DH11

LOGIC TEST

MD-11-DZDHC-B

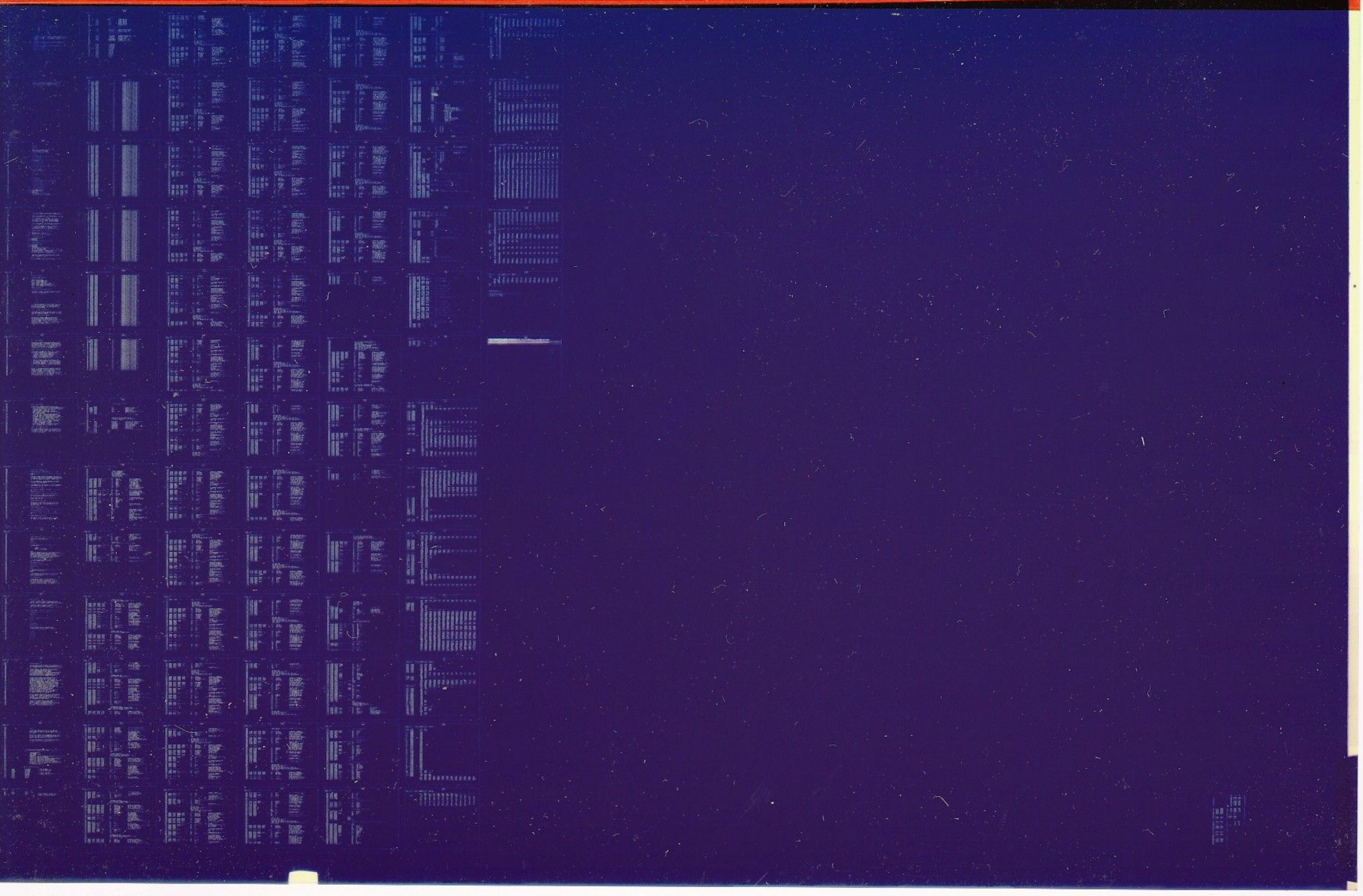
EP-DZDHC-B-DL-A

FICHE 1 OF 1

NOV 1976

digital

MADE IN U.S.A.



