000      2000
0356 0200      0200
0357 0000      0000

```

/OPERATOR INTERVENTION AUTO RESTART

/SETUP FOR A AUTO RESTART

/WAIT FOR LINE CORD TO BE PLUGGED IN
/RETRY TEST

```

0371 0311
0372 4501
0373 0451
0374 0452
0375 0354
0376 0600
0377 0343
0400

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PAGE

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0400 0000      ACTLIN, 0
0401 1022      TAD      OP2SEL
0402 7700      SMA      CLA
0403 5600      JMP      I ACTLIN
0404 1066      TAD      FLDLIM
0405 1131      TAD      H70
0406 7640      SZA      CLA
0407 5600      JMP      I ACTLIN
0410 1067      TAD      UPERLM
0411 7001      IAC
0412 7640      SZA      CLA
0413 5600      JMP      I ACTLIN
0414 7352      CLA      CLL CMA RTR
0415 3067      DCA      UPERLM
0416 5600      JMP      I ACTLIN

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/IS THE PROGRAM RUNNING ON ACT LINE?
/NO, RETURN
/GET THE FIELD LIMIT

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/IS THE FIELD LIMIT EQUAL TO FIELD 7?
/NO, RETURN TO TEST
/GET THE UPPER ADDRESS LIMIT
/ADD 1 TO IT
/WAS IT 7777
/NO, RETURN
/SET LAST ADDRESS = 5777
/SAVE IT
/RETURN TO PROGRAM

```

```

0417 1022      EIDPAS, TAD      OP2SEL
0420 7700      SMA      CLA
0421 5234      JMP      ENDING
0422 1021      TAD      OP1SEL
0423 1144      AND      K200
0424 7640      SZA      CLA
0425 5234      JMP      ENDING
0426 2242      ISZ      PRGPAS
0427 5234      JMP      ENDING
0430 1377      TAD      (-144
0431 3242      DCA      PRGPAS
0432 6272      CIF      70
0433 4500      JMS      I GOODPS
0434 4331      ENDING, JMS      SWCHK
0435 7006      RTL
0436 7004      RAL
0437 7710      SPA      CLA
0440 7402      HLT
0441 5776      JMP      0201

```

```

/CHECK FOR ACT LINE
/IS THE PROGRAM RUNNING ON ACT LINE
/NO GO CHECK FOR SR 3 TO HALT AT END OF A PASS
/GET THE HARDWARE CONFIGURATION
/CHECK FOR THE SIMULATOR
/WAS THE SIMULATOR SELECTED
/YES, ALREADY NOTIFIED PROM OF GOOD PAS
/CHECK 1/2 SECOND COUNT
/NOT 1/2 SECOND YET
/RESET THE COUNTER

```

```

/CHANGE INSTRUCTION FIELD TO 7
/SIGNAL THE PROM
/CHECK SR 3 TO HALT ON A PROGRAM PASS

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/END OF A COMPLETE PROGRAM PASS
/RESTART THE PROGRAM

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0442 7634      PRGPAS, -144

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0443 7010      POWFAL, RAR
0444 3251      DCA      LINK
0445 1000      TAD      INTSER
0446 3252      DCA      PC
0447 6103      CAL
0450 4501      JMS      I AURST

```

```

/CLEAR AC LOW F/F
/RETURN TO THE PROGRAM

```

```

0451 0000      LINK, 0
0452 0000      PC, 0
0453 0000      PRGRST, 0

```

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0454 6102 SPL
0455 7610 SKP CLA
0456 5254 JMP ,=2
0457 5532 JMP I TEST /RETURN TO TEST BEING EXECUTED AND START OVER

0460 3300 TESTAD, 0
0461 7340 CLA CLL CMA
0462 1260 TAD TESTAD
0463 3102 DCA TEST
0464 1375 TAD (PRGRST
0465 3101 DCA AUTRST
0466 5660 JMP I TESTAD

0467 7402 BATEMT, HLT /BATTERY IS EMPTY = GOOD = BYE
0470 5502 JMP I TEST /RETURN TO TEST IF OK

0471 3000 GOODBD, 0
0472 1022 TAD OP2SEL /GET HARDWARE CONFIGURATION
0473 7700 SMA CLA /IS THE PROGRAM RUNNING ON ACT LINE
0474 5671 JMP I GOODBD /NO RETURN TO PROGRAM
0475 6272 CIF 70 /CHANGE INSTRUCTION FIELD TO FIELD 7
0476 4500 JMS I GOODPS /SIGNAL ACT LINE PROGRAM STILL RUNNING
0477 5671 JMP I GOODBD /RETURN TO PROGRAM

0500 1000 ERRORX, 0 /ERROR ROUTINE
0501 7300 CLA CLL
0502 1022 TAD OP2SEL /CHECK FOR ACT LINE
0503 7700 SMA CLA
0504 5316 JMP CHKINH
0505 1021 TAD OP1SEL
0506 1144 AND K200
0507 7640 SZA CLA
0510 6160 CLRMOD
0511 6002 IOF /TURN THE INTERRUPT OFF
0512 7240 CLA CMA
0513 1300 TAD ERRORX
0514 6272 CIF 70
0515 5477 JMP I BADPAS /GO TO ROM FOR ERROR
0516 4331 JMS SWCHK /CHECK FOR SR 0(1) TO INHIBIT ERROR HALT
0517 7710 SPA CLA /IS SR 0 SET TO A ONE
0520 5324 JMP ERLPSW /YES, GO CHECK SR 1 TO LOOP ON ERROR
0521 7340 CLA CLL CMA
0522 1300 TAD ERRORX /SUBTRACT ONE FROM JMS ERROR PC
0523 7402 HLT /AC CONTAINS THE ADDRESS WHERE THE ERROR
/WAS DETECTED BY THE PROGRAM, REFER
/TO THE PROGRAM LISTING FOR ERROR
/EXPLANATION AND THE TEST DESCRIPTION,
/CHECK THE SWITCH REGISTER TO LOOP ON ERROR

0524 4331 ERLPSW, JMS SWCHK
0525 7004 RAL
0526 7710 SPA CLA /IS SR 1 SET TO A ONE TO LOOP ON TEST
0527 5502 JMP I TEST /YES GO LOOP ON THE TEST
0530 5700 JMP I ERRORX /NO, RETURN TO THE PROGRAM

