IDENTIFICATION

PRODUCT CODE:	MAINDEC-08-DJKMA-B-D
PRODUCT NAME:	KM8-A OPTION TEST #2
DATE CREATED:	JUNE 2,1975
MAINTAINER:	DIAGNOSTIC GROUP
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SUPERCEDES:	MAINDEC-08-DJKMA-A

TABLE OF CONTENTS

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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

2.0 REQUIREMENTS
2.1 HARDWARE
2.2 STORAGE
2.3 PREREQUISITE SOFTWARE

3.0 RESTRICTIONS

4.0 STANDARD TEST PROCEDURE
4.1 CHANGING DEVICE IOT CODES
4.2 HARDWARE SETUP
4.3 LOADING THE PROGRAM
4.4 PROGRAM INITIALIZATION
4.5 RUN MEMORY EXTENSION/TIME SHARE TEST
4.6 RUN TIME SHARE DISABLE TEST
4.7 RUN BOOTSTRAP/SIMULATOR TEST
4.7.1 RUN SIMULATOR TEST
4.7.2 RUN BOOTSTRAP TEST
4.8 RUN AUTO RESTART/POWER FAIL TEST
4.9 PDP-8A XOR TESTING

5.0 ERRORS
5.1 MEMORY EXTENSION/TIME SHARE TEST ERRORS
5.1.1 MEMORY EXTENSION/TIME SHARE TEST ERROR RECOVERY
5.2 TIME SHARE DISABLE TEST ERRORS
5.2.1 TIME SHARE DISABLE TEST ERROR RECOVERY
5.3 BOOTSTRAP TEST ERRORS
5.3.1 BOOTSTRAP TEST ERROR RECOVERY
5.4 AUTO RESTART/POWER FAIL TEST ERRORS
5.4.1 AUTO RESTART/POWER FAIL TEST ERROR RECOVERY

6.0 SWITCH REGISTER SETTINGS
6.1 NORMAL OPERATING SWITCHES
6.2 ERROR SWITCHES

7.0 REVISIONS

8.0 PROGRAM DESCRIPTION

9.0 FLOWCHARTS

10.0 LISTING

1.0 ABSTRACT

KM8-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 KM8-A OPTION TEST 2 MUST RESIDE IN FIELD Ø. THE 4K VERSION OF THE PROGRAM OCCUPIES LOCATIONS ØØØ TO 5177 AND USES LOCATIONS 5200 TO 7777 AS A BUFFER AREA. THE 1K VERSIONS OF THE PROGRAM OCCUPIES FOR THE MOST PART LOCATIONS ØØØ 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.Ø 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.Ø 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		LOW SPEED READER	
ADDRESS	CONTENT	ADDRESS	CONTENT
0156	6014	0156	6032
0157	6011	0157	6031
0160	5357	0160	5357
0161	6016	0161	6036
0162	7106	0162	7106
0163	7006	0163	7006
0164	7510	0164	7510
0165	5374	0165	5357
0166	7006	0166	7006
0167	6011	0167	6031
0170	5367	0170	5367
0171	6016	0171	6034
0172	7420	0172	7420
0173	3776	0173	3776
0174	3376	0174	3376
0175	5357	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-08-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 UNPLUG 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
TA8E	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
TA8E	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.

4.8 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-Ø8-DJKMA-B-PB1, OR AT LOCATION 1733 FOR TAPE MAINDEC-Ø8-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 7ØØØ 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-Ø8-DJKMA-B-PB1 OR AT LOCATION 1733 FOR MAINDEC-Ø8-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 7ØØØ 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 CDFCIF (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=T17RET-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,

BOTCMP - 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

```
                        /KM8-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.
                        ////////////////////////////////////////////////////////////////////////////
```



```
                        /KM8-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 AC:
                                                /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    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
                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  0=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 IST XRON IOT
                6174    XRSI=6174               /SET XOR INTERRUPT ENABLE
                6175    SXRO=6175               /SKIP IF ERROR 2 AND CLEAR IT
                6176    XRTO=6176               /SET TIME OUT DELAY
```



```
                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          /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
0020    0000    SWITCH, 0                       /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
                /RK8E BOOT STRAP WILL LOAD INTO THE FOLLOWING LOCATIONS


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    *62

0062    0000    CDFCHK, 0
```

```
0063  0062    CHKCDF, CDFCHK
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    ADDCNT, 0
0077  6520    BADPAS, 6520
0100  6500    GOODPS, 6500
0101  5052    AUTRST, PRGRST
0102  0000    TEST,   0                       /SCOPE LOOP AND TEST LOOP ADDRESS

      4503    ERROR=  JMS  I  .
0103  5107                    ERRORX
      4504    LOOP=   JMS  I  .
0104  5151                    TSTLOP
      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    .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        /IF SIMULATOR SELECTED THIS LOCATION WILL CHANGE TO JMS I AUTRST
0201  6160    TEST1,    CLRMOD                  /CLEAR SIMULATOR TEST LOGIC
0202  4505              SCOPLP                  /SETUP SCOPE ANND 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  7040          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             /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             /IS IT EQUAL TO FIELD 3
0276  4503          ERROR                   /NO, CDF 30 OR RDF FAILED
0277  6224          RIF                     /READ THE INSTRUCTION FIELD
0300  7640          SZA     CLA             /IS THE I,F, STILL EQUAL TO 0?
0301  4503          ERROR                   /NO, THE I,F, CHANGED
0302  6241          CDF     40              /CHANGE THE DATA FIELD TO FIELD 4
0303  6214          RDF                     /READ THE DATA FIELD
0304  1374          TAD     N40
0305  7640          SZA     CLA             /IS IT EQUAL TO D,F, 4
0306  4503          ERROR                   /NO, CDF 40 OR RDF FAILED
0307  6224          RIF                     /READ THE INSTRUCTION FIELD
0310  7640          SZA     CLA             /IS IT STILL EQUAL TO 0
0311  4503          ERROR                   /NO, THE I,F, CHANGED
0312  6211          CDF     10              /CHANGE THE DATA FIELD TO FIELD 1
0313  6214          RDF                     /READ THE DATA FIELD
0314  1116          TAD     M10
0315  7640          SZA     CLA             /IS IT EQUAL TO DATA FIELD 1
0316  4503          ERROR                   /NO, CDF 10 OR RDF FAILED
0317  6224          RIF                     /READ THE INSTRUCTION FIELD
0320  7640          SZA     CLA             /IS IT STILL EQUAL TO 0
0321  4503          ERROR                   /NO, THE I,F, CHANGED
0322  6261          CDF     60              /CHANGE DATA FIELD TO FIELD 6
0323  6214          RDF                     /READ THE DATA FIELD
0324  1127          TAD     M60
0325  7640          SZA     CLA             /IS THE D,F, EQUAL TO 6?
0326  4503          ERROR                   /NO, CDF 60 OR RDF FAILED
0327  6224          RIF                     /READ THE INSTRUCTION FIELD
0330  7640          SZA     CLA             /IS IT STILL EQUAL TO ZERO?
```



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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.
/**********************************************************************************************************

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  5360          JMP     .               /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     .               /CINT FAILED TO 0 USER INTERRUPT FLIP-FLOP
0371  5777'         JMP     TST2CN          /CONTINUE THE TEST
0372  7757  K7757,  7757
0373  7750  N30,    -30
0374  7740  N40,    -40
0375  7707  C7707,  7707

0377  0404
      0400  PAGE

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  M300,   -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     .               /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,
0433  4504          LOOP                    /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     .               /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.,
0456  6234          RIB                     /READ THE INTERRUPT BUFFER
0457  1133          TAD     M100            /CHECK THE SAVE FIELD FOR USER FLAG
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

                /**********
                /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 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 UF 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

                /**********
                /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
```

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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                   /CAF FAILED TO CLEAR USER INTERRUPT
0547  6234          RIB                     /READ THE INTERRUPT BUFFER
0550  1133          TAD     M100            /CHECK FOR THE USER FLAG
0551  7640          SZA     CLA
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     .               /CUF FAILED TO CLEAR USER BUFFER FLIP-FLOP
0564  6254          SINT                    /SKIP ON USER INTERRUPT SET
0565  7410          SKP
0566  4503          ERROR                   /SINT SKIPPED, USER INTERRUPT SHOULD NOT BE SET
0567  7340          CLA CLL CMA
0570  6004          GTF                     /GET THE FLAGS
0571  1203          TAD     M300            /
0572  7640          SZA     CLA             /CHECK FOR INTERRUPT ENABLE & USER FLAG
0573  4503          ERROR                   /INTERRUPT ENABLE OR USER FLAG NOT SET
0574  6234          RIB                     /READ THE INTERRUPT BUFFER
0575  1133          TAD     M100
0576  7640          SZA     CLA
0577  4503          ERROR                   /USER FLAG NOT SET OR OTHER BITS SET
0600  4504          LOOP                    /LOOP ON TEST IF SR = 1000
0601  5204          JMP     .+3
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 INTERRJPT 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
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0616  7604          LAS                     /LOAD THE AC WITH THE SWITCH REGISTER
0617  7610          SKP     CLA
0620  5220          JMP     .               /LAS TRAPPED OR USER MODE SET
0621  4222          JMS     .+1             /SET USER BUFFER F/F
0622  7402          HLT/XXXX                /THE PC OF THE JMS
0623  7402          HLT                     /SHOULD TRAP HERE - IF NOT USER FIELD F/F PROBABLY NOT SET
0624  5224          JMP     .               /HALT FAILED TO TRAP
0625  6254          SINT                    /SKIP ON USER INTERRUPT F/F
0626  4503          ERROR                   /USER INTERRUPT F/F NOT SET
0627  6234          RIB                     /READ THE INTERRJPT 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  6254          SINT                    /CLEAR USER INTERRJPT 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  4505  TEST7,  SCOPLP                 /SETUP SCOPE AND TEST LOOPING ADDRESS
0655  6007          CAF                     /CLEAR ALL FLAGS
0656  6001          ION                     /TURN THE INTERRJPT 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 ONES
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  7000          NOP                     /SHOULD INTERRUPT HERE
0674  4503          ERROR                   /FAILED TO INTERRUPT
0675  7340          CLA CLL CMA             /SET THE AC TO ALL ONE'S
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0676  6004          GTF                     /GET THE FLAGS
0677  1203          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  6004          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
```



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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 REQ 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 NTERRUPT 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
1000  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 IB, DF AND UB
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
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1042  1136          TAD     M1100           /CHECK FOR INTERUPT REQUEST AND USER FLAG
1041  7640          SZA     CLA             /WHERE THEY SET
1042  4503          ERROR                   /NO, INT REQUEST OR USER FLAG NOT SET OR RMF
                                            /SET OTHER BITS IN THE IF AND DF
1043  6001          ION                     /TURN THE INTERRUPT BACK ON
1044  5245          JMP     .+1             /INTERRUPT WITH INTERRUPT REQUEST SET
1045  4503          ERROR                   /PROGRAM FAILED TO INTERRUPT
1046  6234          RIB                     /READ THE INTERRUPT BUFFER
1047  7640          SZA     CLA
1050  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
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  4503          ERROR                   /USER FLAG OR INT REQUEST NOT SET
1140  6234          RIB                     /READ THE INTERRUPT BUFFER
1141  1133          TAD     M100
1142  7640          SZA CLA
1143  4503          ERROR                   /USER FLAG GOT CLEARED
1144  6202    TST11A, 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  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    TST11B, CLA CMA               /SET A LOCATION TO ALL ONE'S TO CHECK THAT
1165  3374          DCA     CJMS01          /THE JMS TO FIELD 7 DIDN'T JMS TO FIELD 7
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    CJMS01, HLT                   /THIS LOCATION PRESET TO 1'S SHOULDN'T CHANGE
1175  4503          ERROR                   /PROGRAM FAILED TO INTERRUPT
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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
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    TST11C, 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 FALGS
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    TST11D, 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
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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  3300            DCA     CJMS04          /JMS TO FIELD 1 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
1300  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 ONES 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 STLL ZERO
1352  7402            HLT                     /THE IF IS NON ZERO OR IT INTERRUPTED
1353  4354            JMS     .+1             /CLEAR INTERRUPT INHIBIT AND INTERRUPT
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1354  7402  CJMS06, HLT                 /THIS LOCATION PRESET TO ALL ONES, IT SHOULDN'T CHANGE
1355  4503          ERROR               /PROGRAM FAILED TO INTERRUPT
1356  7340          CLA CLL CMA         /SET THE AC TO ALL ONE'S
1357  6004          GTF                 /GET THE FLAGS
1360  1373          TAD     N1000       /CHECK FOR USER INTERRUPT REQUEST AND
1361  1375          TAD     M30         /SAVE FIELD OF 30
1362  7640          SZA CLA
1363  4503          ERROR               /GTF FAILED OR READ SOMETHING OTHER THAN ABOVE
1364  6234          RIB                 /READ THE INTERRUPT BUFFER
1365  1375          TAD     M30
1366  7640          SZA CLA
1367  4503          ERROR               /SAVE FIELD NOT EQUAL TO FIELD 3
1370  2354          ISZ     CJMS06
1371  4503          ERROR               /JMS TO FIELD 3 WENT TO FIELD 0
1372  5776'         JMP     TST11H      /GO TO NEXT SECTION

1373  7000  N1000,  -1000
1374  3000  M5000,  -5000
1375  7750  M30,    -30

1376  1400
1377  1174
      1400          PAGE
1400  7240  TST11H, CLA CMA              /SET A LOCATION TO ALL ONES TO CHECK
1401  3210          DCA     CJMS07      /THAT A JMS TO FIELD 4 DIDN'T JMS TO FIELD 0
1402  6242          CIF     40          /CHANGE INSTRUCTION FIELD TO FIELD 4
1403  6001          ION                 /SET INTERRUPT ENABLE
1404  6224          RIF                 /READ THE INSTRUCTION FIELD
1405  7440          SZA                 /IS THE IF STILL ZERO
1406  7402          HLT                 /THE IF IS NON ZERO OR IT INTERRUPTED
1407  4210          JMS     .+1
1410  7402  CJMS07, HLT                 /THIS LOCATION PRESET TO ALL ONE'S
1411  4503          ERROR               /PROGRAM FAILED TO INTERRUPT
1412  7360          CLA CLL CML CMA     /SET THE AC AND LINK TO 1'S
1413  6004          GTF                 /GET THE FLAGS
1414  1363          TAD     N5000       /CHECK FOR USER INTERRUPT REQUEST AND LINK
1415  1364          TAD     M40         /AND SAVE FIELD OF 40
1416  7640          SZA CLA
1417  4503          ERROR               /GTF FAILED OR READ SOMETHING OTHER THAN ABOVE
1420  6234          RIB                 /READ THE INTERRUPT BUFFER
1421  1364          TAD     M40
1422  7640          SZA CLA
1423  4503          ERROR               /SAVE FIELD NOT EQUAL TO 40
1424  2210          ISZ     CJMS07
1425  4503          ERROR               /JMS TO FIELD 4 WENT TO FIELD 0
1426  7340  TST11I, CLA CLL CMA         /SETUP A LOCATION TO CHECK THAT A JMS TO
1427  3236          DCA     CJMS10      /FIELD 0 GETS EXECUTED
1430  6202          CIF     00          /CHANGE INSTRUCTION FIELD TO FIELD 00
1431  6001          ION                 /TURN THE INTERRUPT ON
1432  6224          RIF                 /READ THE INSTRUCTION FIELD
1433  7440          SZA                 /IS THE IF STILL ZERO
1434  7402          HLT                 /THE IF IS NON ZERO OR IT INTERRUPTED
1435  4236          JMS     .+1         /CLEAR INTERRUPT ENABLE AND INTERRUPT
1436  7402  CJMS10, HLT                 /THIS LOCATION PREVIOUSLY SET TO 1'S
1437  4503          ERROR               /PROGRAM FAILED TO INTERRUPT
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1440  6004          GTF                 /GET THE FLAGS
1441  1242          TAD     .+1         /CHECK FOR INTERRUPT REQUEST AND
1442  7000          NOP
1443  7640          SZA CLA             /SAVE FIELD OF 0
1444  4503          ERROR               /GTF FAILED OR READ SOMETHING OTHER THAN ABOVE
1445  6234          RIB                 /READ THE INTERRUPT BUFFER
1446  7640          SZA CLA
1447  4503          ERROR               /SAVE FIELD NON ZERO OR RIB FAILED
1450  2236          ISZ     CJMS10      /CHECK THAT THE JMS DID CHANGE LOCATION CJMS10
1451  7610          SKP     CLA
1452  4503          ERROR               /JMS TO FIELD 0 FAILED TO STORE ITS PC IN CJMS10
1453  6007          CAF                 /CLEAR ALL FLAGS INCLUDING USER INTERRUPT
1454  6004          GTF                 /GET THE FLAGS
1455  7640          SZA CLA
1456  4503          ERROR               /INIT FAILED TO CLEAR USER INTERRUPT F/F
1457  4504          LOOP                /LOOP ON TEST IF SR = 1000
1460  5777'         JMP     TEST12

1461  0000  XORCHK, 0
1462  7710          SPA     CLA
1463  7402          HLT                 /END OF A COMPLETE PROGRAM PASS
1464  1021          TAD     OP1SEL      /GET THE HARDWARE CONFIGURATION
1465  0376          AND     (100        /MASK OUT THE XOR BIT
1466  7650          SNA     CLA         /IS IT SET
1467  5661          JMP  I  XORCHK      /NO, RETURN TO THE PROGRAM
1470  6007          CAF                 /CLEAR ALL FLAGS
1471  6173          STIF                /SKIP IF MUT POWER ON AND 1ST XRON
1472  7610          SKP     CLA
1473  5277          JMP     .+4         /MUT POWER ON GO ISSUE SECOND XRON
1474  6160          CLRMOD              /CLEAR THE SIMULATOR
1475  6170          XRON                /START INITIALIZATION OF MUT
1476  5661          JMP  I  XORCHK      /RETURN TO THE PROGRAM
1477  6007          CAF                 /CLEAR ALL FLAGS
1500  6171          SKXR                /SKIP IF ERROR 1 FLOP SET
1501  6170          XRON                /START ACTUAL XOR TESTING
1502  6007          CAF                 /CLEAR ALL FLAGS AGAIN
1503  5661          JMP  I  XORCHK      /RETURN TO THE PROGRAM

1504  0000  XORLOP, 0
1505  3321          DCA     SAVSWH      /SAVE THE SWITCH SETTINGS
1506  1021          TAD     OP1SEL      /GET THE HARDWARE CONFIGURATION
1507  0376          AND     (100        /MASK OUT THE XOR BIT
1510  7640          SZA     CLA         /IS IT SET
1511  5316          JMP     .+5         /YES, GO CHECK FOR XOR ERROR
1512  1321          TAD     SAVSWH      /NO, GET THE SWITCH SETTINGS
1513  7700          SMA     CLA         /LOOP ON TEST ?
1514  5704          JMP  I  XORLOP      /NO,RETURN FOR NEXT TEST
1515  5502          JMP  I  TEST        /YES, LOOP ON THE TEST
1516  4171          SKXR                /SKIP ON XOR ERROR 1
1517  5312          JMP     .-5         /XOR ERROR NOT SET CHECK S,R, 2
1520  5502          JMP  I  TEST        /LOOP ON THE TEST A XOR ERROR

1521  0000  SAVSWH, 0
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                        /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    N5000,  -5000
1564  7740    N40,    -40