IDENTIFICATION

PROGRAM CODE: MAINDEC-11-DZDMC-B-D

PROGRAM NAME: DMC11 TRANSMITTER AND RECEIVER LOGIC TEST

DATE: APRIL 1976

MAINTAINER: DIAGNOSTIC GROUP

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ABSTRACT

THE DH11 TRANSMITTER AND RECEIVER LOGIC TEST CHECKS
THE BASIC TRANSMITTER AND RECEIVER FUNCTIONS.
FUNCTIONS TESTED INCLUDE INTERRUPTS, OPERATION OF
TRANSMITTER MFR LOGIC, AND OPERATION OF RECEIVER SILO LOGIC.

3. REQUIREMENTS

2.1 EQUIPMENT

PDP-11 FAMILY STANDARD COMPUTER WITH 4KW OF MEMORY
ASR-33 TELETYPE OR EQUIVALENT
DH11 ASYNCHRONOUS MULTIPLEXER
DM11 MAINTENANCE CARD INSTALLED

2.2 STORAGE

THE PROGRAM LOADS INTO 4KW OF MEMORY

3. LOADING PROCEDURE

THE STANDART PROCEDURE FOR LOADING ABSOLUTE BINARY TAPES
IS TO BE USED

4. STARTING PROCEDURE

4.1 CONTROL SWITCH SETTINGS

4.1.1 AFTER PROGRAM LOAD (INITIAL PROGRAM START)

ALL CONSOLE SWITCHES DOWN

4.1.2 TO MODIFY DEVICE VECTOR AND CONTROL REGISTER ADDRESSES
AFTER PROGRAM RESTART

SW00=1

4.1.3 TO START PROGRAM AT SELECTED TEST AFTER PROGRAM RESTART

SW01=1

4.2 STARTING ADDRESS

THE STARTING ADDRESS FOR ALL TESTS IS 000200

THE RESTART ADDRESS FOR ALL TESTS I 002000

THE STARTING ADDRESS TO ENTER A SELECTED TEST IS 003200

4.3 PROGRAM AND/OR OPERATOR ACTION

4.3.1 INITIAL PROGRAM START

4.3.1.1 LOAD PROGRAM INTO MEMORY
4.3.1.2 LOAD ADDRESS 000200
4.3.1.3 CLEAR CONSOLE SWITCHES
4.3.1.4 PRESS START
4.3.1.5 THE PROGRAM WILL TYPE "DH11 XXXX
AND WILL THEN TYPE "VECTOR ADDRESS-" AND WAIT FOR AN
INPUT FROM THE TELETYPE KEYBOARD.

4.3 (CONT'D)

4.3.1.6 TYPE IN THE ADDRESS OF THE RECEIVER INTERRUPT VECTOR
FOR THE DH11 TO BE TESTED FOLLOWED BY <CARRIAGE RETURN>

NOTE: WORDS IN ANGLE BRACKETS, I.E. <CARRIAGE RETURN> MEAN THAT
THE TELETYPE KEY WITH THE NAMED FUNCTION SHOULD BE STRUCK

IF AN INCORPECT ADDRESS IS ENTERED, THE PROGRAM
WILL TYPE "?" AND WILL REPEAT THE SECOND MESSAGE OF 4.3.1.5
4.3.1.7 THE PROGRAM WILL TYPE "CONTROL REGISTER ADDRESS-"
AND WAIT FOR AN INPUT FROM THE TELETYPE KEYBOARD

4.3.1.9 TYPE IN THE ADDRESS OF THE SYSTEM CONTROL REGISTER OF THE
DH11 TO BE TESTED FOLLOWED BY <CARRIAGE RETURN>

IF AN INCORRECT ADDRESS IS TYPED, THE PROGRAM WILL TYPE
"?" AND WILL THEN REPEAT THE MESSAGE OF 4.3.1.7
4.3.1.9 THE PROGRAM WILL TYPE "R" TO INDICATE THAT IT IS
ABOUT TO START TESTING, AND THEN TESTING WILL BEGIN

4.3.2 PROGRAM RESTART WITH ALL SWITCHES DOWN

4.3.2.1 PERFORM 4.3.1.2 TO 4.3.1.5
4.3.2.2 THE PROGRAM WILL TYPE "DH11 XXXX
AND WILL THEN CONTINUE AS DESCRIBED IN 4.3.1.9

4.3.3 PROGRAM RESTART WITH SW00=1

4.3.3.1 LOAD ADDRESS 000200
4.3.3.2 SET SW01=1
4.3.3.3 PRESS START
4.3.3.4 THE PROGRAM WILL PERFORM AS DESCRIBED IN 4.3.1.5 TO 4.3.1.9