```

```

0531 3000 SWCHK, 0
0532 7300 CLA CLL
0533 1021 TAD OP1SEL /GET THE HARDWARE STATUS WORD
0534 7700 SMA CLA /IS THE HARDWARE FRONT PANEL SELECTED
0535 5340 JMP ,+3 /NO, USE THE PSEUDO SWITCH REGISTER
0536 7634 LAS
0537 5731 JMP I SWCHK /RETURN
0540 1020 TAD SWITCH /THE PSEUDO SWITCH REGISTER
0541 5731 JMP I SWCHK /RETURN

0542 3000 TSTLOP, 0 /ROUTINE TO CHECK SR 2 TO LOOP ON TEST
0543 4331 JMS SWCHK /GO GET THE SWITCH REGISTER
0544 7006 RTL
0545 7730 SMA CLA
0546 5742 JMP I TSTLOP /GO TO NEXT TEST
0547 5532 JMP I TEST /LOOP ON SAME TEST

0550 3000 ACLBAT, 0
0551 2000 ISZ INTSER
0552 5400 JMP I INTSER

0575 0453
0576 0201
0577 7634
2600 PAGE

0600 0000 BUFFER, 0 /BUFFER IS FROM 600 TO 1777

0200 *200

```


0300	11111111	11111111	11111111	11100000	00000000	00000000	00111111	11111111
0100	11111111	11111111	11111111	11111111	11111111	00000000	00000000	00000000
0200	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111
0300	11111111	11111111	11111111	11111111	11111111	11111111	00000000	01111111
0400	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111
0500	11111111	11111111	11111111	11111111	11111111	11100000	00000000	00000111
0600	10000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
0700	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000

1000
1100

1200
1300

1400
1500

1600
1700

2000
2100

2200
2300

2400
2500

2600
2700

3000
3100

3200
3300

3400
3500

3600
3700

4000
4100

4200
4300

4400
4500

4600
4700

5000
5100

5200
5300

5400
5500

5600
5700

6000
6100

6200
6300

6400
6500

6600
6700

7000
7100

7200
7300

7400
7500

7600
7700

ACDOWM	352	K7	0140	RXBE	0024
ACLBAT	550	K70	0142	SAVES	0065
ACTLIN	400	K77	0143	SAVWFU	0075
ADDGNT	276	K7774	0146	SBE	6101
AUTO	201	LINK	0451	SCOPLP	4505
AUTRST	101	LODRG2	6152	SINT	6254
BADPAS	077	LODRG3	6153	SKON	6000
BATEMT	2467	LOOP	4504	SKPEMA	6166
BUFFCNT	303	M1	0111	SPL	6102
BUFFER	600	M10	0116	STRCMP	0243
BUFFGOD	272	M100	0133	SUF	6274
BUFFPAT	305	M11	0117	SWCHK	0531
CAF	6007	M1100	0136	SWITCH	0020
CAL	6103	M125	0134	TEST	0102
CAF	6201	M152	0135	TESTAD	0460
CAFCHK	062	M2	0112	TSTLOP	0542
CHKCDF	063	M20	0120	UPERLM	0067
CHKINN	516	M25	0121	WRKADU	0072
CIF	6202	M33	0122	WRKFLD	0070
CIFCDF	6203	M4	0113	XBAT	0107
CINT	6204	M43	0123	XPWRFL	0106
CLREMA	6154	M44	0124		
CLRMOD	6160	M5	0114		
CLRSIN	6150	M50	0125		
COMPBUF	0251	M5100	0137		
CNTBUF	0304	M55	0126		
CUF	6204	M60	0127		
DATPAT	0071	M66	0130		
DATREC	0064	M7	0115		
ENDING	434	M70	0131		
ENDPAS	417	M77	0132		
FRLPS	524	MANRST	0310		
ERROR	4503	OP1SEL	0021		
ERRORX	4500	OP21K4	0000		
EXECUT	6164	OP2SEL	0022		
FILLIT	0302	OPRINT	0343		
FLOLIN	0066	OPRRET	0311		
GOODDD	1471	PASEND	0110		
GOODPS	0100	PC	0452		
GTF	6004	POWFAL	0443		
HGHLIN	0073	PRGPAS	0442		
HLT	7402	PRGRST	0453		
INTSEN	0000	RCF	6214		
K1	0342	REDEMA	6155		
K10	0141	RESADD	0354		
K200	0144	RESET	0326		
K3	0307	RETPRG	0340		
K34	0341	RIB	6234		
K400	0145	RIF	6224		
K4100	0147	RKBE	0023		
K5252	0306	RMF	6244		
K6201	0074	RTF	6005		

ERRORS DETECTED: 0
 LINKS GENERATED: 3
 RUN-TIME: 10 SECONDS
 2K CORE USED