1576  0100
1577  1600
      1600          PAGE


                        /**********************************************************************************************************
                        /TEST 12 - CHECKS THAT A CIF AND CDF WILL LOAD THE APPROPIATE
                        /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
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1601  6007            CAF                     /CLEAR ALL FLAGS
1602  6001            ION                     /TURN THE INTERRUPT ON
1603  6274            SUF                     /SET USER BUFFER FLIP-FLOP
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     M1100           /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     CDFCHK          /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            CDF     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    CKJMS1, 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
1640  4503            ERROR                   /RIB FAILED OR SAVE FIELD NOT EQUAL TO 16
1641  2062            ISZ     CDFCHK          /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 CDFCHK AND CKJMS2 TO ONES
1646  3062            DCA     CDFCHK          /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            CDF     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
                                              /CDFCHK 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    CKJMS2, 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
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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     CDFCHK      /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 ANNOTHER FIELD
1675  4503            ERROR               /JMS I WENT TO FIELD 0 INSTEAD OF FIELD 16,
1676  7340  TST12C,  CLA CLL CMA         /SET LOCATIONS CDFCHK AND CKJMS3 TO ONE'S
1677  3062            DCA     CDFCHK      /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 INSTRUCTIN 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     CDFCHK
1724  4503            ERROR               /DCA I WENT TO FIELD 0 INSTEAD OF FIELD 4
1725  2310            ISZ     CKJMS3
1726  4503            ERROR               /JMS I WENT TO FIELD 0 INSTEAD OF FIELD 3
1727  7340  TST12D,  CLA CLL CMA         /SET LOCATIONS CDFCHK AND CKJMS4 TO ONES,
1730  3062            DCA     CDFCHK      /TO CHECK THAT DCA I OR JMS I TO ANOTHER
1731  7340            CLA CLL CMA         /FIELD DOESN'T GO TO FIELD 0
1732  3341            DCA     CKJMS4
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, REQ,, 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     CDFCHK
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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            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 CDFCHK AND CKJMS5 TO ONES
2006  3062            DCA     CDFCHK      /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 ON)
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, REQ,, 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
2030  7640            SZA CLA
2031  4503            ERROR               /SAVE FIELD REGISTER NOT EQUAL TO ABOVE
2032  2062            ISZ     CDFCHK
2033  4503            ERROR               /DCA I TO FIELD 5 WENT TO FIELD 2
2034  2217            ISZ     CKJMS5
2035  4503            ERROR               /JMS I TO FIELD 2 WENT TO FIELD 0
2036  7340  TST12F,  CLA CLL CMA         /SET LOCATIONS CDFCHK AND CKJMS6 TO
2037  3062            DCA     CDFCHK      /ONES TO CHECK THAT DCA I AND JMS I
2040  7240            CLA CMA             /TO ANOTHER FIELD DOESN'T GO TO FIELD 0
2041  3250            DCA     CKJMS6
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 INTERRJPT ON
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2046  4647            JMS I   .+1             /CLEAR INTERRUPT INHIBIT
2047  2050            CKJMS6                  /INDIRECT ADDRESS
2050  7402  CKJMS6,   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            ISZ     CDFCHK
2064  4503            ERROR                   /DCA I WENT TO FIELD 0 INSTEAD OF FIELD 3
2065  2250            ISZ     CKJMS6
2066  4503            ERROR                   /JMS I WENT TO FIELD 0 INSTEAD OF FIELD 4
2067  7340  TST12G,   CLA CLL CMA             /SET CDFCHK AND CKJMS7 TO ONES TO
2070  3062            DCA     CDFCHK          /CHECK FOR DCA I TO ANOTHER FIELD AND A
2071  7240            CLA CMA                 /JMS I TO ANOTHER FIELD
2072  3301            DCA     CKJMS7
2073  6271            CDF     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                     /TURNN INTERRUPT ON
2077  4700            JMS I   .+1             /CLEAR INTERRUPT INHIBIT
2100  2101            CKJMS7                  /INDIRECT ADDRESS
2101  7402  CKJMS7,   HLT                     /THIS LOCATION WAS SET TO ONE'S BUT SHOULD CHANGE
2102  4503            ERROR                   /PROGRAM FAILED TO INTERRPT
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            ISZ     CDFCHK
2115  4503            ERROR                   /DCA I WENT TO FIELD 0 INSTEAD OF FIELD 7
2116  2301            ISZ     CKJMS7
2117  7410            SKP
2120  4503            ERROR                   /JMS I TO FIELD 0 WENT TO ANOTHER FIELD
2121  7340  TST12H,   CLA CLL CMA             /SET UP CDFCHK TO ONES TO CHECK THAT
2122  3062            DCA     CDFCHK          /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            CDF     00              /CHANGE DATA FIELD TO FIELD 0
2126  6272            CIF     70              /CHANGE INSTRUCTION FIELD TO FIELD 7
2127  3463            DCA I   CHKCDF          /CLEAR LOCATION CDFCHK 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  CKJMS8,   HLT                     /THIS LOCATION PRESET TO 1'S, IT SHOULD NOT CHANGE
2134  4503            ERROR                   /PROGRAM FAILED TO INTERRUPT
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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            ISZ     CDFCHK
2147  7410            SKP
2150  4503            ERROR                   /DCA I TO FIELD 0 WENT TO ANOTHER FIELD
2151  2333            ISZ     CKJMS8
2152  4503            ERROR                   /JMS I TO FIELD 7 WENT TO FIELD 0
2153  7240  TST12I,   CLA CMA                 /SETUP CDFCHK AND CKJMS9 TO ONES TO
2154  3062            DCA     CDFCHK          /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            CDF     00              /CHANGE DATA FIELD TO FIELD 0
2160  6202            CIF     00              /CHANGE INSTRUCTION FIELD TO FIELD 0
2161  3463            DCA I   CHKCDF          /CLEAR LOCATION CDFCHK
2162  6001            ION                     /SET INTERRUPT ENABLE
2163  4764            JMS I   .+1             /CLEAR INTERRUPT INHIBIT
2164  2165            CKJMS9                  /INDIRECT ADDRESS
2165  7402  CKJMS9,   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
2170  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            ISZ     CDFCHK
2201  7410            SKP
2202  4503            ERROR                   /DCA I TO FIELD 0 DID NOT GO TO FIELD 0
2203  2777            ISZ     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
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                    /**********************************************************************************************************
                    /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
2230  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  JMSCK1, 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
2270  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  JMSCK2, 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
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2304  4503          ERROR                     /SAVE FIELD NTO 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  JMSCK3, 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  JMSCK4, 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  K77J7,  7707
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2372  7756    M22,    -22


2376  2400
2377  2165
      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                   /SAVE FIELD NOT EQUAL TO ABOVE OR CIFCDF 30 FAILED
2406  2062            ISZ     CDFCHK
2407  4503            ERROR                   /DCA I TO FIELD 3 WENT TO FIELD 0
2410  2200            ISZ     JMSCK5
2411  4503            ERROR                   /JMS TO FIELD 3 WENT TO FIELD 0
2412  6254            SINT                    /SKIP ON USER INTERRUPT F/F
2413  4503            ERROR                   /USER INTERRUPT F/F GOT CLEARED
2414  7240    TST13F, CLA CMA                 /SETUP TWO LOCATIONS TO CHECK THAT
2415  3062            DCA     CDFCHK          /CIFCDF 60 WENT TO ANOTHER FIELD
2416  7240            CLA CMA                 /THEN FIELD ZERO
2417  3224            DCA     JMSCK6
2420  6263            CIFCDF  60              /CHANGE INSTRUCTION AND DATA FIELD TO FIELD 6,
2421  3463            DCA I   CHKCDF          /TRY TO CLEAR CDFCHK IN FIELD 6
2422  6001            ION                     /SET INTERRUPT ENABLE
2423  4224            JMS     JMSCK6          /CLEAR INTERRUPT INHIBIT AND INTERRUPT
2424  7402    JMSCK6, HLT                     /THIS LOCATIONS PRESET TO ONES
2425  4503            ERROR                   /PROGRAM FAILED TO INTERRUPT
2426  6234            RIB                     /READ THE INTERRUPT BUFFER
2427  1130            TAD     M66             /CHECK FOR ISF OF 6 AND DSF OF 6
2430  7640            SZA CLA
2431  4503            ERROR                   /SAVE FIELD NOT EQUAL ABOVE OR CIFCDF 60 FAILED
2432  2062            ISZ     CDFCHK
2433  4503            ERROR                   /DCA I TO FIELD 6 WENT TO FIELD 0
2434  2224            ISZ     JMSCK6
2435  4503            ERROR                   /JMS TO FIELD 6 WENT TO FIELD 0
2436  6254            SINT                    /SKIP ON USER INTERRUPT F/F
2437  4503            ERROR                   /USER INTERRUPT GOT CLEARED
2440  7240    TST13G, CLA CMA                 /SETUP 2 LOCATIONS TO CHECK THAT
2441  3062            DCA     CDFCHK          /CIFCDF 10 WENT TO ANOTHER FIELD
2442  7240            CLA CMA                 /THAN FIELD 0
2443  3250            DCA     JMSCK7
2444  6213            CIFCDF  10              /CHANGE INSTRUCTION FIELD & DATA FIELD TO FIELD 1
2445  3463            DCA I   CHKCDF          /TRY TO CLEAR CDFCHK IN FIELD 1
2446  6001            ION                     /SET INTERRUPT ENABLE
2447  4250            JMS     JMSCK7          /CLEAR INTERRUPT INHIBIT AND INTERRUPT
2450  7402    JMSCK7, HLT                     /THIS LOCATION PRESET TO ONES
2451  4503            ERROR                   /PROGRAM FAILED TO INTERRUPT
2452  6234            RIB                     /READ THE INTERRUPT BUFFER
2453  1117            TAD     M11             /CHECK FOR ISF OF 1 AND DSF OF 1
2454  7640            SZA CLA
2455  4503            ERROR                   /SAVE FIELD NOT EQUAL ABOVE OR CIFCDF 10 FAILED
2456  2062            ISZ     CDFCHK
2457  4503            ERROR                   /DCA I TO FIELD 1 WENT TO FIELD 0
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2460  2250            ISZ     JMSCK7
2461  4503            ERROR                   /JMS TO FIELD 1 WENT TO FIELD 0
2462  6254            SINT                    /SKIP ON USER INTERRUPT F/F
2463  4503            ERROR                   /USER INTERRUPT F/F GOT CLEARED
2464  7240    TST13H, CLA CMA                 /SET UP 2 LOCATIONS TO CHECK THAT
2465  3062            DCA     CDFCHK          /CIFCDF 00 WENT TO FIELD 0 INSTEAD
2466  7240            CLA CMA                 /OF ANOTHER FIELD
2467  3274            DCA     JMSCK8
2470  6203            CIFCDF  00              /CHANGE INSTRUCTION AND DATA FIELD TO 0
2471  3463            DCA I   CHKCDF          /CLEAR CDFCHK IN FIELD 0
2472  6001            ION                     /SET INTERRUPT ENABLE
2473  4274            JMS     JMSCK8          /CLEAR INTERRUPT INHIBIT AND INTERRUPT
2474  7402    JMSCK8, HLT                     /THIS LOCATIONS PRESET TO ONES
2475  4503            ERROR                   /PROGRAM FAILED TO INTERRUPT
2476  6234            RIB                     /READ THE INTERRJPT BUFFER
2477  7640            SZA CLA
2500  4503            ERROR                   /SAVE FIELD IS NOT EQUAL TO 0
2501  2062            ISZ     CDFCHK
2502  7410            SKP
2503  4503            ERROR                   /DCA I FAILED TO CLEAR CDFCHK IN FIELD 0
2504  2274            ISZ     JMSCK8
2505  7410            SKP
2506  4503            ERROR                   /JMS FAILED TO CHANGE JMSCK8 IN FIELD 0
2507  6204            CINT                    /CLEAR USER INTERRJPT F/F
2510  6254            SINT                    /SKIP ON USER INTERRJPT F/F
2511  7410            SKP
2512  4503            ERROR                   /CINT FAILED TO CLEAR JSER INTERRUPT F/F
2513  4504            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,
                /**********************************************************************************************************

2514  4505    TEST14, SCOPLP                  /SETUP SCOPE AND TEST LOOPING ADDRESS
2515  6007            CAF                     /CLEAR ALL FLAGS
2516  6001            ION                     /SET INTERRUPT ENABLE
2517  6274            SUF                     /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 INTERRJPT
2524  4503            ERROR                   /USER INTERRUPT NOT SET
2525  6234            RIB                     /READ THE INTERRJPT BUFFER
2526  1133            TAD     M100            /CHECK FOR USER FLAG
2527  7640            SZA     CLA
2530  4503            ERROR                   /USER FLAG OR INT REQ NOT SET
2531  7125            7125
2532  1331    TST14A, TAD     .-1
2533  6005            RTF                     /LOAD THE UB, IB, & DF WITH JSER FLAG, IF OF 2 & DF OF 5
2534  7300            CLA CLL                 /AND SET INTERRUPT ENABLE
2535  6214            RDF                     /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  0152            0152
2570  1367  TST14B,  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 INTERRJPT 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  7000            NOP
2616  6001            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 INTERRJPT
2622  4503            ERROR                   /USER INTERRUPT NOT SET
2623  6234            RIB                     /READ THE INTERRJPT 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  TST14C,  SINT                    /SKIP ON USER INTERRJPT FLIP-FLOP
```



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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 FLAGS 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 INTERRJPT 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 INTERRJPT
2647  4503            ERROR                   /USER INTERRUPT GOT CLEARED
2650  6244            RMF                     /RESTORE MEMORY FIELDS
2651  6214            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 INTERRJPT 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  TST15D,  SINT                    /SKIP ON USER INTERRJPT FLIP-FLOP
2670  4503            ERROR                   /USER INTERRUPT CLEARED
2671  6005            RTF                     /RESTORE THE FLAGS, 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 INTERRJPT 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 INTERRJPT BUFFER
2704  7640            SZA CLA
2705  4503            ERROR                   /RMF FAILED TO RELOAD IF AND DF TO ZERO
2706  6204            CINT                    /CLEAR USER INTERRJPT FLIP-FLOP
2707  6254            SINT                    /SKIP ON USER INTERRJPT FLIP-FLOP
2710  7612            SKP     CLA
2711  4503            ERROR                   /CINT FAILED TO CLEAR JSER INTERRUPT
2712  4504            LOOP                    /LOOP ON TEST IF SR = 1000
```

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

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        SUF                       /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
2730  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,
2736  7000        NOP                       /CHECK THAT PROGRAM DOESN'T INTERRUPT
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  0750        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 DSF 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                   /CLEAR AC AND LINK
2766  6203        CIFCDF                    /SET IB AND DF TO 0
2767  6001        ION                       /SET INTERRUPT ENABLE
2770  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
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2776  6034        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 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  0371        AND     K37               /MASK OFF THE MEMORY BITS
3007  7104        CLL     RAL               /ROTATE BITS LEFT ONCE TO SETUP FOR FIELD
3010  3065        DCA     SAVESZ            /LIMIT AND LAST ADDRESS IN LAST FIELD
3011  1065        TAD     SAVESZ            /GET THE NUMBER
3012  0142        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  0140        AND     K7                /MASK OFF ADDRESS BITS
3016  7112        CLL     RTR               /ROTATE THE NUMBER 4 PLACES TO THE RIGHT
3017  7012        RTR
3020  1372        TAD     K1777             /ADD 1K TO THE NUMBER
3021  3067        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 0
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        SUF                       /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  3072        DCA     WRKADD            /SET FIRST ADDRESS EQUAL TO 1777
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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  1066          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
3100  3301          DCA     .+1             /PUT CDF TO NEW FIELD IN NEXT ADDRESS

3101  7402  CDFNEW, HLT/CDF                 /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          RAR
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     CDFNEW          /GET THE CDF INSTRUCTION TO THE NEW FIELD
3127  3330          DCA     .+1             /PUT IT IN THE NEXT LOCATION
3130  7402          HLT/CDF                 /CDF TO NEW FIELD
3131  6214          RDF                     /READ THE DATA FIELD
3132  7041          CIA                     /NEGATE IT
3133  1070          TAD     WRKFLD          /GET THE WORKING FIELD
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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 BOUNDRY
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
3170  5775          JMP     TEST17
3171  0037  K37,    37
3172  1777  K1777,  1777