4.3.4 PROGRAM RESTART WITH SW01=1

4.3.4.1 LOAD ADDRESS 000200
4.3.4.2 SET SW01=1
4.3.4.3 PRESS START
4.3.4.4 THE PROGRAM WILL TYPE "DH11 XXXX
AND WILL THEN TYPE "TEST FO-" AND WILL WAIT FOR AN INPUT
FROM THE TELETYPE KEYBOARD
4.3.4.5 TYPE IN THE ADDRESS OF THE TEST AT WHICH THE PROGRAM IS TO
BE STARTED FOLLOWED BY <CARRIAGE RETURN>
4.3.4.6 THE PROGRAM WILL TYPE R TO INDICATE THAT IT HAS STARTED
AND WILL START TESTING AT THE SELECTED TEST.

NOTE: CARE MUST BE TAKEN WHEN THS FEATURE IS USED, SINCE
THERE IS NO PROTECTION AGAINST SELECTING AN ADDRESS THAT
IS IN THE MIDDLE OF A TEST

NOTE: IF IT IS DESIRED TO LOOP ON THE TEST THAT IS SELECTED
SET SW14=1 BEFORE ENTERING THE TEST ADDRESS

5. OPERATING PROCEDURE

5.1 OPERATIONAL SWITCH SETTINGS

SW15=1, HALT ON ERROR
SW14=1, LOOP ON CURRENT TEST
SW13=1, SUPPRESS ERROR TYPEOUT
SW11=1, INHIBIT ITERATIONS
SW10=1, ESCAPE TO NEXT TEST ON ERROR
SW09=1, FREEZE VARIABLE PARAMETER IN CURRENT TEST
SW01=1, START PROGRAM AT SELECTED TEST
SW00=1, CHANGE PARAMETERS AT PROGRAM RESTART

5.2 SUBROUTINE ABSTRACTS

5.2.1 TRAPCATCHER (LOCATIONS 000000-000776)

THIS ROUTINE IS USED TO INTERCEPT UNEXPECTED INTERRUPTS
AND TRAPS. THE AREA FROM 000000-000776 IS LOADED
WITH THE FOLLOWING SEQUENCE

```
        2
        0
        4
        0
        .
        .
        .
        772
        0
        776
        0
```

IF AN UNEXPECTED INTERRUPT OR TRAP OCCURS, THE PROGRAM
WILL HALT WITH THE PC 2 GREATER THAN THE ADDRESS TO
WHICH THE PROGRAM TRAPPED. THE PROCESSOR STACK MAY
BE EXAMINED TO DETERMINE WHERE THE PROGRAM WAS WHEN THE
TRAP OR INTERRUPT OCCURED.

5.2.2 START (PROGRAM INITIALIZATION)

THIS ROUTINE INITIALIZES ALL PROGRAM FLAGS AND COUNTERS.
TYPES THE PROGRAM TITLE MESSAGE, AND INPUTS THE VECTOR
AND CONTROL REGISTER ADDRESSES OF THE DH11 TO BE TESTED.

5.2.3 BEGIN (PROGRAM START AND RESTART)

THIS ROUTINE IS ENTERED IMMEDIATLY AFTER "START"
AND EACH TIME A PROGRAM PASS HAS BEEN COMPLETED.
THE ROUTINE SETS UP THE PROCESSOR STACK AND STATUS WORD
AND THEN TRANSFERS CONTROL TO THE TEST AT WHICH
TESTING WILL BEGIN. IF SW01=0 WHEN THIS ROUTINE IS ENTERD
TESTING WILL START AT T1 (TEST 1). IF SW01=1 WHEN
THIS ROUTINE IS ENTERED, TESTING WILL START AT THE PC
ENTERED FROM THE TELETYPE KEYBOARD.

5.2.4 EOP (END OF PASS)

THIS ROUTINE IS ENTERED ONCE PER PASS AFTER ALL TESTS HAVE BEEN COMPLETED. THIS ROUTINE TYPES THE MAINDEC IDENTIFICATION CODE OF THE PROGRAM, CLEARS ERROR FLAGS AND UPDATES THE PASS COUNT. IF THE PROGRAM WAS LOADED UNDER ACT11 OR DDP, THE ROUTINE CHECKS FOR RETURN TO THE ACT11 OR DDP MONITOR. IF THE PROGRAM IS NOT UNDER MONITOR CONTROL, THE ROUTINE TRANSFERS TO BEGIN.