3175  3200
3176  5000
3177  3321
      3200          PAGE


                    /*****************************************************************************************************
                    /TEST 17 - CHECKS THE RIF INSTRUCTION TO READ THE INSTRUCTION FIELD
                    /REGISTER,THE PROGRAM DEPOSITS THE FOLLOWING CODE INTO LOCATIONS 0000-
                    /0004 OF EACH SELECTED EXTENDED FIELD: RIF-ION- JMP I 3-T17RET-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    BEGT17, DCA     WRKADD          /SET THE FIRST ADDRESS TO 0
3220  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
3230  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
3250  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 CIF CDF TO NEW FIELD IN NEXT ADDRESS
3266  7402            HLT/CDF CIF             /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  7041            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
```

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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 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, SCOPLP                  /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  0144            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, 0                       /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  1115            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 REGISTTER
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  6153            CLRSIM                  /CLEAR SIMULATOR CONTROL WORD
3414  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.
                      /*****************************************************************************************************
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
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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 RAR         /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
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3536  6274            SUF                     /TRY TO SET USER BUFFER
3537  5310            JMP     .+1             /TRY TO ENTER TIME SHARE MODE
3512  7404            OSR                     /SHOULD TRAP HERE IF TIME SHARE NOT DISABLED
3511  7410            SKP
3512  4503            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  0345            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  0100  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 TA8E CASSETTE BOOTSTRAP

3552  4000  TA8ADD,  4000                    /BOOTSTRAP WILL START LOADING INTO THIS ADDRESS
3553  7740            TA8CMP-TA8END-1
3554  1237  TA8CMP,  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
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3566  3636            3636
3567  1205            1205
3570  6704            6704
3571  6706            6706
3572  6701            6701
3573  5216            5216
3574  7002            7002
3575  7430            7430
3576  1636            1636
3577  7022            7022
3600  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  TA8END,  7730
3614  0000            0000                  /TERMINATOR

3615  4334  BOOTTB,  PTPADD
3616  4346           DSKADD
3617  3552           TA8ADD
3620  1522           RX8ADD
3621  3623           RK8ADD
3622  0000           0

                     /THE FOLLOWING LOCATIONS CONTAIN THE CONTENTS OF THE RK8E BOOTSTRAP

3623  0023  RK8ADD,  3023                    /BOOTSTRAP WILL LOAD INTO THIS ADDRESS
3624  7771           RK8CMP-RK8END-1         /NUMBER OF LOCATIONS TO COMPARE
3625  2200  RK8CMP,  2200
3626  6745           6745
3627  1023           2023
3630  7640           7640
3631  5024           5024
3632  6743           6743
3633  5031  RK8END,  5031
3634  0000           0000                  /TERMINATOR

/*****************************************************************************************************
/THE FOLLOWING TEST CHECKS THE BOOTSTRAP TO LOAD AND TO COMPARE CORRECTLY
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                        /*****************************************************************************************************
3635  4505    TEST21, SCOPLP                  /SETUP TEST COUNT AND SCOPE LOOPING ADDRESS
3636  1377            TAD     (JMS I AUTRST   /SETUP LOCATIONS 0 AND 200
3637  3000            DCA     INTSER
3640  1377            TAD     (JMS I AUTRST
3641  3776'           DCA     TEST1-1
3642  1375            TAD     (NOBOOT         /SET UP A LOCATION IN CASE LOGIC DID A AUTO RESTART
3643  3101            DCA     AUTRST          /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
3650  4774'           JMS     SETUP           /GO SETUP FOR BOOTSTRAPS
3651  1373    NXTBOT, 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 BOOTSRAP ENABLE BITS
3655  3360            DCA     CONTW3          /SAVE THE ADDRESS OF BOOT 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            LODRG2                  /LOAD SIMULATOR CONTROL REGISTER 2
3667  7300            CLA     CLL
3670  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            LODRG3                  /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
3677  6160    BOTRT1, CLRMOD                  /CLEAR SIMULATOR LOGIC
3700  7301            CLA CLL IAC             /BOOTSTRAP SHOULD RETURN HERE VIA SIMULATOR
3701  1022            TAD     OP2SEL          /CHECK FOR THE ACT LINE
3702  7510            SPA                     /IS THE PROGRAM ON THE ACT LINE
3703  6305            6305                    /YES, ENABLE THE ACT LINE
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
3720  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            LODRG2                  /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            LODRG3                  /LOAD CONTROL REGISTER 3
3731  7320            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
3734  6160    BOTRT2, CLRMOD                  /CLEAR SIMULATOR LOGIC
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     CNTBOT          /DONE ALL 5 BOOTSTRAPS?
3752  5251            JMP     NXTBOT          /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    CNTBOT, 0
3757  0000    CONTW2, 0
3760  0000    CONTW3, 0
3761  0401    ADD401, 0401
3762  0000    BTSUBT, 0

                /BOOTSTRAP RETURN ADDRESSES

3763  3677    BOOTR1, BOTRT1
3764  3734    BOOTR2, BOTRT2


3766  4041
3767  5100
3770  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                 /5215
4031  7402          HLT                 /7346
4032  7402          HLT                 /7002
4033  7402          HLT                 /3235
4034  7402          HLT                 /5201
4035  7402          HLT                 /7737
4036  7402          HLT                 /3557
4037  7402          HLT                 /7730
4040  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,
                    /**************************************************************************************************

4041  4505  TEST22, SCOPLP                 /SETUP TEST AND SCOPE LOOP ADDRESS
4042  1377          TAD     (JMS I AUTRST /SETUP LOCATIONS 0 AND 200
4043  3000          DCA     INTSER        /
4044  1377          TAD     (JMS I AUTRST /
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4045  3776'         DCA     TEST1-1       /
4046  1375          TAD     (RSTAUT       /GET THE AUTO RESTART ADDRESS
4047  3131          DCA     AUTRST        /SAVE IT
4050  1374          TAD     (NOAUTO       /GET BOOT STRAP ADDRESS
4051  3653          DCA  I  .+2
4052  5255          JMP     .+3
4053  7401          0401
4054  4503  NOAUTO, ERROR                 /LOGIC DID A BOOT INSTEAD OF A AUTO RESTART
4055  4773'         JMS     SETUP         /GO SETUP FOR TEST
4056  5160  AUTTST, CLRMOD          /CLEAR SIMULATOR MODULE
4057  1372          TAD     (RESADD       /GET THE ADDRESS OF AUTO RESTART TABLE
4060  1334          TAD     AUTSEL        /GET THE PROGRAM AUTO - RESTART TO BE EXECUTED
4061  3335          DCA     ADDRES        /SAVE THE TABLE ADDRESS
4062  1371          TAD     (SELAUT       /GET THE CONTROL WORD 2 TABLE ADDRESS
4063  1334          TAD     AUTSEL        /ADD IN THE RESTART TO BE EXECUTED
4064  3336          DCA     CONW2         /SAVE THIS ADDRESS TO GET THE CONTROL WORD
4065  1022          TAD     OP2SEL        /CHECK TO SEE IF PROGRAM IS ON ACT LINE
4066  7710          SPA     CLA
4067  6305          6305                  /DISABLE ACT LINE UNTIL AUTO RESTART IS DONE
4070  1736          TAD  I  CONW2         /GET THE CONTROL WORD
4071  6152          LODRG2                /LOAD CONTROL REGISTER 2
4072  7300          CLA     CLL
4073  1347          TAD     AUTENA        /GET THE ENABLE CONTROL WORD
4074  6153          LODRG3                /LOAD CONTROL REGISTER 3
4075  7300          CLA     CLL
4076  6164          EXECUT                /EXECUTE A AUTO RESTART
4077  7602          HLT     CLA           /SHOULD DO A AUTO RESTART HERE-PRESS CONT FOR RETRY
4100  5256          JMP     AUTTST        /RETRY
4101  0000  RSTAUT, 0                    /A AUTO RESTART SHOULD COME HERE
4102  6160          CLRMOD                /CLEAR SIMULATOR LOGIC
4103  7301          CLA CLL IAC           /SET BIT 11 TO A ONE
4104  1022          TAD     OP2SEL        /CHECK FOR THE ACT LINE
4105  7510          SPA                   /IS IT RUNNING ON ACT LINE
4106  6305          6305                  /YES, ENABLE ACT LINE
4107  7340          CLA CLL CMA           /SET THE AC TO MINUS 1
4110  1301          TAD     RSTAUT        /GET THE PC FROM THE AUTO RESTART
4111  7041          CIA                   /NEGATE IT
4112  1735          TAD  I  ADDRES        /GET THE EXPECTED AUTO RESTART PC
4113  7650          SNA     CLA           /ARE THEY EQUAL?
4114  5325          JMP     GODAUT        /YES GO DO NEXT ADDRESS
4115  4503          ERROR                 /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     AUTTST        /DO SAME RESTART OVER AGAIN
4125  2334  GODAUT, ISZ     AUTSEL        /ADD 1 TO PROGRAM SELECT RESTART
4126  2333          ISZ     AUTCNT        /DONE ALL FOUR AUTO RESTARTS?
4127  5256          JMP     AUTTST        /NO,GO DO NEXT ONE
4130  4770'         JMS     GOODBD        /SIGNAL ACT LINE OF A GOOD PASS IF ON IT
4131  4534          LOOP                  /LOOP ON TEST IF SR = 1000
4132  5767'         JMP      TEST23
```

```
4133  0000    AUTCNT, 0
4134  0000    AUTSEL, 0
4135  0000    ADDRES, 0
4136  0000    CONW2,  0

4137  4200    RESADD, 4200
4140  2000            2000
4141  0200            0200
4142  0000            0000

4143  1256    SELAUT, 1256                    /AUTO RESTART AT 4200
4144  1254            1254                    /AUTO RESTART AT 2000
4145  1252            1252                    /AUTO RESTART AT 200
4146  1250            1250                    /AUTO RESTART AT 0000

4147  0037    AUTENA, 0037                    /POWER ON TRIGGERED AUTO RESTART

                /CONTROL WORD 2 BOOTSTRAP SELECT

4150  1672    BOTSEL, 1672                    /HI-LOW PAPER TAPE SELECT
4151  0522            0522                    /RF08/DF32D BOOTSTRAP SELECT

4152  0422            0422                    /TA8E CASSETTE BOOTSTRAP SELECT
4153  1132            1132                    /R8X FLOPPY BOOTSTRAP SELECT
4154  1252            1252                    /RK8-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          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.
```



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/*****************************************************************************************************************
4200  4501            JMS  I  AUTRST          /AUTO RESTART HANDLER
4201  4505    TEST23, SCOPLP                  /SETUP TEST AND SCOPE LOOP ADDRESS
4202  1377            TAD     (ACLBAT
4203  3101            DCA     AUTRST
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 CML RTR         /GET CONTROL BIT FOR BATTERY EMPTY
4215  6153            LODRG3                  /LOAD SIMULATOR REGISTER 3
4216  6001            ION                     /TURN THE INTERRJPT ON
4217  5220            JMP     .+1
4220  4503            ERROR                   /BATTERY EMPTY NOT SET OR FAILED TO INTERRUPT
4221  4503            ERROR                   /AC LOW OR LEVEL IS TRJE
4222  6102            SPL                     /SKIP ON AC LOW
4223  7410            SKP
4224  4503            ERROR                   /AC LOW SET-SHOULD ONLY BE BAT EMPTY
4225  1257            TAD     K1000           /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 INTERRJPT 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
4236  6102            SPL                     /SKIP ON AC LOW F/F
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     K1000           /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


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

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

4304  7737     PTPADD, 7737                    /BOOTSTRAP WILL START LOADING INTO THIS ADDRESS
4305  7741             PTPCMP-PTPEND-1         /NUMBER OF LOCATIONS TO COMPARE
4306  6014     PTPCMP, 6014
4307  3376             3376
4310  7326             7326
4311  1337             1337
4312  2376             2376
4313  5341             5341
4314  6011             6011
4315  5356             5356
4316  3361             3361
4317  1361             1361
4320  3371             3371
4321  1345             1345
4322  3357             3357
4323  1345             1345
4324  3367             3367
4325  6032             6032
4326  6031             6031
4327  5357             5357
4330  6036             6036
4331  7106             7106
4332  7006             7006
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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                    /BOOTSTRAP WILL START LOADING INTO THIS ADDRESS
4347  7773             RFDFCP-RFDFED-1         /NUMBER OF LOCATIONS TO COMPARE
4350  7600     RFDFCP, 7600
4351  6603             6603
4352  6622             6622
4353  5352             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 CLRBOT 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=TA8E CASSETTE BOOTSTRAP
                        /       SR=0003=RX8E FLOPPY BOOTSTRAP
                        /       SR=0004=RK8E BOOTSTRAP
                        /9,     THE PROGRAM SHOULD HALT AT ADDRESS BOOTOK IF NO ERRORS
                        /*************************************************************************************************

4400  7402     BOTCMP, HLT                     /SET THE SR FOR THE APPROPRIATE BOOTSTRAP COMPARE
4401  5204             JMP     .+3
4402  0000             0                       /SIMULATOR BOOTSTRAP CHECK ENTERS HERE
4403  5213             JMP     .+10
4404  1021             TAD     OP1SEL          /GET THE HARDWARE OPTIONS
4405  7720             SMA     CLA             /IS THE HARDWARE SR BIT SET
4406  5211             JMP     .+3             /NO,USE THE PSEUDO SWITCH REGISTER
4407  7604             LAS                     /USE THE HARDWARE SWITCH REGISTER
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4412  7410            SKP
4411  1020            TAD     SWITCH          /GET THE PSEUDO SWITCH REGISTER
4412  0140            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
4420  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
4430  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
4433  1370            TAD     BOTSAD          /GET BOOTSTRAP ADDRESS THAT WAS BAD
4434  7402            HLT                     /AC=THE ADDRESS THAT DIDN'T COMPARE
4435  7230            CLA
4436  1767            TAD  I  BOTADD
4437  7402            HLT                     /AC=EXPECTED CONTENTS OF BOOTSTRAP
4440  7230            CLA
4441  1770            TAD  I  BOTSAD
4442  7402            HLT                     /AC=ACTUAL CONTENTS OF BOOTSTRAP
4443  7300    GOODCP, CLA     CLL
4444  2370            ISZ     BOTSAD
4445  7000            NOP
4446  2367            ISZ     BOTADD
4447  7000            NOP
4450  2371            ISZ     BOTCNT          /END OF COMPARE
4451  5225            JMP     COMPAR          /NO,GO GET NEXT WORD
4452  1767            TAD  I  BOTADD          /CONTINUE FOR TC08
4453  7440            SZA
4454  5220            JMP     COMPAR-5
4455  1021            TAD     OP1SEL          /GET HARDWARE OPTIONS
4456  0144            AND     K200
4457  7640            SZA     CLA             /WAS THE SIMULATOR BEING USED
4460  5632            JMP  I  BOTCMP+2        /YES, RETURN TO SIMULATOR BOOTSTRAP CHECK
4461  7402    BOOTOK, HLT                     /BOOT STRAP COMPARED OK
4462  5200            JMP     BOTCMP          /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,
                /*************************************************************************************************

4463  0000    CLEARB, 0                       /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
4473  5311            JMP     BOTEND          /END OF CLEARING BOOTSTRAP LOCATIONS
4474  3367            DCA     BOTADD          /SAVE IT
4475  1767            TAD  I  BOTADD          /GET THE BOOTSTRAP STARTING ADDRESS
4476  3370            DCA     BOTSAD          /SAVE IT
4477  2367            ISZ     BOTADD
4500  1767            TAD  I  BOTADD          /GET THE WORD COUNT
4501  3371            DCA     BOTCNT          /SAVE IT
4502  3770            DCA  I  BOTSAD
4503  2370            ISZ     BOTSAD
4504  7000            NOP
4505  2371            ISZ     BOTCNT
4506  5302            JMP     .+4
4507  2366            ISZ     SAVSTR
4510  5271            JMP     CLRBOT+4
4511  1021    BOTEND, TAD     OP1SEL
4512  0144            AND     K200
4513  7640            SZA     CLA
4514  5663            JMP  I  CLEARB          /RETURN TO SIMULATOR BOOTSTRAP TEST
4515  7402            HLT                     /END OF CLEARING BOOTSTRAPS
4516  5265            JMP     CLRBOT          /DO IT AGAIN


4517  0000    SETUP,  0
4520  3776'           DCA     AUTSEL
4521  3775'           DCA     SIMBOT
4522  1021            TAD     OP1SEL          /GET THE HARDWARE CONFIGURATION
4523  7104            CLL     RAL             /MOVE FIELD BITS INTO BITS 6-8
4524  0142            AND     K70             /MASK OUT FIELD BITS
4525  7650            SNA     CLA             /IS MEMORY SIZE GREATER THAN 4K
4526  5341            JMP     SETUP2          /NO, GO GET THE MEMORY SIZE
4527  3775'   SETUP1, DCA     SIMBOT          /YES THAN DO ALL BOOT'S
4530  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     M4
4537  3773'           DCA     AUTCNT          /SAVE THE NUMBER OF AUTO'S TO DO
4540  5717            JMP  I  SETUP           /RETURN TO DO BOOT OR AUTO-RESTART
4541  1021    SETUP2, TAD     OP1SEL          /GET THE HARDWARE CONFIGURATION
4542  0372            AND     KK3             /MASK OFF FIELD 3 MEMORY SIZE
4543  7450            SNA                     /IS IT 1K OF MEMORY
4544  5354            JMP     SET1K           /YES,SETUP TO DO 2 BOOTS OR 2 AUTO-RESTART
4545  1111            TAD     M1              /SUBTRACT 1
4546  7450            SNA                     /IS IT 2K OF MEMORY
4547  5360            JMP     SET2K           /YES,DO TWO BOOTS AND 3 AUTO'S
4550  1111            TAD     M1              /SUBTRACT 1
4551  7650            SNA     CLA             /IS IT 3K OF MEMORY
4552  5363            JMP     SET3K           /YES, SETUP TO DO 3 BOOTS AND 4 AUTO'S
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4553  5327            JMP     SETUP1          /MUST BE 4K OF MEMORY-DO ALL
4554  7305  SET1K,    CLA CLL IAC RAL
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            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////////
/**********************************************************************************************************

4600  4505  AUTO,    SCOPLP                  /SETUP TEST AND SCOPE LOOP ADDRESS
4601  6007            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  6162            CLRMOD                  /SIMULATOR SELECTED CLEAR TEST MODULE
4606  1377            TAD     (OPRINT         /GET THE ADDRESS FOR THE INTERRUPT ROUTINE
4607  3101            DCA     AUTRST          /SAVE IT
4610  1376            TAD     (BUFFER         /GET THE ADDRESS OF TEST BUFFER
4611  3313            DCA     FILLIT          /SAVE IT
4612  1021            TAD     OP1SEL          /GET HARDWARE CONFIGURAATION
4613   352            AND     K34             /CHECK TO  SEE IF MORE THAN 4K
4614  7640            SZA     CLA             /IS IT GREATER THEN 4K?
4615  5222            JMP     .+5             /YES, THAN FIELD 0 EQUALS 4K
4616  1021            TAD     OP1SEL          /NO, THAN IT MUST BE 3K OR 4K
4617   353            AND     K1              /CHECK FOR 3K OR 4K
4620  7650            SNA     CLA             /IS IT 3K OR 4K?
4621  7332            CLA CLL CML RTR         /ONLY 3K ADD 2000 TO COUNTER
4622  1376            TAD     (BUFFER
4623  3314            DCA     BUFCNT
4624  1314            TAD     BUFCNT          /GET THE NUMBER OF WORDS TO FILL THE BUFFER
4625  3315            DCA     CNTBUF          /SAVE IT
4626  1317            TAD     K5252           /THE FIRST WORD IN THE BUFFER WILL BE 5252
4627  3316            DCA     BUFPAT          /SAVE THE WORD
4630  1316            TAD     BUFPAT          /GET THE WORD
4631  3713            DCA  I  FILLIT          /PUT IT IN THE BUFFER
4632  1316            TAD     BUFPAT          /GET THE WORD
4633  7040            CMA                     /COMPLEMENT IT
4634  3316            DCA     BUFPAT
4635  2313            ISZ     FILLIT          /INCREMENT BUFFER ADDRESS
4636  2315            ISZ     CNTBUF          /DONE?
4637  5232            JMP     .-7             /NO KEEP FILLING THE BUFFER
4640  7402            HLT                     /SET THE SWITCH REGISTER OR PSEUDO S,R
                                              /TO THE AUTO-RESTART TO BE EXECUTED
4641  1021            TAD     OP1SEL          /GET THE HARDWARE CONFIGURATION
4642  7500            SMA                     /IS THE HARDWARE S,R, BEING USED
4643  5246            JMP     .+3             /NO USE THE PSEUDO SWITCH REGISTER
4644  7604            LAS
4645  7410            SKP
4646  1220            TAD     SWITCH
4647   320            AND     K3              /MASK OFF BITS 10 AND 11
4650  1375            TAD     (RESADD         /ADD THE AUTO RESTART TABLE ADDRESS TO IT
4651  3321            DCA     MANRST          /SAVE IT
4652  1721            TAD  I  MANRST          /GET THE AUTO RESTART TO BE EXECUTED
4653  3321            DCA     MANRST          /SAVE IT FOR COMPARISON AFTER RESTART
4654  1376  STRCMP,   TAD     (BUFFER         /GET THE BUFFER ADDRESS
4655  3313            DCA     FILLIT          /SAVE IT
4656  1314            TAD     BUFCNT          /GET THE BUFFER SIZE
4657  3315            DCA     CNTBUF          /SAVE IT
4660  1317            TAD     K5252
4661  3316            DCA     BUFPAT          /SETUP INITIAL PATTERN
4662  6001  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 DIDN'T COMPARE- PRESS
```

```
                                        /"CONT" FOR ADDRESS AND GOOD AND BAD DATA
4671  1313          TAD     FILLIT      /
4672  7402          HLT                 /AC=BUFFER ADDRESS WHERE ERROR WAS DETECTED
4673  7300          CLA     CLL
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
4732  1321          TAD     MANRST      /GET THE EXPECTED AUTO RESTART ADDRESS
4733  7402          HLT                 /AC = EXPECTED AUTO RESTART ADDRESS
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  3101          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
```



```
4751  0000  RETPRG, 0

4752  0034  K34,    34
4753  0001  K1,     1


4754  0000  OPRINT, 0                    /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  ACDOWN, HLT                 /WAIT FOR LINE CORD TO BE PLUGGED IN
4764  5502          JMP  I  TEST        /RETRY TEST



4770  4722
4771  0200
4772  4521
4773  5050
4774  5051
4775  4137
4776  5200
4777  4754
      5000          PAGE


5000  0000  ACTLIN, 0
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     K70
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 7777
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
```

```
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              /CHANGE INSTRUCTION FIELD TO 7
5033  4500          JMS  I  GOODPS          /SIGNAL THE PROM
5034  4340  ENDING, JMS     SWCHK           /CHECK SR 3 TO HALT ON A PROGRAM PASS
5035  7006          RTL
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                     /ITS ALL OVER NOW - GOOD-BYE
5077  5502          JMP  I  TEST
```



```
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  6272          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  7144          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  BADPAS          /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
                              /WAS DETECTED BY THE PROGRAM, REFER
                              /TO THE PROGRAM LISTING FOR ERROR
                              /EXPLANATION AND THE TEST DESCRIPTION,
5133  4340  ERLPSW, JMS     SWCHK           /CHECK THE SWITCH REGISTER TO LOOP ON ERROR
5134  7004          RAL
5135  7710          SPA     CLA             /IS SR 1 SET TO A ONE TO LOOP ON TEST
5136  5502          JMP  I  TEST            /YES GO LOOP ON THE TEST
5137  5707          JMP  I  ERRORX          /NO, RETURN TO THE PROGRAM

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                       /ROUTINE TO CHECK SR 2 TO LOOP ON TEST
5152  4340          JMS     SWCHK           /GO GET THE SWITCH REGISTER
5153  7006          RTL
5154  4772'         JMS     XORLOP          /CHECK FOR XOR ERROR IF SELECTED
5155  5751          JMP  I  TSTLOP          /GO TO NEXT TEST
```

```
5156  0000    ACLBAT, 0
5157  2000            ISZ     INTSER
5160  5400            JMP  I  INTSER

5172  1524
5173  4201
5174  5052
5175  0201
5176  1461
5177  7634
      5200            PAGE


5200  0000    BUFFER, 0                       /BUFFER IS FROM 5200 TO 7777 FOR 4K
                                              /BUFFER IS FROM 5200 TO 5777 FOR 3K


      0200            *200


                $
```



```
0000  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  11111111  11111101

0400  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
0500  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111

0600  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
0700  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  11111111  11111111
1500  11111111  11111111  11111111  11111111  11111111  11111111  11111000  00700011

1600  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
1700  11111111  11111111  11111111  11111111  11111111  11111111  11111111  10700001

2000  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
2100  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111

2200  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
2300  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11100011

2400  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
2500  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111

2600  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
2700  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111

3000  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
3100  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11100111

3200  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
3300  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111

3400  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
3500  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111

3600  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
3700  11111111  11111111  11111111  11111111  11111111  11111111  11111011  11111111
```

```
4000  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
4100  11111111  11111111  11111111  11111111  11111111  11111111  11111001  11111111