5.2.5 SCOPER (SCOPE LOOP AND ITERATION HANDLER)

THIS ROUTINE IS ENTERED EACH TIME A TEST IS COMPLETED. THE ROUTINE CHECKS FOR THE FOLLOWING UPON ENTRY

A) IF SW10=1, THE ROUTINE WILL TRANSFER TO THE NEXT TEST IN SEQUENCE, AFTER CLEARING ERROR FLAGS.
B) IF SW11=1, THE ROUTINE WILL TRANSFER TO THE NEXT TEST SEQUENCE, AFTER CLEARING ERROR FLAGS.
C) IF SW14=1, THE ROUTINE WILL LOOP ON THE CURRENT TEST REGARDLESS OF THE ITERATION COUNT.

IF NONE OF THE ABOVE IS TRUE, THE ROUTINE WILL ADD 1 TO THE COUNT OF TEST ITERATIONS, AND COMPARE THIS VALUE TO THE NUMBER OF ITERATIONS THAT SHOULD BE PERFORMED. IF THESE NUMBERS ARE EQUAL, THE ROUTINE WILL TRANSFER TO THE NEXT TEST IN SEQUENCE. THE THE NUMBERS ARE NOT EQUAL, THE TEST CURRENTLY IN PROGRESS WILL BE REPEATED.

5.2.6 SCOP1R (FREEZE ON CURRENT DATA)

THE CALL TO THIS ROUTINE FOLLOWS IMMEDIATLY AFTER THE THE CALL TO THE ERROR HANDLER IN THOSE TESTS THAT HAVE VARIABLE PARAMETERS. THIS ROUTINE IS ALWAYS ENTERED IN THOSE TESTS, WHETHER OR NOT AN ERROR OCCURS.
IF SW09=1, THE ROUTINE WILL TRANSFER CONTROL BACK TO THE TEST AT A POINT WHICH WILL ALLOW REPEATING THE FUNCTION UNDER TEST CONTINUOUSLY WITH THE SAME DATA. IF THIS OPTION IS SELECTED, THE ROUTINE "SCOPER" IS NEVER ENTERED AND ITERATION COUNTS WILL NOT BE UPDATED.

5.2.7 ERRORS (ERROR HANDLER)

THIS ROUTINE IS ENTERED UPON ERROR DETECTION ONLY.
WITH ALL CONSOLE SWITCHES DOWN, THE ROUTINE PROCEDES AS FOLLOWS:
A) THE PC OF THE INSTRUCTION THAT CALLED THE ERROR HANDLER
   IS ACCESSED THRU THE STACK, AND HEN THE EMT INSTRUCTION
   ITSELF IS FETCHED. THE 8 LSB OF THE EMT
   INSTRUCTION ARE THE ERROR CODE. THIS CODE IS
   USED TO ACCESS A TABLE OF ERROR MESSAGES AND ERROR
   DATA STORAGE LOCATIONS.
B) IF THE TEST THAT FAILED DID NOT FAIL PREVIOUSLY
   DURING THIS PASS, A COMPLETE ERROR REPORT IS MADE
   IF THE TEST THAT FAILED FAILED MOR THAT ONCE DURING
   THE CURRENT PASS, ONLY THE DATA RELATING TO THE FAILUER
   IS TYPED. IF SW13=1, NO ERROR TYPEOUT IS MADE.
C) THE ROUTINE NOW CHECKS FOR HALT ON ERROR. IF SW15=1
   THE PROGRAM WILL HALT WITH THE PC OF THE CALL TO
   THE ERROR ROUTINE IN R0. IF SW15=0, THE PROGRAM WILL
   NOT HALT, BUT WILL CHECK FOR ESCAPE TO NEXT TEST.
D) IF SW10=0, THE ROUTINE WILL RETURN
   TO THE TEST IN PROGRESS. IF SW10=1, THE ROUTINE WILL
   ABORT THE CURRENT TEST, AND TRANSFER TO THE NEXT
   TEST IN SEQUENCE, THRU THE ROUTINE "SCOPER".

5.2.8 TRPSRV (TRAP DECODE AND DISPATCH)

THIS ROUTINE DECODES THE 9 LSB OF THE TRAP INSTRUCTION
THAT CAUSED TH PROGRAM INTERRUPT, AND TRANSFERS CONTROL
TO THE ROUTINE THRL THE TABLE "TRPTAB" USING THE 9 LSB
OF THE TRAP INSTRUCTION AS AN OFFSET TO THE POINTER TO
THE ROUTINE TO BE ENTERED.