4200  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
4300  11111111  11111111  11111111  11111111  11111111  11111100  00000000  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  01111111

5200  10000000  10000000  00000000  00000000  00000000  00000000  00000000  00000000
5300  00000000  10000000  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    GTF     6004    M152    0135
ACTLIN  5000    CJMS06  1354    HGHLIM  0073    M16     1770
ADD401  3761    CJMS07  1410    HLT     7402    M2      0112
ADDCNT  7076    CJMS10  1436    INTSER  0000    M20     0120
ADDRES  4135    CKJMS1  1627    JMSCK1  2253    M22     2372
AUTCNT  4133    CKJMS2  1657    JMSCK2  2277    M25     0121
AUTENA  4147    CKJMS3  1713    JMSCK3  2321    M30     1375
AUTO    4600    CKJMS4  1741    JMSCK4  2345    M300    0403
AUTRST  4101    CKJMS5  2017    JMSCK5  2400    M33     0122
AUTSEL  4134    CKJMS6  2050    JMSCK6  2424    M34     1765
AUTTST  4056    CKJMS7  2101    JMSCK7  2450    M4      0113
BADPAS  4077    CKJMS8  2133    JMSCK8  2474    M40     1564
BATEMT  5066    CKJMS9  2165    K1      4753    M4100   0602
BEGT16  3044    CLEARB  4463    K10     0141    M43     0123
BEGT17  3217    CLRBOT  4465    K100    3545    M44     0124
BOOTOK  4461    CLREMA  6154    K1000   4257    M5      0114
BOOTR1  3763    CLRERG  3546    K1777   3172    M50     0125
BOOTR2  3764    CLRMOD  6160    K200    0144    M5000   1374
BOOTTO  3615    CLRSIM  6150    K3      4720    M5100   0137
BOTADD  4567    CMPBUF  4662    K34     4752    M52     1766
BOTCLR  4565    CNTBOT  3756    K37     3171    M55     0126
BOTCMP  4400    CNTBUF  4715    K400    0145    M60     0127
BOTCNT  4571    COMPAR  4425    K4100   0147    M61     1767
BOTENA  4155    CONTW2  3757    K5252   4717    M66     0130
BOTEND  4511    CONTW3  3760    K6201   0074    M7      0115
BOTRT1  3677    CONW2   4136    K7      0140    M70     0131
BOTRT2  3734    CUF     6264    K70     0142    M77     0132
BOTSAD  4570    DATPAT  0071    K7677   0402    MANRST  4721
BOTSEL  4150    DATREC  0064    K77     0143    N1000   1373
BTSURT  3762    DEAD    5076    K7707   2371    N30     0373
BTTST1  3660    DSKADD  4346    K7757   0372    N40     0374
BTTST2  3715    EMA1    3547    K7774   0146    N5000   1563
BUFCNT  4714    EMA2    3550    KK3     4572    NOAUTO  4054
BUFFER  5200    EMA3    3551    LINK    5050    NOBOOT  3645
BUFGOO  4703    EMACLR  3331    LOOPRG2 6152    NXTBOT  3651
BUFPAT  4716    EMAIF1  3432    LOOPRG3 6153    OP1SEL  0021
C7777   1375    EMAIF2  3451    LOOP    4504    OP23K   0000
CAF     6007    EMAIF3  3464    M1      0111    OP2SEL  0022
CAL     5103    ENDING  5034    M10     0116    OPRINT  4754
CAPSB   4000    ENDPAS  5017    M100    0133    OPRRET  4722
CDF     6201    ENDT17  3314    M1000   0603    PASEND  0110
CDFCHK  1062    ENDTST  3163    M1007   2004    PC      5051
CDFNEW  3101    ERLPSW  5133    M1016   1761    POINTR  3313
CHKCDF  1063    ERROR   4503    M1025   2001    POWFAL  5042
CHKINH  5125    ERRORX  5107    M1034   1755    PRGPAS  5041
CIF     6202    EXECUT  6164    M1043   2002    PRGRST  5052
CIFCDF  6203    FILLIT  4713    M1052   1764    PTPADD  4304
CINT    6204    FLDLIM  0066    M1061   1762    PTPCMP  4306
CJMS01  1174    GODAUT  4125    M1073   2003    PTPEND  4344
CJMS02  1224    GOODBD  5100    M11     0117    RDF     6214
CJMS03  1252    GOODCP  4443    M1100   0136    REDEMA  6155
```

```
RESADD  4137        TEST10  1060        TST14C  2627
RESET   4737        TEST11  1123        TST14D  2667
RETPRS  4751        TEST12  1600        TST18A  3345
RFDFCP  4350        TEST13  2223        TST18B  3364
RFDFED  4354        TEST14  2514        TST18C  3377
RIB     6234        TEST15  2713        TST19A  3430
RIF     6224        TEST16  3002        TST19B  3446
RK8ADD  3623        TEST17  3200        TST19C  3461
RK8CMP  3625        TEST18  3321        TST2CN  0404
RK8E    3023        TEST19  3415        TSTLOP  5151
RK8END  3633        TEST2   0342        UPERLM  0067
RMF     6244        TEST20  3477        WRKADD  0072
RSTAUT  4101        TEST21  3635        WRKFLD  0070
RTF     6005        TEST22  4041        XBAT    0107
RX8ADD  1522        TEST23  4201        XORCHK  1461
RX8CMP  1524        TEST3   0434        XORLOP  1504
RX8E    3024        TEST4   0476        XPWRFL  0106
RX8END  1561        TEST5   0532        XRCI    6172
SAVESZ  3065        TEST6   0604        XRON    6170
SAVSTR  4566        TEST7   0654        XRSI    6174
SAVSWR  1521        TEST8   0713        XRTO    6176
SAVWFD  3075        TEST9   1003
SBE     6101        TESTAD  5057
SCOPLP  4505        TIMDIS  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  3755        TST11H  1400
SINT    6254        TST11I  1426
SKON    6000        TST12A  1615
SKPEMA  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  3020        TST12I  2153
SXRC    6175        TST13A  2243
T16LCD  3074        TST13B  2267
T17CDF  3246        TST13C  2311
T17RET  3271        TST13D  2335
TA8ADD  3552        TST13E  2361
TA8CMP  3554        TST13F  2414
TA8END  3613        TST13G  2440
TABLE   3306        TST13H  2464
TEST    3102        TST14A  2532
TEST1   3201        TST14B  2570
```



```
ERRORS DETECTED: 0

LINKS GENERATED: 40

RUN-TIME:  25 SECONDS

3K CORE USED
```

```
                        /KM8-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.
                        ////////////////////////////////////////////////////////////////////////////////
```



```
                        /KM8-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


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 AC
                                /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 INTERRJPT 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    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
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  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        /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
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 CPJ 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                     /2207
0024    7402    RX8E,   HLT                     /6745
0025    7402            HLT                     /0023
0026    7402            HLT                     /7640
0027    7402            HLT                     /5024
0030    7402            HLT                     /6743
0031    7402            HLT                     /5031
0032    7402            HLT                     /TERMINATOR


        0062    *62

0062    0000    CDFCHK, 0
0063    0062    CHKCDF, CDFCHK
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    ADDCNT, 0
0077  6520    BADPAS, 6520
0100  6500    GOODPS, 6500
0101  1647    AUTRST, PRGRST
0102  0000    TEST,   0                       /SCOPE LOOP AND TEST LOOP ADDRESS

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

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  0400    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      /IF SIMULATOR SELECTED THIS LOCATION WILL CHANGE TO JMS I AUTRST
0201  6160  TEST1,    CLRMOD                /CLEAR SIMULATOR TEST LOGIC
0202  4505            SCOPLP                /SETUP SCOPE ANND 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 TWE DF WITH THE AC
0253  6214            RDF                   /READ THE DATA FIELD
```

```
0254  7040          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             /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             /IS IT EQUAL TO FIELD 3
0276  4503          ERROR                   /NO, CDF 30 OR RDF FAILED
0277  6224          RIF                     /READ THE INSTRUCTION FIELD
0300  7640          SZA     CLA             /IS THE I,F, STILL EQUAL TO 3?
0301  4503          ERROR                   /NO, THE I,F, CHANGED
0302  6241          CDF     40              /CHANGE THE DATA FIELD TO FIELD 4
0303  6214          RDF                     /READ THE DATA FIELD
0304  1374          TAD     N40
0305  7640          SZA     CLA             /IS IT EQUAL TO D,F, 4
0306  4503          ERROR                   /NO, CDF 40 OR RDF FAILED
0307  6224          RIF                     /READ THE INSTRUCTION FIELD
0310  7640          SZA     CLA             /IS IT STILL EQUAL TO 0
0311  4503          ERROR                   /NO, THE I,F, CHANGED
0312  6211          CDF     10              /CHANGE THE DATA FIELD TO FIELD 1
0313  6214          RDF                     /READ THE DATA FIELD
0314  1116          TAD     M10
0315  7640          SZA     CLA             /IS IT EQUAL TO DATA FIELD 1
0316  4503          ERROR                   /NO, CDF 10 OR RDF FAILED
0317  6224          RIF                     /READ THE INSTRUCTION FIELD
0320  7640          SZA     CLA             /IS IT STILL EQUAL TO 0
0321  4503          ERROR                   /NO, THE I,F, CHANGED
0322  6261          CDF     60              /CHANGE DATA FIELD TO FIELD 6
0323  6214          RDF                     /READ THE DATA FIELD
0324  1127          TAD     M60
0325  7640          SZA     CLA             /IS THE D,F, EQUAL TO 6?
0326  4503          ERROR                   /NO, CDF 60 OR RDF FAILED
0327  6224          RIF                     /READ THE INSTRUCTION FIELD
0330  7640          SZA     CLA             /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 0
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
```



```
                /**********************************************************************************************
                /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.
                /**********************************************************************************************

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  4523          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  5360          JMP     .               /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     .               /CINT FAILED TO 0 USER INTERRUPT FLIP-FLOP
0371  5777'         JMP     TST2CN          /CONTINUE THE TEST
0372  7757    K7757,  7757
0373  7750    M30,    -30
0374  7740    M40,    -40
0375  7727    C7737,  7727

0377  .404
      400     PAGE

0400  7000          NOP
0401  7000          NOP
0402  7677    K7677,  7677
0403  7500    M300,   -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
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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,
0433  4504          LOOP                     /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     .                /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.,
0456  6234          RIB                      /READ THE INTERRUPT BUFFER
0457  1133          TAD     M100             /CHECK THE SAVE FIELD FOR USER FLAG
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
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,
                /**********************************************************************************************************

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 INTERRJPT WITH INITIAIZE
0510  6254          SINT                     /SKIP ON USER INTERRJPT
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 INTERRJPT CLEARED UF F/F
0515  6001          ION                      /IOT SHOULD NOT TRAP HERE
0516  7410          SKP
0517  5317          JMP     .                /ION TRAPPED,
0520  6234          RIB                      /READ THE INTERRJPT BUFFER
0521  1133          TAD     M100
0522  7640          SZA     CLA
0523  4503          ERROR                    /USER FLAG NOT SET OR OTWER 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

                /**********************************************************************************************************
                /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 INTERRJPT 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                    /CAF FAILED TO CLEAR USER INTERRURT
0547  6234          RIB                      /READ THE INTERRJPT BUFFER
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0550  1133          TAD     M100            /CHECK FOR THE USER FLAG
0551  7640          SZA     CLA
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     .               /CUF FAILED TO CLEAR USER BUFFER FLIP-FLOP
0564  6254          SINT                    /SKIP ON USER INTERRUPT SET
0565  7410          SKP
0566  4503          ERROR                   /SINT SKIPPED, USER INTERRUPT SHOULD NOT BE SET
0567  7340          CLA CLL CMA
0570  6004          GTF                     /GET THE FLAGS
0571  1203          TAD     M300            /
0572  7640          SZA     CLA             /CHECK FOR INTERRUPT ENABLE + USER FLAG
0573  4503          ERROR                   /INTERRUPT ENABLE OR USER FLAG NOT SET
0574  6234          RIB                     /READ THE INTERRUPT BUFFER
0575  1133          TAD     M100
0576  7640          SZA     CLA
0577  4503          ERROR                   /USER FLAG NOT SET OR OTHER BITS SET
0600  4504          LOOP                    /LOOP ON TEST IF SR = 1000
0601  5204          JMP     .+3
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     .               /LAS TRAPPED OR USER MODE SET
0621  4222          JMS     .+1             /SET USER BUFFER F/F
0622  7402          HLT/XXXX                /THE PC OF THE JMS
0623  7402          HLT                     /SHOULD TRAP HERE - IF NOT USER FIELD F/F PROBABLY NOT SET
0624  5224          JMP     .               /HALT FAILED TO TRAP
0625  6254          SINT                    /SKIP ON USER INTERRUPT F/F
0626  4503          ERROR                   /USER INTERRUPT F/F NOT SET
0627  6234          RIB                     /READ THE INTERRUPT BUFFER
```



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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  4505  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 ONES
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, REQ, AND USER FLAG
0672  6001          ION                     /TURN THE INTERRUPT ON
0673  7000          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     M1300           /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  6004          GTF
```

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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 REQ OR INT REQ NOT SET
0770  6254          SINT                    /SKIP ON USER INTERRUPT F/F
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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
1000  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 IB, DF AND UB
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
1040  1136          TAD     M1100           /CHECK FOR INTERJPT REQUEST AND USER FLAG
1041  7640          SZA     CLA             /WHERE THEY SET
1042  4503          ERROR                   /NO, INT REQUEST OR USER FLAG NOT SET OR RMF
                                            /SET OTHER BITS IN THE IF AND DF
1043  6001          ION                     /TURN THE INTERRJPT BACK ON
1044  5245          JMP     .+1             /INTERRUPT WITH INTERRJPT REQUEST SET
1045  4503          ERROR                   /PROGRAM FAILED TO INTERRUPT
1046  6234          RIB                     /READ THE INTERRJPT BUFFER
1047  7640          SZA     CLA
1050  4503          ERROR                   /USER FLAG NOT CLEARED ON INTERRUPT
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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 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,
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              /**********************************************************************************************************

1123  4505  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
1140  6234          RIB                     /READ THE INTERRUPT BUFFER
1141  1133          TAD     M100
1142  7640          SZA CLA
1143  4503          ERROR                   /USER FLAG GOT CLEARED
1144  6202  TST11A, 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  6004          GTF                     /GET THE FLAGS
1155  1360          TAD     .+3             /CHECK FOR USER INTERRUPT REQUEST
1156  7640          SZA CLA
1157  4503          ERROR                   /INT REQ 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  TST11B, CLA CMA                 /SET A LOCATION TO ALL ONE'S TO CHECK THAT
1165  3374          DCA     CJMS01          /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  CJMS01, 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
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1212  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  TST11C,  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 FALGS
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  TST11D,  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 INTERRJPT BUFFER
1263  1120            TAD     M20
1264  7640            SZA CLA                 /DOES THE INTERRJPT 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  3300            DCA     CJMS04          /JMS TO FIELD 1 DIDN'T JMS TO FIELD 0
1272  6212            CIF     10              /CHANGE INSTRUCTION FIELD TO FIELD 1,·
1273  6001            ION                     /TURN THE INTERRJPT 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
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1277  4300            JMS     .+1             /CLEAR INTERRUPT INHIBIT AND INTERRUPT
1300  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 INTERRJPT 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 INTERRJPT 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 ONES 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 INTERRJPT 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 INTERRJPT 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 INTERRJPT 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 INTERRJPT ON
1350  6224            RIF                     /READ THE INSTRUCTION FIELD
1351  7440            SZA                     /IS THE IF STLL 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                     /THIS LOCATION PRESET TO ALL ONES, IT SHOULDN'T CHANGE
1355  4503            ERROR                   /PROGRAM FAILED TO INTERRUPT
1356  7340            CLA CLL CMA             /SET THE AC TO ALL ONE'S
1357  6004            GTF                     /GET THE FLAGS
1360  1373            TAD     N1000           /CHECK FOR USER INTERRJPT REQUEST AND
1361  1375            TAD     M30             /SAVE FIELD OF 30
1362  7640            SZA CLA
1363  4503            ERROR                   /GTF FAILED OR READ SOMETHING OTHER THAN ABOVE
1364  6234            RIB                     /READ THE INTERRJPT BUFFER
1365  1375            TAD     M30
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1366  7640          SZA CLA
1367  4503          ERROR                   /SAVE FIELD NOT EQUAL TO FIELD 3
1370  2354          ISZ     CJMS06
1371  4503          ERROR                   /JMS TO FIELD 3 WENT TO FIELD 0
1372  5776'         JMP     TST11H          /GO TO NEXT SECTION

1373  7000  N1000,  -1000
1374  3000  N5000,  -5000
1375  7750  M30,    -30

1376  1400
1377  1174
      1400          PAGE
1400  7240  TST11H, CLA CMA                 /SET A LOCATION TO ALL ONES TO CHECK
1401  3210          DCA     CJMS07          /THAT A JMS TO FIELD 4 DIDN'T JMS TO FIELD 0
1402  6242          CIF     40              /CHANGE INSTRUCTION FIELD TO FIELD 4
1403  6001          ION                     /SET INTERRUPT ENABLE
1404  6224          RIF                     /READ THE INSTRUCTION FIELD
1405  7440          SZA                     /IS THE IF STILL ZERO
1406  7402          HLT                     /THE IF IS NON ZERO OR IT INTERRUPTED
1407  4210          JMS     .+1
1410  7402  CJMS07, HLT                     /THIS LOCATION PRESET TO ALL ONE'S
1411  4503          ERROR                   /PROGRAM FAILED TO INTERRUPT
1412  7360          CLA CLL CML CMA         /SET THE AC AND LINK TO 1'S
1413  6004          GTF                     /GET THE FLAGS
1414  1261          TAD     N5000           /CHECK FOR USER INTERRUPT REQUEST AND LINK
1415  1262          TAD     M40             /AND SAVE FIELD OF 40
1416  7640          SZA CLA
1417  4503          ERROR                   /GTF FAILED OR READ SOMETHING OTHER THAN ABOVE
1420  6234          RIB                     /READ THE INTERRUPT BUFFER
1421  1262          TAD     M40
1422  7640          SZA CLA
1423  4503          ERROR                   /SAVE FIELD NOT EQUAL TO 40
1424  2210          ISZ     CJMS07
1425  4503          ERROR                   /JMS TO FIELD 4 WENT TO FIELD 0
1426  7340  TST11I, CLA CLL CMA             /SETUP A LOCATION TO CHECK THAT A JMS TO
1427  3236          DCA     CJMS10          /FIELD 0 GETS EXECUTED
1430  6202          CIF     00              /CHANGE INSTRUCTION FIELD TO FIELD 00
1431  6001          ION                     /TURN THE INTERRUPT ON
1432  6224          RIF                     /READ THE INSTRUCTION FIELD
1433  7440          SZA                     /IS THE IF STILL ZERO
1434  7402          HLT                     /THE IF IS NON ZERO OR IT INTERRUPTED
1435  4236          JMS     .+1             /CLEAR INTERRUPT ENABLE AND INTERRUPT
1436  7402  CJMS10, HLT                     /THIS LOCATION PREVIOUSLY SET TO 1'S
1437  4503          ERROR                   /PROGRAM FAILED TO INTERRUPT
1440  6004          GTF                     /GET THE FLAGS
1441  1242          TAD     .+1             /CHECK FOR INTERRUPT REQUEST AND
1442  7000          NOP
1443  7640          SZA CLA                 /SAVE FIELD OF 0
1444  4503          ERROR                   /GTF FAILED OR READ SOMETHING OTHER THAN ABOVE
1445  6234          RIB                     /READ THE INTERRUPT BUFFER
1446  7640          SZA CLA
1447  4503          ERROR                   /SAVE FIELD NON ZERO OR RIB FAILED
1450  2236          ISZ     CJMS10          /CHECK THAT THE JMS DID CHANGE LOCATION CJMS10
1451  7610          SKP     CLA
```



```
1452  4503          ERROR                   /JMS TO FIELD 2 FAILED TO STORE ITS PC IN CJMS10
1453  6007          CAF                     /CLEAR ALL FLAGS INCLUDING USER INTERRUPT
1454  6004          GTF                     /GET THE FLAGS
1455  7640          SZA CLA
1456  4503          ERROR                   /INIT FAILED TO CLEAR USER INTERRUPT F/F
1457  4534          LOOP                    /LOOP ON TEST IF SR = 1000
1460  5510          JMP  I  PASEND          /END OF 1ST 1K SEGMENT