5.3 PROGRAM AND OR OPERATOR ACTION

5.3.1 PROGRAM START WITH ALL SWITCHES DOWN

5.3.1.1 REFER TO SECTIONS 4.3.1 AND 4.3.2 FOR INITIAL PROGFAM BEHAVIOR.

5.3.1.2 AFTER "R" HAS BEEN TYPED BY THE PROGRAM, TEST EXECUTION WILL BEGIN. EACH TEST WILL BE REPEATED A SELECTED NUMBER OF ITERATIONS (SEE LISTING FOR EXACT NUMBER FOR EACH TEST) AND THEN THE PROGRAM WILL PROCEED TO THE NEXT TEST.

5.3.1.3 WHEN ALL ITERATIONS H. /E BEEN COMPLETED, THE PROGRAM WILL TYPE "DZDHX" AND THEN RESTART TESTING AT TEST 1 (LOCATION T1 IN THE PROGRAM).

5.3.1.4 IF AN ERROR OCCURS, THE FROGRAM WILL TYPE AN APPROPRIATE ERROR MESSAGE, AND THEN CONTINUE THE TEST IN PROGRESS.

5.3.2 PROGRAM START WITH SW00=1

THE PROGRAM WILL PERFORM AS DESCRIBED IN 4.3.1 AND 5.3.1

5.3.3 PROGRAM START WITH SW01=1

5.3.3.1 REFER TO SECTION 4.3.4 FOR INITIAL PROGRAM BEHAVIOR

5.3.3.2 TEST EXECUTION WILL START AT THE ADDRESS SPECIFIED AND WILL CONTINUE AS DESCRIBED IN 5.3.1.2

5.3.3.3 AFTER "DZDHX" HAS BEEN TYPED, THE PROGRAM WILL RESUME TESTING AT TEST 1

5.3.4 PROGRAM OPERATION WITH SW15=1

SAME AS 5.3.1, EXCEPT THAT IN THE CASE OF AN ERROR, THE PROGRAM WILL HALT AFTER THE ERROR TYPEOUT, AND THE PC+2 OF THE CALL TO THE ERROR ROUTINE WILL BE DISPLAYED IN R0.

5.3.5 PROGRAM OPERATION WITH SW13=1

SAME AS 5.3.1 EXCEPT THAT NO ERROR TYPEOUTS WILL OCCUR

5.3.6 PROGRAM OPERATION WITH SW11=1

SAME AS 5.3.1 EXCEPT THAT EACH TEST WILL BE REPEATED ONCE ONLY

5.3.7 PROGRAM OPERATION WITH SW10=1

SAME AS 5.3.1, EXCEPT THAT IN THE CASE OF AN ERROR THE CURRENT TEST WILL BE ABORTED, AND THE PROGRAM WILL PROCEED TO THE NEXT TEST IN SEQUENCE.

5. (CONT'D)

5.3.8 PROGRAM OPERATION WITH SW14=1, OR SW09=1

THESE FUNCTIONS ARE NORMALLY USED FOR TROUBLE SHOOTING.
SEE SECTION 6.3 FOR THEIR USE.

6. ERRORS

6.1 ERROR HALTS

THE ERROR MESSAGE FORMAT FOR ALL ERROR TYPEOUTS
IS AS FOLLOWS

```
PC+2    MESSAGE
        HEADER (IF APPLICABLE)
        DATA    (IF APPLICABLE)
```

WHERE
PC+2 IS THE ADDRESS OF THE CALL TO THE ERROR HANDLER + 2
MESSAGE IS AN ASCII MESSAGE DESCRIBING (BRIEFLY) THE FAILURE
HEADER IS A DESCRIPTION OF THE DATA TO FOLLOW
DATA IS OCTAL INFORMATION RELATING TO THE CAUSE OF THE FAILURE
IF THE SAME ERROR OCCURS IN A GIVEN TEST ON THE SAME
PASS, AND IF DATA IS ASSOCIATED WITH THAT ERROR, ONLY
DATA IS TYPE ON SUCCEEDING ERROR TYPEOUTS

IF NO DATA IS ASSOCIATED WITH THE ERROR
THE COMPLETE ERROR MESSAGE IS TYPED.