1461  3000  N5000,  -5000
1462  7740  M40,    -40


      1600          PAGE


1600  7000  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     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 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  5232          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  4533          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            /RESTART THE PROGRAM

1636  7634  PRGPAS, -144
```

```
1637  7010  POWFAL, RAR
1640  3245          DCA     LINK
1641  1000          TAD     INTSER
1642  3246          DCA     PC
1643  6103          CAL
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  GOODBD, 0
1666  1022          TAD     OP2SEL          /GET HARDWARE CONFIGURATION
1667  7700          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  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  CHKINH, 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          /SUBTRACT ONE FROM JMS ERROR PC
1717  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,
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
1727  1021          TAD     OP1SEL          /GET THE HARDWARE STATUS WORD
1730  7700          SMA     CLA             /IS THE HARDWARE FRONT PANEL SELECTED
1731  5334          JMP     .+3             /NO, USE THE PSEUDO SWITCH REGISTER
1732  7624          LAS
1733  5725          JMP  I  SWCHK           /RETURN
1734  1020          TAD     SWITCH          /THE PSEUDO SWITCH REGISTER
1735  5725          JMP  I  SWCHK           /RETURN

1736  0000  TSTLOP, 0                       /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  5736          JMP  I  TSTLOP          /GO TO NEXT TEST
1743  5502          JMP  I  TEST            /LOOP ON SAME TEST


1744  0000  ACLBAT, 0
1745  2000          ISZ     INTSER
1746  5400          JMP  I  INTSER

1775  1647
1776  0200
1777  7634
      0000          PAGE


      0200          *200
```

```
0300  11111111  11111111  11111111  11100000  00000000  00000000  00111111  11111111
0400  11111111  11111111  11111111  11111111  11111111  00000000  00000000  00000000

0500  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
0600  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111101

0700  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  00000111

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
ACTLIN  1600
ADDCNT  0076
AUTRST  0101
BADPAS  0077
BATEMT  1663
C7707   0375
CAF     6007
CAL     6103
CDF     6201
CDFCHK  0062
CHKCDF  0063
CHKINT  1712
CIF     6202
CIFCDF  6203
CINT    6204
CJMS01  1174
CJMS02  1224
CJMS03  1252
CJMS04  1300
CJMS05  1326
CJMS06  1354
CJMS07  1410
CJMS10  1436
CLREMA  6154
CLRMOD  6160
CLRSIM  6150
CUF     6264
DATPAT  0071
DATREC  0064
ENDING  1630
ENDPAS  1617
ERLPSW  1720
ERROR   4503
ERRORX  1674
EXECUT  6164
FLDLIN  0066
GOODBD  1665
GOODPS  0100
GTF     6004
HGHLIM  0073
HLT     7402
INTSER  0000
K10     0141
K200    0144
K400    0145
K4100   0147
K6201   0074
K7      0140
K70     0142
K7677   0402
K77     0143
K7757   0372
K7774   0146
LINK    1645
LODRG2  6152
LODRG3  6153
LOOP    4504
M1      0111
M10     0116
M100    0133
M1000   0603
M11     0117
M1100   0136
M125    0134
M152    0135
M2      0112
M20     0120
M25     0121
M30     1375
M300    0403
M33     0122
M4      0113
M40     1462
M4100   0602
M43     0123
M44     0124
M5      0114
M50     0125
M5000   1374
M5100   0137
M55     0126
M60     0127
M66     0130
M7      0115
M70     0131
M77     0132
N1000   1373
N30     0373
N40     0374
N5000   1461
OP1SEL  0021
OP21K1  0000
OP2SEL  0022
PASEND  0110
PC      1646
POWFAL  1637
PRGPAS  1636
PRGRST  1647
RDF     6214
REDEMA  6155
RIB     6234
RIF     6224
RK8E    0023
RMF     6244
RTF     6005
RX8E    0024
SAVESZ  0065
SAVWFU  0075
SBE     6101
SCOPLP  4505
SINT    6254
SKON    6000
SKPEMA  6166
SPL     6102
SUF     6274
SWCHK   1725
SWITCH  0020
TEST    0102
TEST1   0201
TEST10  1060
TEST11  1123
TEST2   0342
TEST3   0434
TEST4   0476
TEST5   0532
TEST6   0604
TEST7   0654
TEST8   0713
TEST9   1003
TESTAD  1654
TST11A  1144
TST11B  1164
TST11C  1212
TST11D  1242
TST11E  1270
TST11F  1316
TST11G  1344
TST11H  1400
TST11I  1426
TST2CN  0404
TSTLOP  1736
UPERLM  0067
WRKADD  0072
WRKFLD  0070
XBAT    0107
XPWRFL  0106
```



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

```
                        /KM8-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,
                        ////////////////////////////////////////////////////////////////////////////////
```



```
                        /KM8-A OPTION TEST 2 MAINDEC-08-DJKMA-B-L 1K PART 2
                        /
                        /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 AC
                                        /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

6224    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    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,

6231    CDF=6231                        /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
                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  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


                0200    *0

0000    1200    INTSER, 0                               /JMS I AUTRST PLACED HERE FOR SIMULATOR AUTO RESTART
0001    3264            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    5537            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    2000            ISZ     INTSER                  /ADD 1 TO THE INTERRUPTED PC
0017    5400            JMP  I  INTSER                  /RETURN TO THE PROGRAM


                0020    *20
0020    0000    SWITCH, 0                               /PSEUDO SWITCH REGISTER IF BIT 0=0 OF OP1SEL
0021    1030    OP1SEL, 1070                            /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    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    *62

0062    0000    CDFCHK, 0
0063    0062    CHKCDF, CDFCHK
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    WGHLIM, 0
0074    6201    K6201,  6201
```

```
0075  0000    SAVWRD, 0
0076  0000    ADDCNT, 0
0077  6520    BADPAS, 6520
0100  6500    GOODPS, 6500
0101  1647    AUTRST, PRGRST
0102  0000    TEST,   0                       /SCOPE LOOP AND TEST LOOP ADDRESS

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

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  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    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
```



```
                /**********************************************************************************************
                /TEST 12 - CHECKS THAT A CIF AND CDF WILL LOAD THE APPROPIATE
                /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.
                /**********************************************************************************************

0200  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-FLOP
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            GTF                     /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  3062            DCA     CDFCHK          /STORE IT TO CHECK THAT THE DATA FIELD CHANGED
0217  7340            CLA CLL CMA             /SET THE AC TO ALL ONES
0220  3227            DCA     CKJMS1          /SAVE IT TO CHECK THE JMS TO ANOTHER FIELD
0221  6261            CDF     60              /CHANGE DATA FIELD TO FIELD 6
0222  6212            CIF     10              /CHANGE INSTRUCTION FIELD TO FIELD 1
0223  3463            DCA I   CHKCDF          /CHANGE EMA LINES TO CHECK THAT THE
                                                /DCA WENT TO ANOTHER FIELD THAN FIELD 0
0224  6001            ION                     /TURN THE INTERRUPT ON
0225  4626            JMS I   .+1             /CLEAR INTERRUPT INHIBIT AND INTERRUPT
0226   227            CKJMS1
0227  7402    CKJMS1, HLT                     /THIS LOCATION PRESET TO ONE'S TO CHECK JMS TO ANOTHER FIELD
0230  4503            ERROR                   /PROGRAM FAILED TO INTERRUPT
0231  6004            GTF                     /GET THE FLAGS
0232  1361            TAD     M1016           /CHECK FOR INT REQ, ISF OF 10 AND DSF OF 6
0233  7640            SZA CLA                 /IN 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 DSF 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 I WENT TO ANOTHER FIELD
0242  4503            ERROR                   /DCA I WENT TO FIELD 0 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  3062            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            CDF     10              /CHANGE DATA FIELD TO FIELD 1
0252  6262            CIF     60              /CHANGE INSTRUCTION FIELD TO FIELD 6
0253  3463            DCA I   CHKCDF          /CHANGE EMA LINES TO FIELD 1
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0254  6001            ION                 /CDFCHK SHOULD NOT CHANGE IN FIELD 0
0255  4656            JMS I   .+1         /TURN THE INTERRUPT ON
0256  0257            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 60 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 ANNOTHER FIELD
0276  7340  TST12C,   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 INSTRUCTIN 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  0310            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 REQ, 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               /DCA I WENT TO FIELD 0 INSTEAD OF FIELD 4
0325  2310            ISZ     CKJMS3
0326  4503            ERROR               /JMS I WENT TO FIELD 0 INSTEAD OF FIELD 3
0327  7340  TST12D,   CLA CLL CMA         /SET LOCATIONS CDFCHK AND CKJMS4 TO ONES,
0330  3062            DCA     CDFCHK      /TO CHECK THAT DCA I OR JMS I TO ANOTHER
0331  7340            CLA CLL CMA         /FIELD DOESN'T GO TO FIELD 0
0332  3341            DCA     CKJMS4
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  0341            CKJMS4              /CLEAR INTERRUPT INHIBIT
0341  7402  CKJMS4,   HLT                 /INDIRECT ADDRESS
                                          /THIS LOCATION PRESET TO ONES TO CHECK JMS TO FIELD 5
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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               /THE SAVE FIELD REGISTER NOT EQUAL TO ABOVE
0350  6234            RIB                 /READ THE INTERRUPT BUFFER
0351  1366            TAD     M52         /CHECK FOR ISF OF 5 AND DSF OF 2
0352  7640            SZA CLA
0353  4503            ERROR               /SAVE FIELD NOT EQUAL TO ABOVE
0354  2062            ISZ     CDFCHK
0355  4503            ERROR               /DCA I TO FIELD 2 WENT TO FIELD 7
0356  2341            ISZ     CKJMS4
0357  4503            ERROR               /JMS I TO FIELD 5 WENT TO FIELD 7
0360  5777'           JMP     TST12E

0361  6762  M1016,    -1016
0362  6717  M1061,    -1061
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  7405
      7400            PAGE

0400  7000            NOP
0401  6753  M1025,    -1025
0402  6735  M1043,    -1043
0403  6710  M1070,    -1070
0404  6771  M1007,    -1007
0405  7340  TST12E,   CLA CLL CMA         /SETUP 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          /CHANGE DATA FIELD TO FIELD 5
0412  6222            CIF     20          /CHANGE INSTRUCTION FIELD TO 2
0413  3463            DCA I   CHKCDF      /CHANGE EMA LINES TO 5 (DF ON)
0414  6001            ION                 /TURN INTERRUPT ENABLE ON
0415  4616            JMS I   .+1         /CLEAR INTERRUPT INHIBIT
0416  0417            CKJMS5              /INDIRECT ADDRESS
0417  7402  CKJMS5,   HLT                 /THIS LOCATION PRESET TO ONES TO CHECK JMS TO FIELD 2
0420  4503            ERROR               /PROGRAM FAILED TO INTERRUPT
0421  7340            CLA CLL CMA         /SET THE AC TO ALL ONES
0422  6004            GTF                 /GET THE FLAGS
0423  1201            TAD     M1025       /CHECK FOR INT, REQ,, ISF=2 AND DSF=5
0424  7640            SZA CLA
0425  4503            ERROR               /THE SAVE FIELD REGISTER NOT EQUAL TO ABOVE
0426  6234            RIB                 /READ THE INTERRUPT BUFFER
0427  1121            TAD     M25         /CHECK FOR ISF OF 2 AND DSF=5
0430  7640            SZA CLA
0431  4503            ERROR               /SAVE FIELD REGISTER NOT EQUAL TO ABOVE
0432  0262            ISZ     CDFCHK
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0433  4503            ERROR                   /DCA I TO FIELD 5 WENT TO FIELD 0
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     30              /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  0450            CKJMS6                  /INDIRECT ADDRESS
0450  7402    CKJMS6, 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  6202            CIF     00              /CHANGE INSTRUCTION FIELD TO FIELD 0
0475  3463            DCA I   CHKCDF          /CHANGE EMA LINES TO 7
0476  6001            ION                     /TURNN INTERRUPT ON
0477  4700            JMS I   .+1             /CLEAR INTERRUPT INHIBIT
0500  0501            CKJMS7                  /INDIRECT ADDRESS
0501  7402    CKJMS7, HLT                     /THIS LOCATION WAS SET TO ONE'S BUT SHOULD CHANGE
0502  4503            ERROR                   /PROGRAM FAILED TO INTERRPT
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
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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  6231            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  0533            CKJMS8                  /INDIRECT ADDRESS
0533  7402    CKJMS8, 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  4503            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  4503            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     CKJMS8
0552  4503            ERROR                   /JMS I TO FIELD 7 WENT TO FIELD 2
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     10              /CHANGE DATA FIELD TO FIELD 1
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  0565            CKJMS9                  /INDIRECT ADDRESS
0565  7402    CKJMS9, 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     CKJMS9
0604  7410            SKP
0605  4503            ERROR                   /JMS I TO FIELD 2 DID NOT GO TO FIELD 0
0606  1371            TAD     K7707           /CHECK THE INCLUSIVE OR OF RIF WITH AC
0607  6224            RIF
0610  1142            TAD     K70
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0611  7040            CMA
0612  7640            SZA CLA
0613  4503            ERROR                   /THE INCLUSIVE OR OF IF WITH AC FAILED
0614  6254            SINT                    /SKIP ON USER INTERRUPT
0615  4503            ERROR                   /USER INTERRUPT FLIP-FLOP GOT CLEARED
0616  6007            CAF                     /CLEAR ALL FLAGS
0617  6254            SINT                    /SKIP ON USER INTERRUPT
0620  7410            SKP
0621  4503            ERROR                   /INIT FAILED TO CLEAR USER INTERRUPT F/F
0622  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.
                /**********************************************************************************************************

0623  4505    TEST13, SCOPLP                  /SETUP TEST AND SCOPLE LOOPING ADDRESS
0624  6007            CAF                     /CLEAR ALL FLAGS
0625  6202            CIF     00              /INITIALIZE THE IF AND DF TO FIELD 0
0626  6211            CDF     00              /
0627  5230            JMP     .+1             /LOAD THE IF BY A JMP
0630  6001            ION                     /TURN THE INTERRUPT ON
0631  6274            SUF                     /SET THE USER BUFFER F/F
0632  5233            JMP     .+1             /ENTER USER MODE
0633  7402            HLT                     /PROGRAM FAILED TO TRAP
0634  5234            JMP     .               /HALT FAILED TO TRAP
0635  6254            SINT                    /SKIP ON USER INTERRUPT FLIP-FLOP
0636  4503            ERROR                   /USER INTERRUPT FLIP-FLOP NOT SET
0637  6234            RIB                     /READ THE INTERRUPT BUFFER
0640  1133            TAD     M100
0641  7640            SZA CLA
0642  4503            ERROR                   /USER FLAG NOT SET OR SAVE FIELD NON ZERO
0643  7240    TST13A, CLA CMA                 /SETUP TWO LOCATIONS TO CHECK THAT A CIF,CDF
0644  3062            DCA     CDFCHK          /WENT TO ANOTHER FIELD BY DOING A DCA I AND JMS
0645  7240            CLA CMA
0646  3253            DCA     JMSCK1
0647  6273            CIFCDF  70              /CHANGE IF AND DF TO FIELD 7
0650  3463            DCA I   CHKCDF          /TRY TO CLEAR CDFCHK IN FIELD 7
0651  6001            ION                     /SET INTERRUPT ENABLE
0652  4253            JMS     JMSCK1          /CLEAR INTERRUPT INHIBIT AND INTERRUPT
0653  7402    JMSCK1, HLT                     /THIS LOCATION PRESET TO 7777
0654  4503            ERROR                   /PROGRAM FAILED TO INTERRUPT
0655  6234            RIB                     /READ THE INTERRUPT BUFFER
0656  1132            TAD     M77             /CHECK SAVE FIELD FOR ISF OF 7 AND DSF OF 7
0657  7640            SZA CLA
0660  4503            ERROR                   /CIFCDF TO FIELD 7 FAILED OR SAVE FIELD NOT=TO 77
0661  2062            ISZ     CDFCHK
0662  4503            ERROR                   /DCA I TO FIELD 7 WENT TO FIELD 7
0663  2253            ISZ     JMSCK1
0664  4503            ERROR                   /JMS TO FIELD 7 WENT TO FIELD 0
0665  6254            SINT                    /SKIP ON USER INTERRUPT F/F
0666  4503            ERROR                   /USER INTERRUPT F/F GOT CLEARED
0667  7240    TST13B, CLA CMA                 /SETUP TWO LOCATIONS TO CHECK THAT CIFCDF 20
0670  3062            DCA     CDFCHK          /WENT TO ANOTHER FIELD THAN FIELD 0
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0671  7240            CLA CMA
0672  3277            DCA     JMSCK2
0673  6223            CIFCDF  20              /CHANGE INSTRUCTION FIELD AND DATA FIELD TO 2
0674  3463            DCA I   CHKCDF          /TRY TO CLEAR CDFCHK IN FIELD 2
0675  6001            ION                     /SET INTERRUPT ENABLE
0676  4277            JMS     JMSCK2          /CLEAR INTERRUPT INHIBIT AND INTERRUPT
0677  7402    JMSCK2, HLT                     /THIS LOCATIONS PRESET TO 7777
0700  4503            ERROR                   /PROGRAM FAILED TO INTERRUPT
0701  6234            RIB                     /READ THE INTERRUPT BUFFER
0702  1372            TAD     M22             /CHECK SAVE FIELD FOR ISF=2 & DSF=2
0703  7640            SZA CLA
0704  4503            ERROR                   /SAVE FIELD NTO EQUAL. OT CIFCDF 20 FAILED
0705  2062            ISZ     CDFCHK
0706  4503            ERROR                   /DCA I TO FIELD 2 WENT TO FIELD 2
0707  2277            ISZ     JMSCK2
0710  4503            ERROR                   /JMS TO FIELD 2 WENT TO FIELD 0
0711  7240    TST13C, CLA CMA                 /SETUP TWO LOCATIONS TO CHECK THAT CIFCDF 50
0712  3062            DCA     CDFCHK          /WENT TO ANOTHER FIELD THAN FIELD 0
0713  7240            CLA CMA
0714  3321            DCA     JMSCK3
0715  6253            CIFCDF  50              /CHANGE INSTRUCTION FIELD AND DATA FIELD TO FIELD 5
0716  3463            DCA I   CHKCDF          /TRY TO CLEAR CDFCHK IN FIELD 5
0717  6001            ION                     /SET INTERRUPT ENABLE
0720  4321            JMS     JMSCK3          /CLEAR INTERRUPT INHIBIT AND INTERRUPT
0721  7402    JMSCK3, HLT                     /THIS LOCATIONS PRESET TO 7777
0722  4503            ERROR                   /PROGRAM FAILED TO INTERRUPT
0723  6234            RIB                     /READ THE INTERRUPT BUFFER
0724  1126            TAD     M55             /CHECK FOR ISF OF 5 AND DSF OF 5
0725  7640            SZA CLA
0726  4503            ERROR                   /SAVE FIELD NOT EQUAL TO ISF,DSF OF 5
0727  2062            ISZ     CDFCHK
0730  4503            ERROR                   /DCA I TO FIELD 5 WENT TO FIELD 5
0731  2321            ISZ     JMSCK3
0732  4503            ERROR                   /JMS TO FIELD 5 WENT TO FIELD 0
0733  6254            SINT                    /SKIP ON USER INTERRUPT F/F
0734  4503            ERROR                   /USER INTERRUPT F/F GOT CLEARED
0735  7240    TST13D, CLA CMA                 /SETUP TWO LOCATIONS TO ONE'S TO CHECK
0736  3062            DCA     CDFCHK          /THAT CI[illegible] TO FIELD 4 WENT TO ANOTHER
0737  7240            CLA CMA                 /FIELD THAN FIELD 0
0740  3345            DCA     JMSCK4
0741  6243            CIFCDF  40              /CHANGE INSTRUCTION FIELD AND DATA FIELD TO FIELD 4
0742  3463            DCA I   CHKCDF          /TRY TO CLEAR CDFCHK IN FIELD 4
0743  6001            ION                     /SET INTERRUPT ENABLE
0744  4345            JMS     JMSCK4          /CLEAR INTERRUPT INHIBIT AND INTERRUPT
0745  7402    JMSCK4, HLT                     /THIS LOCATION PRESET TO ONE'S
0746  4503            ERROR                   /PROGRAM FAILED TO INTERRUPT
0747  6234            RIB                     /READ THE INTERRUPT BUFFER
0750  1124            TAD     M44             /CHECK ISF FOR 4 AND DSF FOR 4
0751  7640            SZA CLA
0752  4503            ERROR                   /SAVE FIELD NOT EQUAL TO 44
0753  2062            ISZ     CDFCHK
0754  4503            ERROR                   /DCA I TO FIELD 4 WENT TO FIELD 0
0755  2345            ISZ     JMSCK4
0756  4503            ERROR                   /JMS TO FIELD 4 WENT TO FIELD 0
0757  6254            SINT                    /SKIP ON USER INTERRUPT F/F
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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,    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
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1045  3463            DCA I   CHKCDF          /TRY TO CLEAR CDFCHK IN FIELD 1
1046  6001            ION                     /SET INTERRUPT ENABLE
1047  4250            JMS     JMSCK7          /CLEAR INTERRUPT INHIBIT AND INTERRUPT
1050  7402    JMSCK7, HLT                     /THIS LOCATION PRESET TO ONES
1051  4503            ERROR                   /PROGRAM FAILED TO INTERRUPT
1052  6234            RIB                     /READ THE INTERRJPT BUFFER
1053  1117            TAD     M11             /CHECK FOR ISF OF 1 AND DSF OF 1
1054  7640            SZA CLA
1055  4503            ERROR                   /SAVE FIELD NOT EQUAL ABOVE OR CIFCDF 10 FAILED
1056  2062            ISZ     CDFCHK
1057  4503            ERROR                   /DCA I TO FIELD 1 WENT TO FIELD 2
1060  2250            ISZ     JMSCK7
1061  4503            ERROR                   /JMS TO FIELD 1 WENT TO FIELD 0
1062  6254            SINT                    /SKIP ON USER INTERRJPT F/F
1063  4503            ERROR                   /USER INTERRUPT F/F GOT CLEARED
1064  7240    TST13H, CLA CMA                 /SET UP 2 LOCATIONS TO CHECK THAT
1065  3062            DCA     CDFCHK          /CIFCDF 00 WENT TO FIELD 0 INSTEAD
1066  7240            CLA CMA                 /OF ANOTHER FIELD
1067  3274            DCA     JMSCK8
1070  6203            CIFCDF  00              /CHANGE INSTRUCTION AND DATA FIELD TO 0
1071  3463            DCA I   CHKCDF          /CLEAR CDFCHK IN FIELD 0
1072  6001            ION                     /SET INTERRUPT ENABLE
1073  4274            JMS     JMSCK8          /CLEAR INTERRUPT INHIBIT AND INTERRUPT
1074  7402    JMSCK8, HLT                     /THIS LOCATIONS PRESET TO ONES
1075  4503            ERROR                   /PROGRAM FAILED TO INTERRUPT
1076  6234            RIB                     /READ THE INTERRJPT BUFFER
1077  7640            SZA CLA
1100  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 0
1107  6204            CINT                    /CLEAR USER INTERRUPT F/F
1110  6254            SINT                    /SKIP ON USER INTERRJPT 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  6007            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 INTERRJPT
1124  4503            ERROR                   /USER INTERRUPT NOT SET
1125  6234            RIB                     /READ THE INTERRJPT BUFFER
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1126  1133            TAD     M100        /CHECK FOR USER FLAG
1127  7640            SZA     CLA
1130  4503            ERROR               /USER FLAG OR INT REQ NOT SET
1131  0125            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  6214            RDF                 /READ THE DATA FIELD TO CHECK THAT FIELD 5 GOT LOADED
1136  1125            TAD     M50
1137  7640            SZA CLA
1140  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
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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  6035            RTF                 /RESTORE THE FLAGS AND SET INTERRUPT ENABLE
1233  7300            CLA CLL
1234  6214            RDF                 /READ THE DATA FIELD
1235  1131            TAD     M70         /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     M70
1253  7640            SZA CLA
1254  4503            ERROR               /RMF FAILED TO LOAD DF TO 7
1255  6224            RIF                 /CHECK INSTRUCTION FIELD TO BE SET 0
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 INTERRUPPT 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  6234          CINT                    /CLEAR USER INTERRUPT FLIP-FLOP
1307  6254          SINT                    /SKIP ON USER INTERRUPT FLIP-FLOP
1310  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.
              /**********************************************************************************************

1313  4505    TEST15, SCOPLP                  /SETUP SCOPE AND TEST LOOPING ADDRESS
1314  6007          CAF                     /CLEAR ALL FLAGS
1315  6203          CIFCDF                  /CHANGE DATA AND INSTRUCTION FIELD TO 0
1316  5317          JMP     .+1             /CLEAR INTERRUPT INHIBIT
1317  6264          CUF                     /CLEAR USER FLAG
1320  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
1330  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          CIFCDF  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.
1336  7000          NOP                     /CHECK THAT PROGRAM DOESN'T INTERRUPT
1337  7410          SKP
1340  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  2750          AND I   .+1             /DO A AND I TO THE NEXT LOCATION
1350  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 DSF 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          CIFCDF                  /SET IB AND DF TO 0
1367  6001          ION                     /SET INTERRUPT ENABLE
1370  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  6234          CINT                    /CLEAR USER INTERRUPT
1375  7340          CLA CLL CMA             /SET THE AC TO ONES AND LINK TO 0
1376  6024          GTF                     /GET THE FLAGS
1377  7640          SZA CLA
1400  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 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.
              /**********************************************************************************************

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  0371          AND     K37             /MASK OFF THE MEMORY BITS
1407  7104          CLL     RAL             /ROTATE BITS LEFT ONCE TO SETUP FOR FIELD
1410  3065          DCA     SAVESZ          /LIMIT AND LAST ADDRESS IN LAST FIELD
1411  1065          TAD     SAVESZ          /GET THE NUMBER
1412  0142          AND     K70             /MASK OFF BITS 6-8 FOR FIELD LIMIT
1413  3066          DCA     FLDLIM          /SAVE THE NUMBER AS THE LAST SELECTED FIELD
1414  1065          TAD     SAVESZ          /GET THE ROTATED NUMBER
1415  0140          AND     K7              /MASK OFF ADDRESS BITS
1416  7112          CLL     RTR             /ROTATE THE NUMBER 4 PLACES TO THE RIGHT
1417  7012          RTR
1420  1372          TAD     K1777           /ADD 1K TO THE NUMBER
1421  3067          DCA     UPERLM          /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 0
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
1430  5231          JMP     .+1
1431  7402          HLT                     /SHOULD TRAP HERE
1432  5232          JMP     .               /HALT FAILED TO TRAP
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1433  6254            SINT                    /SKIP ON USER INTERRUPT
1434  4503            ERROR                   /USER INTERRUPT NOT SET
1435  7340            CLA CLL CMA             /SET THE AC TO ALL ONES
1436  6004            GTF                     /GET THE FLAGS
1437  1136            TAD     M1100           /CHECK FOR USER FLAG AND INT REQ
1440  7640            SZA     CLA
1441  4503            ERROR                   /SAVE FIELD NOT EQUAL TO ABOVE
1442  3070            DCA     WRKFLD          /CLEAR WORKING FIELD
1443  3071            DCA     DATPAT          /CLEAR DATA PATTERN
1444  1372  BEGT16,   TAD     K1777           /GET UPPER ADDRESS OF 1K FIELD
1445  3072            DCA     WRKADD          /SET FIRST ADDRESS EQUAL TO 1777
1446  1070            TAD     WRKFLD          /GET THE WORKING FIELD
1447  1141            TAD     K10             /ADD A FIELD TO IT
1450  3070            DCA     WRKFLD
1451  1070            TAD     WRKFLD          /GET THE WORKING FIELD
1452  7041            CIA                     /NEGATE IT
1453  1066            TAD     FLDLIM          /COMPARE IT TO THE FIELD LIMIT
1454  7510            SPA                     /IS THE NEW FIELD GREATER THAN FIELD LIMIT
1455  5363            JMP     ENDTST          /YES END OF TEST
1456  7640            SZA     CLA             /IS NEW FIELD EQUAL TO LAST FIELD
1457  7240            CLA     CMA             /NO,THE LAST ADDRESS IN THIS FIELD WILL BE 7777
1460  7450            SNA                     /YES,THE LAST ADDRESS WILL BE EQUAL TO UPERLM
1461  1067            TAD     UPERLM
1462  3073            DCA     HGHLIM          /SAVE THE LAST ADDRESS IN THIS FIELD
1463  1073            TAD     HGHLIM          /GET THE HIGH LIMIT
1464  7040            CMA                     /COMPLEMENT IT
1465  7106            CLL     RTL             /ROTATE 3 PLACES TO THE RIGHT
1466  7004            RAL                     /
1467  1146            TAD     K7774           /ADD IN 4K ADDRESS CONSTANT
1470  3076            DCA     ADDCNT          /SAVE IT
1471  1070            TAD     WRKFLD          /GET THE NEW FIELD
1472  7001            IAC                     /ADD 1 TO IT
1473  3071            DCA     DATPAT          /SAVE THE WORD AS THE DATA PATTERN
1474  6254  T16LCD,   SINT                    /SKIP ON USER INTERRUPT
1475  4503            ERROR                   /USER INTERRUPT GOT CLEARED
1476  1070            TAD     WRKFLD          /GET THE NEW FIELD
1477  1074            TAD     K6201           /GET THE CDF INSTRUCTION
1500  3301            DCA     .+1             /PUT CDF TO NEW FIELD IN NEXT ADDRESS

1501  7402  CDFNEW,   HLT/CDF                 /CHANGE DATA FIELD TO NEW FIELD
1502  6214            RDF                     /READ THE DATA FIELD
1503  7041            CIA                     /NEGATE IT
1504  1070            TAD     WRKFLD          /GET THE NEW FIELD
1505  7640            SZA     CLA
1506  4503            ERROR                   /CDF TO NEW FIELD FAILED
1507  1071            TAD     DATPAT          /GET THE DATA PATTERN
1510  6001            ION                     /TURN THE INTERRJPT ON
1511  3472            DCA  I  WRKADD          /PUT THE WORD UP IN NEW FIELD AND INTERRUPT
1512  4503            ERROR                   /PROGRAM FAILED TO INTERRUPT
1513  1070            TAD     WRKFLD
1514  7112            CLL     RTR
1515  7010            RAR
1516  3075            DCA     SAVWFD          /SAVE THE WORKING FIELD IN BITS 9-11
1517  6234            RIB                     /READ THE INTERRUPT BUFFER
1520  7041            CIA                     /NEGATE IT
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1521  1075            TAD     SAVWFD          /GET THE EXPECTED WORKING SAVE FIELD
1522  7640            SZA     CLA
1523  4503            ERROR                   /SAVE FIELD NOT EQUAL TO EXPECTED FIELD
1524  6254            SINT                    /SKIP ON USER INTERRJPT F/F
1525  4503            ERROR                   /USER INTERRUPT GOT CLEARED
1526  1301            TAD     CDFNEW          /GET THE CDF INSTRJCTION TO THE NEW FIELD
1527  3330            DCA     .+1             /PUT IT IN THE NEXT LOCATION
1530  7402            HLT/CDF                 /CDF TO NEW FIELD
1531  6214            RDF                     /READ THE DATA FIELD
1532  7041            CIA                     /NEGATE IT
1533  1070            TAD     WRKFLD          /GET THE WORKING FIELD
1534  7640            SZA     CLA
1535  4503            ERROR                   /CDF TO NEW FIELD FAILED
1536  6001            ION                     /TURN THE INTERRJPT ON
1537  1472            TAD  I  WRKADD          /GET DATA PATTERN FROM NEW FIELD
1540  4503            ERROR                   /PROGRAM FAILED TO INTERRUPT
1541  6234            RIB                     /READ THE INTERRJPT BUFFER
1542  7041            CIA                     /NEGATE IT
1543  1075            TAD     SAVWFD          /GET THE EXPECTED SAVE FIELD
1544  7640            SZA     CLA             /ARE THEY EQUAL
1545  4503            ERROR                   /NO,EXPECTED SAVE FIELD NOT EQUAL TO FIELD READ
1546  1071            TAD     DATPAT          /GET THE DATA PATTERN
1547  7041            CIA                     /NEGATE IT
1550  1064            TAD     DATREC          /GET THE WORD RECEIVED
1551  7640            SZA     CLA             /ARE THEY EQUAL?
1552  4503            ERROR                   /NO, DATA ERROR IN WRKFLD
1553  2076            ISZ     ADDCNT          /GET NEXT ADDRESS IN THIS FIELD?
1554  7610            SKP     CLA             /YES
1555  5244            JMP     BEGT16          /NO,GO GET NEXT FIELD IF ANY LEFT
1556  7332            CLA CLL CML RTR         /ADD 1K
1557  1072            TAD     WRKADD          /GET THE WORKING ADDRESS
1560  3072            DCA     WRKADD          /SAVE NEW 1K UPPER ADDRESS BOUNDRY
1561  2071            ISZ     DATPAT          /ADD ANOTHER 1K TO DATA WORD
1562  5274            JMP     T16LCD          /GO LOAD AND COMPARE THIS ADDRESS
1563  6204  ENDTST,   CINT                    /CLEAR USER INTERRUPT
1564  6254            SINT                    /SKIP ON USER INTERRJPT
1565  7610            SKP     CLA
1566  4503            ERROR                   /CINT FAILED TO CLEAR JSER INTERRUPT
1567  4504            LOOP                    /LOOP ON TEST IF SR = 1000
1570  5510            JMP  I  PASEND
1571  0037  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     M70
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  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  1000            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, 7
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, 7
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    BATENT, HLT                   /BATTERY IS EMPTY - GOOD - BYE
1664  5502            JMP  I  TEST          /RETURN TO TEST IF OK


1665  0000    GOODBD, 0
1666  1022            TAD     OP2SEL        /GET HARDWARE CONFIGURATION
1667  7700            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  0000    ERRORX, 7                     /ERROR ROUTINE
1675  7320            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    CHKINH, 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        /SUBTRACT ONE FROM JMS ERROR PC
1717  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,
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,  7
1726  7300            CLA     CLL
1727  1021            TAD     OP1SEL        /GET THE HARDWARE STATUS WORD
1730  7700            SMA     CLA           /IS THE HARDWARE FRONT PANEL SELECTED
1731  5334            JMP     .+3           /NO, USE THE PSEUDO SWITCH REGISTER
1732  7604            LAS
1733  5725            JMP  I  SWCHK         /RETURN
1734  1020            TAD     SWITCH        /THE PSEUDO SWITCH REGISTER
1735  5725            JMP  I  SWCHK         /RETURN


1736  0000    TSTLOP, 7                     /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  5736          JMP  I  TSTLOP          /GO TO NEXT TEST
1743  5502          JMP  I  TEST            /LOOP ON SAME TEST


1744  0000    ACLBAT, 0
1745  2000          ISZ     INTSER
1746  5400          JMP  I  INTSER

1775  1647
1776  7200
1777  7634
      2000          PAGE


      0200          *200
```



```
0000  11111111  11111111  11111111  11100000  00000000  00000000  10111111  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  11111111  10000001

0400  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
0500  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111

0600  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
0700  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11100011

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  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  11111110  00000000  00000000  00000111

2000
2100

2200
2300

2400
2500

2600
2700


3000
3100

3200
3300

3400
3500

3600
3700
```

```
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        JMSCK7  1050        %70     0131        TST13G  1040
ACTLIN  1670        JMSCK8  1074        %77     0132        TST13H  1064
ADDCNT  1076        K10     0141        0P1SEL  0021        TST14A  1132
AUTRST  0101        K1777   1572        0P21K2  0030        TST14B  1170
BADPAS  0077        K200    0144        0P2SEL  0022        TST14C  1227
BATEMT  1665        K37     1571        PASEND  0110        TST14D  1267
BEGT16  1444        K400    0145        PC      1646        TSTLOP  1736
CAF     6007        K4100   0147        POWFAL  1637        UPERLM  0067
CAL     6103        K6201   0074        PRGPAS  1636        WRKADD  0072
CDF     6201        K7      0143        PRGRST  1647        WRKFLD  0070
CDFCHK  0062        K73     0142        PDF     6214        XBAT    0137
CDFNEW  1501        K77     0143        PEDEMA  6155        XPWRFL  0136
CHKCDF  0063        K7707   0771        PIB     6234
CHKINH  1712        K7774   0146        PIF     6224
CIF     6202        LINK    1645        PK8E    0023
CIFCDF  6203        LOOPG2  6152        PUF     6244
CINT    6234        LOOPG3  6153        RTF     6005
CKJMS1  0227        LOOP    4534        RX8E    0024
CKJMS2  0257        %1      0111        SAVESE  0065
CKJMS3  0310        %10     0116        SAVWFD  0075
CKJMS4  0341        %100    0133        SBE     6131
CKJMS5  0417        %1007   0404        SCOPLP  4535
CKJMS6  0450        %1016   0361        SINT    6254
CKJMS7  0501        %1025   0401        SKON    6000
CKJMS8  0533        %1034   0363        SKPEMA  6166
CKJMS9  0565        %1043   0402        SPL     6102
CLREMA  6154        %1052   0364        SUF     6274
CLRMOD  6160        %1061   0362        SWCHK   1725
CLRSIM  6150        %1070   0403        SWITCH  0020
CUF     6264        %11     0117        T16LOD  1474
DATPAT  0071        %1100   0136        TEST    0102
DATREC  0064        %125    0134        TEST12  0210
ENDING  1630        %152    0135        TEST13  0623
ENDPAS  1617        %16     0070        TEST14  1114
ENDTST  1563        %2      0112        TEST15  1313
ERLPSW  1720        %20     0120        TEST16  1402
ERROR   4503        %22     0772        TESTAD  1654
ERRORX  1674        %25     0121        TST12A  0215
EXECUT  6164        %33     0122        TST12B  0245
FLDLIM  0066        %34     0365        TST12C  0276
GOODBD  1665        %4      0113        TST12D  0327
GOODPS  0100        %43     0123        TST12E  0405
GTF     6004        %44     0124        TST12F  0436
HGHLIM  0073        %5      0114        TST13G  0467
HLT     7402        %53     0125        TST13H  0521
INTSET  0030        %5107   0137        TST14A  0553
JMSCK1  0653        %52     0366        TST14B  0643
JMSCK2  0677        %55     0126        TST14C  0667
JMSCK3  0721        %60     0127        TST14D  0711
JMSCK4  0745        %61     0367        TST14E  0735
JMSCK5  1000        %66     0130        TST14F  0761
JMSCK6  1024        %7      0115        TST15F  1014
```

ERRORS DETECTED: 0

LINKS GENERATED: 6

RUN-TIME: 19 SECONDS

2K CORE USED


```
/KM8-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.
////////////////////////////////////////////////////////////////////////////////
```

```
                /KM8-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 ACI
                                                /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
```



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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
                                                /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
```

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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    *20
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 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    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    *62

0062  0000    CDFCHK, 0
0063  0062    CHKCDF, CDFCHK
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    ADDCNT, 0
0077  6520    BADPAS, 6520
0100  6500    GOODPS, 6500
0101  1653    AUTRST, PRGRST
0102  0000    TEST,   0                   /SCOPE LOOP AND TEST LOOP ADDRESS

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

0106  1643    XPWRFL, POWFAL
0107  1667    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  0400    K400,   400
0146  7774    K7774,  7774
0147  4100    K4100,  4100

      0200    *200
```

```
                /**********************************************************************************************************
                /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.
                /**********************************************************************************************************

0200  7000            NOP/JMS I AUTRST        /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  7144            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
0210  5225            JMP     TST18A          /GO TO FIRST TEST
0211  0000  EMACLR,   0                       /ROUTINE TO LOAD CONTROL WORD AND CLEAR EMA CATCHER REGISTER
0212  1145            TAD     K400
0213  6153            LODRG3                  /LOAD CONTROL REGISTER 3 FOR INT AND SKIP ENABLE
0214  6154            CLREMA                  /CLEAR EMA CATCHER REGISTER
0215  6166            SKPEMA                  /SKIP ON EMA CATCHER REGISTER SET
0216  7610            SKP     CLA
0217  4503            ERROR                   /CLREMA FAILED TO CLEAR CATCHER F/F
0220  6155            REDEMA                  /READ THE EMA CATCHER REGISTER
0221  1115            TAD     M7              /CLEARING THE REGISTER SET IT TO 7
0222  7640            SZA     CLA             /IS THE REGISTER SET TO 7 ?
0223  4503            ERROR                   /NO, CLREMA FAILED TO SET REGISTER TO 7
0224  5611            JMP  I  EMACLR
0225  6211  TST18A,   CDF     10              /CHANGE DATA FIELD TO FIELD 10
0226  6001            ION                     /TURN THE INTERRUPT ON
0227  3630            DCA  I  .+1             /CHANGE THE EMA LINES TO 1 AND INTERRUPT
0230  7402            HLT                     /SIMULATOR FAILED TO INT, OR EMA DIDN'T CHANGE
0231  6166            SKPEMA                  /SKIP ON EMA REGISTER SET
0232  4503            ERROR                   /SIMULATOR EMA CATCHER REGISTER NOT SET
0233  6234            RIB                     /READ THE INTERRUPT BUFFER
0234  1111            TAD     M1
0235  7640            SZA     CLA             /IS THE SAVE FIELD EQUAL TO 1 ?
0236  4503            ERROR                   /NO,SAVE FIELD NOT EQUAL TO 1
0237  6155            REDEMA                  /READ THE SIMULATOR EMA CATCHER REGISTER
0240  1111            TAD     M1
0241  7640            SZA     CLA             /IS THE EMA CATCHER REGISTER = 1 ?
0242  4503            ERROR                   /NO,EMA LINES OTHER THAN EMA2 MUST HAVE BEEN SET
0243  4211            JMS     EMACLR          /LOAD CONTROL WORD AND CLEAR EMA CARCHER REGISTTER
0244  6221  TST18B,   CDF     20              /CHANGE DATA FIELD TO FIELD 2
0245  6001            ION                     /TURN THE INTERRUPT ON
0246  3647            DCA  I  .+1             /CHANGE THE EMA LINES TO 2 AND INTERRUPT
0247  7402            HLT                     /PROGRAM FAILED TO INTERRUPT OR EMA DID NOT CHANGE
0250  6166            SKPEMA                  /SKIP ON EMA REGISTER SET
0251  4503            ERROR                   /EMA CATCHER REGISTER NOT SET
0252  6155            REDEMA                  /READ THE EMA CATCHER REGISTER
0253  1112            TAD     M2
```



```
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
0260  6001            ION                     /TURN THE INTERRUPT ON
0261  3662            DCA  I  .+1             /CHANGE EMA LINES TO 4 AND INTERRUPT
0262  7402            HLT                     /PROGRAM FAILED TO INTERRUPT OR EMA DID NOT CHANGE
0263  6166            SKPEMA                  /SKIP ON EMA CATCHER REGISTER SET
0264  4503            ERROR                   /EMA CATCHER F/F NOT SET
0265  6155            REDEMA                  /READ THE EMA CATCHER REGISTER
0266  1113            TAD     M4
0267  7640            SZA     CLA             /DID THE DF SET EMA0 ONTO THE BUS
0270  4503            ERROR                   /NO,EMA CATCHER REGISTER NOT EQUAL TO 4
0271  4672            JMS  I  .+1             /LOAD CONTROL WORD AND CLEAR EMA CATCHER REGISTER
0272  4211            EMACLR
0273  6150            CLRSIM                  /CLEAR SIMULATOR CONTROL WORD
0274  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
0300  6211            CDF     10              /CHANGE DATA FIELD TO FIELD 1
0301  3761            DCA  I  EMA1            /CLEAR THE FIRST TEST LOCATION
0302  6221            CDF     20              /CHANGE DATA FILED TO FIELD 2
0303  3762            DCA  I  EMA2
0304  6241            CDF     40              /CHANGE DATA FIELD TO FIELD 4
0305  3763            DCA  I  EMA3            /CLEAR A LOCATION IN FIELD 4
0306  6201            CDF     00              /CHANGE DATA FIELD BACK TO FIELD 0
0307  4760            JMS  I  CLRERG          /LOAD CONTROL WORD AND CLEAR EMA CATCHER REGISTER
0310  6212  TST19A,   CIF     10              /CHANGE INSTRUCTION FIELD TO 1
0311  6001            ION                     /TURN THE INTERRUPT ON
0312  5312  EMAIF1,   JMP     .               /CLEAR  INT INHIBIT AND INTERRUPT
0313  7402            HLT                     /PROGRAM FAILED TO INTERRUPT
0314  6166            SKPEMA                  /SKIP ON EMA CATCHER F/F SET
0315  4503            ERROR                   /EMA CATCHER F/F NOT SET
0316  6234            RIB                     /READ THE INTERRUPT BUFFER
0317  1116            TAD     M10
0320  7640            SZA     CLA             /IS THE SAVE FIELD EQUAL TO IF OF 1
0321  4503            ERROR                   /SAVE FIELD NOT EQUAL TO IF OF 1
0322  6155            REDEMA                  /READ THE EMA CATCHER REGISTER
0323  1111            TAD     M1
0324  7640            SZA     CLA             /IS THE EMA CATCHER REGISTER EQUAL TO 1
0325  4503            ERROR                   /NO,EMA CATCHER GEGISTER NOT EQUAL TO 1
0326  4760  TST19B,   JMS  I  CLRERG          /LOAD CONTROL WORD, CLEAR EMA CATCHER REGISTER
0327  6222            CIF     20              /CHANGE INSTRUCTION FIELD TO FIELD 2
0330  6001            ION                     /TURN THE INTERRUPT ON
0331  5331  EMAIF2,   JMP     .               /CLEAR INT INHIBIT AND INTERRUPT
0332  7402            HLT                     /PROGRAM FAILED TO INTERRUPT OR EMA DID NOT CHANGE
```

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

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

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



```
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 TA8E CASSETTE BOOTSTRAP

0443  4000  TA8ADD, 4000                    /BOOTSTRAP WILL START LOADING INTO THIS ADDRESS
0444  7740          TA8CMP-TA8END-1
0445  1237  TA8CMP, 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    TA8END, 7730
0505  0000            0000                    /TERMINATOR


0506  1304    BOOTTB, PTPADD
0507  1346            DSKADD
0510  1443            TA8ADD
0511  1526            RX8ADD
0512  1514            RK8ADD
0513  0000            0

                /THE FOLLOWING LOCATIONS CONTAIN THE CONTENTS OF THE RK8E BOOTSTRAP

0514  0023    RK8ADD, 0023                    /BOOTSTRAP WILL LOAD INTO THIS ADDRESS
0515  7771            RK8CMP-RK8END-1         /NUMBER OF LOCATIONS TO COMPARE
0516  2200    RK8CMP, 2200
0517  6745            6745
0520  0023            0023
0521  7640            7640
0522  5024            5024
0523  6743            6743
0524  5031    RK8END, 5031
0525  0000            0000                    /TERMINATOR

                /THE FOLLOWING LOCATIONS CONTAIN THE CONTENTS OF THE RX8 BOOTSTRAP

0526  0024    RX8ADD, 0024
0527  7742            RX8CMP-RX8END-1
0530  7126    RX8CMP, 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    RX8END, 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 AUTRST   /SETUP LOCATIONS 0 AND 200
0602  3000            DCA     INTSER
0603  1377            TAD     (JMS I AUTRST
0604  3776'           DCA     TEST18-1
0605  1375            TAD     (NOBOOT         /SET UP A LOCATION IN CASE LOGIC DID A AUTO RESTART
0606  3101            DCA     AUTRST          /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 BOOTSRAP ENABLE BITS
0620  3323            DCA     CONTW3          /SAVE THE ADDRESS OF BOOT ENABLE CODE
0621  7346            CLA CLL CMA RTL         /SETUP TO DO 3 BOOTSTRAP COMBINATIONS
0622  3325            DCA     BTSUBT          /SAVE SUB-TEST COUNT
0623  6160    BTTST1, 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            6305                    /YES,DISABLE ACT UNTIL BOOTSTRAP IS COMPLETED
0630  1722            TAD  I  CONTW2          /GET THE BOOTSTRAP SELECT ADDRESS
0631  6152            LODRG2                  /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            LODRG3                  /LOAD SIMULATOR CONTROL REGISTER 3
0637  7300            CLA     CLL
0640  6164            EXECUT                  /LOAD THE BOOTSTRAP
```

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0641  5241            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
0642  6160  BOTRT1, CLRMOD              /CLEAR SIMULATOR LOGIC
0643  7301        CLA CLL IAC           /BOOTSTRAP SHOULD RETURN HERE VIA SIMULATOR
0644  1022        TAD     OP2SEL        /CHECK FOR THE ACT LINE
0645  7510        SPA                   /IS THE PROGRAM ON THE ACT LINE
0646  6305        6305                  /YES, ENABLE THE ACT LINE
0647  7300        CLA     CLL
0650  1320        TAD     SIMBOT        /GET THE BOOT BEING EXECUTED
0651  4770'       JMS     BOTCMP+2      /GO COMPARE THE BOOT THAT WAS LOADED
0652  2323        ISZ     CONTW3        /ADD 1 TO THE BOOTSTRAP ENABLE ADDRESS
0653  2325        ISZ     BTSUBT        /DONE WITH THIS SUB TEST?
0654  5223        JMP     BTTST1        /NO,DO NEXT ENABLING CONDITION
0655  4767'       JMS     GOODBD        /SIGNAL ACT LINE IF SELECTED
0656  1114        TAD     M5            /SETUP TO DO NEXT SUB TEST 5 TIMES
0657  3325        DCA     BTSUBT        /SAVE SUB-TEST COUNT
0660  6160  BTTST2, CLRMOD              /CLEAR SIMULATOR MODULE
0661  4771'       JMS     CLEARB        /CLEAR BOOTSTRAP LOCATIONS IN MEMORY
0662  1022        TAD     OP2SEL        /CHECK FOR THE ACT LINE
0663  7710        SPA     CLA           /IS IT ON THE ACT LINE
0664  6305        6305                  /YES, DISABLE ACT LINE UNTIL BOOT IS DONE
0665  1722        TAD  I  CONTW2        /GET THE BOOTSTRAP SELECT ADDRESS
0666  6152        LODRG2                /LOAD CONTROL REGISTER 2
0667  7300        CLA     CLL
0670  1327        TAD     BOOTR2        /GET BOOT RETURN ADDRESS FOR BOOT RETURN
0671  3724        DCA  I  ADD401        /PUT IT IN LOCATION 401
0672  1723        TAD  I  CONTW3        /GET BOOT STRAP ENABLE CODE
0673  6153        LODRG3                /LOAD CONTROL REGISTER 3
0674  7300        CLA     CLL
0675  6164        EXECUT                /LOAD THE BOOTSTRAP
0676  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
0677  6160  BOTRT2, CLRMOD              /CLEAR SIMULATOR LOGIC
0700  7301        CLA CLL IAC
0701  1022        TAD     OP2SEL
0702  7510        SPA
0703  6305        6305
0704  7300        CLA     CLL
0705  1320        TAD     SIMBOT        /GET THE BOOTSTRAP BEING EXECUTED
0706  4770'       JMS     BOTCMP+2      /GO COMPARE THE BOOTSTRAP THAT WAS LOADED
0707  2323        ISZ     CONTW3        /ADD 1 TO BOOTSTRAP ENABLE ADDRESS
0710  2325        ISZ     BTSUBT        /DONE WITH THE SUB-TEST ?
0711  5260        JMP     BTTST2        /NO, DO NEXT ENABLING CODE
0712  4767'       JMS     GOODBD        /SIGNAL ACT LINE IF SELECTED
0713  2320        ISZ     SIMBOT        /ADD 1 TO THE BOOTSTRAP SELECT
0714  2321        ISZ     CNTBOT        /DONE ALL 5 BOOTSTRAPS?
0715  5214        JMP     NXTBOT        /NO,GO DO NEXT BOOTSTRAP
0716  4504        LOOP                  /LOOP ON TEST IF SR = 1000
0717  5766'       JMP     TEST22        /GO TO THE NEXT TEST
```



```
0720  0000  SIMBOT, 0
0721  0000  CNTBOT, 0
0722  0000  CONTW2, 0
0723  0000  CONTW3, 0
0724  0401  ADD401, 0401
0725  0000  BTSUBT, 0

            /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 AUTRST
0733  3764'       DCA     2000
0734  7325        CLA CLL CML IAC RAL
0735  5763'       JMP     SETUP1
0736  1377  SET3K,  TAD     (JMS I AUTRST
0737  3764'       DCA     2000
0740  1377        TAD     (JMS I AUTRST
0741  3762'       DCA     4200
0742  7325        CLA CLL IAC RAL
0743  5763'       JMP     SETUP1

0762  4200
0763  1527
0764  2000
0765  1134
0766  1041
0767  1701
0770  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                 /1236
1002  7402        HLT                 /6704
1003  7402        HLT                 /6706
1004  7402        HLT                 /6703
1005  7402        HLT                 /5204
1006  7402        HLT                 /7264
1007  7402        HLT                 /6702
1010  7402        HLT                 /7610
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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 AUTRST   /SETUP LOCATIONS 0 AND 200
1043  3000            DCA     INTSER          /
1044  1377            TAD     (JMS I AUTRST   /
1045  3776'           DCA     TEST18-1
1046  1375            TAD     (RSTAUT         /GET THE AUTO RESTART ADDRESS
1047  3101            DCA     AUTRST          /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    AUTTST, 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            6305                    /DISABLE ACT LINE UNTIL AUTO RESTART IS DONE
```



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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     AUTTST          /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            6305                    /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     AUTTST          /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     AUTTST          /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
```

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                    /CONTROL WORD 2 BOOTSTRAP SELECT

1150  1672  BOTSEL, 1672                    /HI-LOW PAPER TAPE SELECT
1151  0522         0522                    /RF08/DF32D BOOTSTRAP SELECT

1152  0422         0422                    /TA8E 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
1160  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  AUTRST          /AUTO RESTART HANDLER
1201  4505  TEST23, SCOPLP                  /SETUP TEST AND SCOPE LOOP ADDRESS
1202  1377         TAD     (ACLBAT
1203  3101         DCA     AUTRST
1204  6007         CAF                     /CLEAR ALL FLAGS
1205  6160         CLRMOD                  /CLEAR SIMULATOR MODULE
1206  6101         SBE                     /SKIP ON BATTERY EMPTY
1207  7410         SKP
1210  4503         ERROR                   /BATTERY EMPTY IS SET
1211  6102         SPL                     /SKIP ON AC LOW
1212  7410         SKP
1213  4503         ERROR                   /AC LOW F/F IS SET
1214  7332         CLA CLL CML RTR         /GET CONTROL BIT FOR BATTERY EMPTY
1215  6153         LODRG3                  /LOAD SIMULATOR REGISTER 3
1216  6001         ION                     /TURN THE INTERRUPT ON
1217  5220         JMP     .+1
1220  4503         ERROR                   /BATTERY EMPTY NOT SET OR FAILED TO INTERRUPT
1221  4503         ERROR                   /AC LOW OR LEVEL IS TRUE
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1222  6102         SPL                     /SKIP ON AC LOW
1223  7410         SKP
1224  4503         ERROR                   /AC LOW SET-SHOULD ONLY BE BAT EMPTY
1225  1257         TAD     K1000           /GET THE CONTROL BIT FOR AC LOW
1226  6153         LODRG3                  /LOAD SIMULATOR REGISTER 3
1227  7200         CLA                     /NOW SET AC LOW HIGH TO CLEAR  BAT EMPTY
1230  6153         LODRG3                  /AND TO LEAVE AC LOW F/F SET
1231  6001         ION                     /TURN THE INTERRUPT ON
1232  5233         JMP     .+1             /GO INTERRUPT ON AC LOW F/F
1233  4503         ERROR                   /AC LOW F/F NOT SET OR FAILED TO INTERRUPT
1234  7610         SKP     CLA
1235  4503         ERROR                   /AC F/F NOT SET AND AC LOW FAILED TO CLEAR
                                           /BATTERY EMPTY
1236  6102         SPL                     /SKIP ON AC LOW F/F
1237  7410         SKP
1240  4503         ERROR                   /CAL IN INT SERVICE FAILED TO CLEAR AC F/F
1241  6101         SBE                     /SKIP ON BATTERY EMPTY
1242  7610         SKP     CLA
1243  4503         ERROR                   /AC LOW GOING HIGH FAILED TO CLEAR BAT EMPTY
1244  1257         TAD     K1000           /GET THE AC LOW BIT
1245  6153         LODRG3                  /LOAD SIMULATOR
1246  6007         CAF                     /CLEAR ALL FLAGS
1247  6102         SPL                     /SKIP ON AC LOW AS A LEVEL
1250  4503         ERROR                   /AC LOW AS A LEVEL FAILED TO SKIP
1251  6153         LODRG3                  /RELEASE AC LOW
1252  6102         SPL                     /SKIP ON AC LOW
1253  7410         SKP
1254  4503         ERROR                   /CAF FAILED TO CLEAR AC LOW
1255  4504         LOOP                    /LOOP ON TEST IF SR = 1000
1256  5510         JMP  I  PASEND          /END OF PROGRAM
1257  1000  K1000,  1000


                    /**********************************************************************************************************
                    /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     .+1             /TRY TO ENTER TIME SHARE MODE
1267  7404         OSR                     /SHOULD TRAP HERE IF TIME SHARE NOT DISABLED
1270  7610         SKP     CLA
1271  4503         ERROR                   /TIME SHARE NOT DISABLED-PROGRAM INTERRUPTED
1272  7604         LAS                     /SHOULD TRAP HERE IF TIME SHARE NOT DISABLED
1273  7610         SKP     CLA
1274  4503         ERROR                   /LAS TRAPPED WITHOUT TIME SHARE ENABLED
1275  6254         SINT                    /SKIP ON USER INTERRUPT
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1276  7610          SKP     CLA
1277  4503          ERROR                   /IOT TRAPPED OR USER INTERRUPT SET
1300  7402          HLT                     /PROGRAM SHOULD HALT HERE FOR COMPLETION
                                            /OF TIME SHARE DISABLE TEST
1301  7610          SKP     CLA
1302  4503          ERROR                   /HLT TRAPPED
1303  5260          JMP     TIMDIS          /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-PTPEND-1         /NUMBER OF LOCATIONS TO COMPARE
1306  6014    PTPCMP, 6014
1307  3376          3376
1310  7326          7326
1311  1337          1337
1312  2376          2376
1313  5341          5341
1314  6011          6011
1315  5356          5356
1316  3361          3361
1317  1361          1361
1320  3371          3371
1321  1345          1345
1322  3357          3357
1323  1345          1345
1324  3367          3367
1325  6032          6032
1326  6031          6031
1327  5357          5357
1330  6036          6036
1331  7106          7106
1332  7006          7006
1333  7510          7510
1334  5374          5374
1335  7006          7006
1336  6031          6031
1337  5367          5367
1340  6034          6034
1341  7420          7420
1342  3776          3776
1343  3376          3376
1344  5356    PTPEND, 5356
1345  0000          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          RFDFCP-RFDFED-1         /NUMBER OF LOCATIONS TO COMPARE
1350  7600    RFDFCP, 7600
1351  6603          6603
1352  6622          6622
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1353  5352          5352
1354  5752    RFDFED, 5752
1355  0000          0000                    /TERMINATOR

1377  1760
      1400          PAGE


                    /*****************************************************************************************************
                    /TO RUN THE OPERATOR INTERVENTION BOOT STRAP COMPARE TEST,DO THE FOLLOWING!
                    /1,     RUN CLRBOT 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=TA8E CASSETTE BOOTSTRAP
                    /       SR=0003=RX8E FLOPPY BOOTSTRAP
                    /       SR=0004=RK8E 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          0                       /SIMULATOR BOOTSTRAP CHECK ENTERS HERE
1403  5213          JMP     .+10
1404  1021          TAD     OP1SEL          /GET THE HARDWARE OPTIONS
1405  7700          SMA     CLA             /IS THE HARDWARE SR BIT SET
1406  5211          JMP     .+3             /NO,USE THE PSEUDO SWITCH REGISTER
1407  7604          LAS                     /USE THE HARDWARE SWITCH REGISTER
1410  7410          SKP
1411  1020          TAD     SWITCH          /GET THE PSEUDO SWITCH REGISTER
1412  0140          AND     K7              /MASK OFF BITS 9-11
1413  1377          TAD     (BOOTTB         /ADD IT TO THE BOOTSTRAP TABLE ADDRESS
1414  3361          DCA     SAVSTR          /SAVE IT
1415  1761          TAD  I  SAVSTR          /GET THE ADDRESS FROM THE TABLE
1416  3362          DCA     BOTADD          /SAVE IT
1417  1762          TAD  I  BOTADD          /GET THE BOOTSTRAP STARTING ADDRESS
1420  3363          DCA     BOTSAD          /THIS IS THE BOOTSTRAP STARTING ADDRESS
1421  2362          ISZ     BOTADD
1422  1762          TAD  I  BOTADD          /GET THE WORD COUNT
1423  3364          DCA     BOTCNT          /SAVE IT
1424  2362          ISZ     BOTADD          /BOTADD IS THE STARTING ADDRESS OF BOOT COMPARE
1425  1763    COMPAR, TAD  I  BOTSAD        /GET THE CONTENTS THAT BOOTSTRAP LOADED
1426  7041          CIA                     /NEGATE IT
1427  1762          TAD  I  BOTADD          /GET THE EXPECTED BOOTSTRAP CONTENTS
1430  7650          SNA     CLA             /ARE THEY EQUAL
1431  5243          JMP     GOODCP          /YES, GO GET NEXT WORD
1432  4503          ERROR                   /BOOTSTRAP COMPARE ERROR, PRESS "CONT" TO
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                                        /GET BAD PC, GOOD CONTENTS, AND BAD CONTENTS
1433  1363          TAD     BOTSAD      /GET BOOTSTRAP ADDRESS THAT WAS BAD
1434  7402          HLT                 /AC=THE ADDRESS THAT DIDN'T COMPARE
1435  7200          CLA
1436  1762          TAD  I  BOTADD
1437  7402          HLT                 /AC=EXPECTED CONTENTS OF BOOTSTRAP
1440  7200          CLA
1441  1763          TAD  I  BOTSAD
1442  7402          HLT                 /AC=ACTUAL CONTENTS OF BOOTSTRAP
1443  7300  GOODCP, CLA     CLL
1444  2363          ISZ     BOTSAD
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 TC08
1453  7440          SZA
1454  5220          JMP     COMPAR+5
1455  1021          TAD     OP1SEL      /GET HARDWARE OPTIONS
1456  0144          AND     K200
1457  7640          SZA     CLA         /WAS THE SIMULATOR BEING USED
1460  5602          JMP  I  BOTCMP+2    /YES, RETURN TO SIMULATOR BOOTSTRAP CHECK
1461  7402  BOOTOK, HLT                 /BOOT STRAP COMPARED OK
1462  5200          JMP     BOTCMP      /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       /GET MEMORY SIZE TO SEE WHAT BOOTS TO CLEAR
1466  1360          TAD     BOTCLR      /GET THE NUMBER TO START CLEARING BOOT
1467  1377          TAD     (BOOTTB     /GET THE ADDRESS OF BOOT STRAP TABLE
1470  3361          DCA     SAVSTR      /SAVE IT
1471  1761          TAD  I  SAVSTR      /GET THE ADDRESS FROM TABLE
1472  7450          SNA
1473  5311          JMP     BOTEND      /END OF CLEARING BOOTSTRAP LOCATIONS
1474  3362          DCA     BOTADD      /SAVE IT
1475  1762          TAD  I  BOTADD      /GET THE BOOTSTRAP STARTING ADDRESS
1476  3363          DCA     BOTSAD      /SAVE IT
1477  2362          ISZ     BOTADD
1500  1762          TAD  I  BOTADD      /GET THE WORD COUNT
1501  3364          DCA     BOTCNT      /SAVE IT
1502  3763          DCA  I  BOTSAD
1503  2363          ISZ     BOTSAD
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
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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      /SAVE THE NUMBER OF AUTO'S TO DO
1540  5717          JMP  I  SETUP       /RETURN TO DO BOOT OR AUTO-RESTART
1541  1021  SETUP2, TAD     OP1SEL      /GET THE HARDWARE CONFIGURATION
1542  0365          AND     KK3         /MASK OFF FIELD 0 MEMORY SIZE
1543  7450          SNA                 /IS IT 1K OF MEMORY
1544  5354          JMP     SET1K       /YES,SETUP TO DO 2 BOOTS OR 2 AUTO-RESTART
1545  1111          TAD     M1          /SUBTRACT 1
1546  7450          SNA                 /IS IT 2K OF MEMORY
1547  5772'         JMP     SET2K       /YES,DO TWO BOOTS AND 3 AUTO'S
1550  1111          TAD     M1          /SUBTRACT 1
1551  7650          SNA     CLA         /IS IT 3K OF MEMORY
1552  5771'         JMP     SET3K       /YES, SETUP TO DO 3 BOOTS AND 4 AUTO'S
1553  5327          JMP     SETUP1      /MUST BE 4K OF MEMORY-DO ALL
1554  7305  SET1K,  CLA CLL IAC RAL
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  BOTSAD, 0
1564  0000  BOTCNT, 0
1565  0003  KK3,    3

1571  0736
1572  0730
1573  1133
1574  0721
1575  0720
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1576  1134
1577  0506
      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     M70
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  1022  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     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  AUTRST       /RETURN TO THE PROGRAM
```



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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, 0
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     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          /YES, GO CHECK SR 1 TO LOOP ON ERROR
1731  7340            CLA CLL CMA
1732  1310            TAD     ERRORX          /SUBTRACT ONE FROM JMS ERROR PC
1733  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,
1734  4341    ERLPSW, JMS     SWCHK           /CHECK THE SWITCH REGISTER TO LOOP ON ERROR
1735  7004            RAL
1736  7710            SPA     CLA             /IS SR 1 SET TO A ONE TO LOOP ON TEST
1737  5502            JMP  I  TEST            /YES GO LOOP ON THE TEST
1740  5710            JMP  I  ERRORX          /NO, RETURN TO THE PROGRAM

1741  0000    SWCHK,  0
1742  7300            CLA     CLL
1743  1021            TAD     OP1SEL          /GET THE HARDWARE STATUS WORD
1744  7700            SMA     CLA             /IS THE HARDWARE FRONT PANEL SELECTED
1745  5350            JMP     .+3             /NO, USE THE PSEUDO SWITCH REGISTER
1746  7604            LAS
1747  5741            JMP  I  SWCHK           /RETURN
1750  1020            TAD     SWITCH          /THE PSEUDO SWITCH REGISTER
1751  5741            JMP  I  SWCHK           /RETURN

1752  0000    TSTLOP, 0                       /ROUTINE TO CHECK SR 2 TO LOOP ON TEST
1753  4341            JMS     SWCHK           /GO GET THE SWITCH REGISTER
1754  7006            RTL
1755  7700            SMA     CLA
1756  5752            JMP  I  TSTLOP          /GO TO NEXT TEST
1757  5502            JMP  I  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

      0200            *200
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0000  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  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  11113000  00000000  00111111  11111111

1000  11111111  11111111  11111111  11111111  11111111  11111111  11111001  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  11111100  01111111

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
ACTLIN  1600        DEAD    1677        M44     0124        SETUP1  1527
ADD401  0724        DSKADD  1346        M5      0114        SETUP2  1541
ADDCNT  0076        EMA1    0361        M50     0125        SIMBOT  0720
ADDRES  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  1054        TA8ADD  0443
BOOTOK  1461        ERLPSW  1734        NOBOOT  0610        TA8CMP  0445
BOOTR1  0726        ERROR   4503        NXTBOT  0614        TA8END  0504
BOOTR2  0727        ERRORX  1710        OP1SEL  0021        TEST    0102
BOOTTB  0536        EXECUT  6164        OP21K3  0000        TEST18  0201
BOTADD  1562        FLDLIM  0066        OP2SEL  0022        TEST19  0275
BOTCLR  1560        GODAUT  1125        PASEND  0110        TEST20  0402
BOTCMP  1400        GOOD8D  1701        PC      1652        TEST21  0600
BOTCNT  1564        GOODCP  1443        POWFAL  1643        TEST22  1041
BOTENA  1155        GOODPS  0100        PRGPAS  1642        TEST23  1201
BOTEND  1511        GTF     6004        PRGRST  1653        TESTAD  1660
BOTRT1  0642        HGHLIM  0073        PTPADD  1304        TIMDIS  1260
BOTRT2  0677        HLT     7402        PTPCMP  1306        TST18A  0225
BOTSAD  1563        INTSER  0000        PTPEND  1344        TST18B  0244
BOTSEL  1150        K10     0141        RDF     6214        TST18C  0257
BTSUBT  0725        K1000   1257        REDEMA  6155        TST19A  0310
BTTST1  0623        K200    0144        RESADD  1137        TST19B  0326
BTTST2  0660        K400    0145        RFDFCP  1350        TST19C  0341
CAF     6007        K4100   0147        RFDFED  1354        TSTLOP  1752
CAL     6103        K6201   0074        RIB     6234        UPERLM  0067
CAPS8   1000        K7      0140        RIF     6224        WRKADD  0072
CDF     6201        K70     0142        RK8ADD  0514        WRKFLD  0070
CDFCHK  0062        K77     0143        RK8CMP  0516        XBAT    0107
CHKCDF  0063        K7774   0146        RK8E    0023        XPWRFL  0106
CHKINH  1726        KK3     1565        RK8END  0524
CIF     6202        LINK    1651        RMF     6244
CIFCDF  6203        LODRG2  6152        RSTAUT  1101
CINT    6204        LODRG3  6153        RTF     6005
CLEAR8  1463        LOOP    4504        RX8ADD  0526
CLRBOT  1465        M1      0111        RX8CMP  0530
CLREMA  6154        M10     0116        RX8E    0024
CLRERC  0360        M100    0133        RX8END  0565
CLRMOD  6160        M11     0117        SAVESZ  0065
CLRSIM  6150        M1100   0136        SAVSTH  1561
CNTBOT  0721        M125    0134        SAVWFD  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


```
/KM8-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.
////////////////////////////////////////////////////////////////////////////////
```

```
                /KM8-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 AC
                                        /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
```



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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
                                        /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  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        /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
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 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    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    *62

0062  0000    CDFCHK, 0
0063  0062    CHKCDF, CDFCHK
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    ADDCNT, 0
0077  6520    BADPAS, 6520
0100  6500    GOODPS, 6500
0101  0453    AUTRST, PRGRST
0102  0000    TEST,   0                   /SCOPE LOOP AND TEST LOOP ADDRESS

      4503    ERROR=  JMS  I  .
0103  0500                    ERRORX
      4504    LOOP=   JMS  I  .
0104  0542                    TSTLOP
      4505    SCOPLP= JMS  I  .
0105  0460                    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    *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  7144          AND      K200
0205  7640          SZA      CLA
0206  6162          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
0230  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  7307          AND      K3             /MASK OFF BITS 12 AND 11
0237  1375          TAD      (RESADD        /ADD THE AUTO RESTART TABLE ADDRESS TO IT
0240  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, TAD      (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
0250  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 DIDN'T 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  5532          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
0313  1311          TAD      OPRRET        /GET THE ADDRESS FROM AUTO RESTART
0314  7041          CIA                    /NEGATE IT
0315  1310          TAD      MANRST        /GET EXPECTED RESTART
0316  7650          SNA      CLA           /ARE THEY EQUAL?
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```
0317  5326          JMP     RESET           /YES RESET AC AND LINK AND RETURN TO COMPARE
0320  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
0321  1310          TAD     MANRST          /GET THE EXPECTED AUTO RESTART ADDRESS
0322  7402          HLT                     /AC = EXPECTED AUTO RESTART ADDRESS
0323  7340          CLA CLL CMA
0324  1311          TAD     OPRRET          /GET ACTUAL
0325  7402          HLT                     /AC = ADDRESS RETURNED FROM AUTO RESTART
0326  7300  RESET,  CLA     CLL
0327  1377          TAD     (OPRINT         /SETUP RETURN ADDRESS FOR POWER FAIL
0330  3101          DCA     AUTRST          /SAVE IT
0331  1774'         TAD     PC
0332  3340          DCA     RETPRG
0333  1773'         TAD     LINK            /GET THE LINK
0334  7004          RAL                     /PUT IT IN THE LINK
0335  1064          TAD     DATREC          /GET THE AC
0336  6001          ION                     /TURN THE INTERRUPT ON
0337  5740          JMP  I  RETPRG

0340  0000  RETPRG, 0

0341  0034  K34,    34
0342  0001  K1,     1



0343  0000  OPRINT, 0                       /OPERATOR INTERVENTION AUTO RESTART
0344  1372          TAD     (JMS I AUTRST
0345  3000          DCA     INTSER
0346  1372          TAD     (JMS I AUTRST
0347  3200          DCA     AUTO-1
0350  1371          TAD     (OPRRET         /SETUP FOR A AUTO RESTART
0351  3101          DCA     AUTRST
0352  7402  ACDOWN, HLT                     /WAIT FOR LINE CORD TO BE PLUGGED IN
0353  5502          JMP  I  TEST            /RETRY TEST
0354  4200  RESADD, 4200
0355  2000          2000
0356  0200          0200
0357  0000          0000



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



```
0400  0000  ACTLIN, 0
0401  1022          TAD     OP2SEL
0402  7700          SMA     CLA             /IS THE PROGRAM RUNNING ON ACT LINE?
0403  5600          JMP  I  ACTLIN          /NO, RETURN
0404  1066          TAD     FLDLIM          /GET THE FIELD LIMIT
0405  1131          TAD     M70
0406  7640          SZA     CLA             /IS THE FIELD LIMIT EQUAL TO FIELD 7?
0407  5600          JMP  I  ACTLIN          /NO, RETURN TO TEST
0410  1067          TAD     UPERLM          /GET THE UPPER ADDRESS LIMIT
0411  7001          IAC                     /ADD 1 TO IT
0412  7640          SZA     CLA             /WAS IT 7777
0413  5600          JMP  I  ACTLIN          /NO, RETURN
0414  7352          CLA CLL CMA RTR         /SET LAST ADDRESS = 5777
0415  3067          DCA     UPERLM          /SAVE IT
0416  5600          JMP  I  ACTLIN          /RETURN TO PROGRAM


0417  1022  ENDPAS, TAD     OP2SEL          /CHECK FOR ACT LINE
0420  7700          SMA     CLA             /IS THE PROGRAM RUNNING ON ACT LINE
0421  5234          JMP     ENDING          /NO GO CHECK FOR SR 3 TO HALT AT END OF A PASS
0422  1021          TAD     OP1SEL          /GET THE HARDWARE CONFIGURATION
0423  0144          AND     K200            /CHECK FOR THE SIMULATOR
0424  7640          SZA     CLA             /WAS THE SIMULATOR SELECTED
0425  5234          JMP     ENDING          /YES, ALREADY NOTIFIED PROM OF GOOD PAS
0426  2242          ISZ     PRGPAS          /CHECK 1/2 SECOND COUNT
0427  5234          JMP     ENDING          /NOT 1/2 SECOND YET
0430  1377          TAD     (-144           /RESET THE COUNTER
0431  3242          DCA     PRGPAS
0432  6272          CIF     70              /CHANGE INSTRUCTION FIELD TO 7
0433  4500          JMS  I  GOODPS          /SIGNAL THE PROM
0434  4331  ENDING, JMS     SWCHK           /CHECK SR 3 TO HALT ON A PROGRAM PASS
0435  7006          RTL
0436  7004          RAL
0437  7710          SPA     CLA
0440  7402          HLT                     /END OF A COMPLETE PROGRAM PASS
0441  5776'         JMP     0201            /RESTART THE PROGRAM


0442  7634  PRGPAS, -144



0443  7010  POWFAL, RAR
0444  3251          DCA     LINK
0445  1000          TAD     INTSER
0446  3252          DCA     PC
0447  6103          CAL                     /CLEAR AC LOW F/F
0450  4501          JMS  I  AUTRST          /RETURN TO THE PROGRAM

0451  0000  LINK,   0
0452  0000  PC,     0

0453  0000  PRGRST, 0
```

```
0454  6102          SPL                     /SKIP ON AC LOW AS A LEVEL
0455  7610          SKP     CLA
0456  5254          JMP     .-2
0457  5502          JMP  I  TEST            /RETURN TO TEST BEING EXECUTED AND START OVER

0460  0000  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  0000  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  0000  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  0144          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  CHKINH, 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,
0524  4331  ERLPSW, JMS     SWCHK           /CHECK THE SWITCH REGISTER TO LOOP ON ERROR
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  0000  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  7604          LAS
0537  5731          JMP  I  SWCHK           /RETURN
0540  1020          TAD     SWITCH          /THE PSEUDO SWITCH REGISTER
0541  5731          JMP  I  SWCHK           /RETURN

0542  0000  TSTLOP, 0                       /ROUTINE TO CHECK SR 2 TO LOOP ON TEST
0543  4331          JMS     SWCHK           /GO GET THE SWITCH REGISTER
0544  7006          RTL
0545  7700          SMA     CLA
0546  5742          JMP  I  TSTLOP          /GO TO NEXT TEST
0547  5502          JMP  I  TEST            /LOOP ON SAME TEST

0550  0000  ACLBAT, 0
0551  2000          ISZ     INTSER
0552  5400          JMP  I  INTSER

0575  0453
0576  0201
0577  7634
      0600          PAGE

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

      0200          *200
```

```
5000
5100
5200
5300
5400
5500
5600
5700
6000
6100
6200
6300
6400
6500
6600
6700
7000
7100
7200
7300
7400
7500
7600
7700
```



```
4000
4100
4200
4300
4400
4500
4600
4700
```



```
2400
2500
2600
2700
3000
3100
3200
3300
3400
3500
3600
3700
```



```
0700  11111111  11111111  11100000  00003000  00000000  00111111  11111111
1000  11111111  11111111  11111111  11111111  11111111  11111111  11111111
1100  11111111  11111111  11111111  11111111  11111111  11111111  11111111
1200  11111111  11111111  11111111  11111111  11111111  11111111  11111111
1300  11111111  11111111  11111111  11111111  11111111  11111111  11111111
1400  11111111  11111111  11111111  11111111  11111111  11111111  11111111
1500  11111111  11111111  11111111  11111111  11111111  11111111  11111111
1600  10000000  00000000  00000000  00000000  00000000  00000000  00000000
1700  00000000  00000000  00000000  00000000  00000000  00000000  00000000
```

ACDOWN	0352	K7	0140	RX8E	0024
ACLBAT	0550	K70	0142	SAVESE	0065
ACTLIN	0400	K77	0143	SAVWFD	0075
ADDCNT	0276	K7774	0146	SBE	6101
AUTO	0201	LINK	0451	SCOPLP	4505
AUTRST	0101	LODRG2	6152	SINT	6254
BADPAS	0077	LODRG3	6153	SKON	6000
BATEMT	0467	LOOP	4504	SKPEMA	6166
BUFCNT	0303	M1	0111	SPL	6102
BUFFER	0600	M10	0116	STRCMP	0243
BUFGOD	0272	M100	0133	SUF	6274
BUFPAT	0305	M11	0117	SWCHK	0531
CAF	6007	M1100	0136	SWITCH	0020
CAL	6103	M125	0134	TEST	0102
CDF	6201	M152	0135	TESTAD	0460
CDFCHK	0062	M2	0112	TSTLOP	0542
CHKCDF	0063	M20	0120	UPERLM	0067
CHKINW	0516	M25	0121	WRKADD	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		
CLRSIW	6150	M50	0125		
CMPBUF	0251	M5100	0137		
CNTBUF	0304	M55	0126		
CUF	6264	M60	0127		
DATPAT	0071	M66	0130		
DATREC	0064	M7	0115		
ENDING	0434	M70	0131		
ENDPAS	0417	M77	0132		
ERLPSW	0524	MANRST	0310		
ERROR	0503	OP1SEL	0021		
ERRORX	0500	OP21K4	0000		
EXECUT	6164	OP2SEL	0022		
FILLIT	0302	OPRINT	0343		
FLOLIM	0066	OPRRET	0311		
GOODBD	0471	PASEND	0110		
GOODPS	0100	PC	0452		
GTF	6004	POWFAL	0443		
HGHLIM	0073	PRGPAS	0442		
HLT	7402	PRGRST	0453		
INTSEN	0000	RDF	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: 18 SECONDS

2K CORE USED