6.1.1 ERROR DESCRIPTIONS

SEE LISTING FOR DETAILS OF ERRORS

6.2 ERROR RECOVERY

6.2.1 SW15=0

IF THE PROGRAM IS RUN WITH SW15=0, NO OPERATOT ACTION IS
REQUIRED TO CONTINUE TESTING

6.2.2 SW15=1

IF THE PROGRAM IS RUN WITH SW15=1, TO CONTINUE TESTING
AFTER THE PROGRAM HAS HALTED, PRESS THE PROCESSOR
CONSOLE CONTINUE SWITCH

6.2.3 ILLEGAL INTERRUPTS

IF AN INTERRUPT OCCURS TO A VECTOR ADDRESS NOT
SELECTED DURING PROGRAM INITIALIZATION, THE PROGRAM WILL
HALT IN THE TRAPCATCHER. THE ADDRESS AT WHICH
THE PROGRAM HALTS IS 2 GREATER THAN THE ADDRESS
TO WHICH THE INTERRUPT OCCURED. THE PROGRAM MUST BE
RESTARTED AT 200 TO RECOVER FROM THIS ERROR.

6.3 SCOPE LOOPING

6.3.1 TO SCOPE ON A SPECIFIC TEST, SET SW14=1 AND SW13=1
THIS WILL CAUSE THE PROGRAM TO CONTINUOUSLY LOOP ON THE
SAME TEST, AND WILL CAUSE ALL ERROR TYPEOUTS TO BE INHIBITED

6.3.2 TO SCOPE ON A SPECIFIC VALUE OF A PARAMETER WITHIN
A TEST, SET SW09=1 TO FREEZE THE DATA
(SEE LISTING FOR THOSE TESTS THAT INCORPORATE THIS FEATURE)

6. (CONT'D)

6.3.3 PROGRAM START TO SCOPE LOOP ON SELECTED TEST

PERFORM SECTION 4.3.4 WITH SW14=1

7. RESTRICTIONS

7.1 STARTING

THE DH11 TEST CARD MUST BE INSTALLED

7.2 RUNNING

NONE

8. MISCELLANEOUS

8.1 EXECUTION TIME

THE TIME FOR ONE PASS OF THE PROGRAM (END OF
TYPEOUT OF DZDHX TO END OF TYPEOUT OF DZDHX)
IS GIVEN FOR VARIOUS PROCESSORS IN THE TABLE BELOW

PROCESSOR	TIME
PDP-11/05,10	
PDP-11/20	
PDP-11/40	
PDP-11/45	

```
                                9.      PROGRAM DESCRIPTION

                                        THE FIRST GROUP OF TESTS VERIFIES THAT NO INTERRUPTS OCCUR
                                        WITH INTERRUPT ENABLES SET FOR EACH INTERRUPTING FUNCTION
                                        AND THE ASSOCIATED DONE BIT OR FLAG FOR THAT FUNCTION CLEARED.

                                        THE NEXT GROUP OF TESTS VERIFIES THAT AN INTERRUPT DOES
                                        OCCUR IF A SPECIFIC DONE BIT OR FLAG IS SET, ALONG
                                        WITH ITS CORRESPONDING INTERRUPT ENABLE.
                                        AT THIS TIME, INTERRUPTS TO THE CORRECT VECTOR ARE TESTED.
                                        IF AN INTERRUPT OCCURS TO ANY VECTOR OTHER THAN THOSE
                                        SELECTED AT PROGRAM START, THE PROGRAM WILL HALT IN THE
                                        TRAPCATCHER IN A LOCATION 2 GREATER THAN THE ADDRESS
                                        OF THE VECTOR TO WHICH THE INTERRUPT OCCURED.

                                        THE NEXT GROUP OF TESTS CHECKS TRANSMITTER NPR AND
                                        INTERRUPT LOGIC OPERATION FOR EACH LINE, IN AN
                                        INDIVIDUAL TEST FOR EACH LINE.  THE BYTE COUNT FOR
                                        THE SELECTED LINE IS SET TO -1 (FOR 1 CHARACTER TRANSMISSION)
                                        AND THE BUS ADDRESS MEMORY LOCATION FOR THAT LIN IS
                                        SET TO 0.  THE BAR BIT FOR THE SELECTED LINE IS SET,
                                        TRANSMITTER INTERRUPT ENABLE IS SET, AND THE PROCESSOR
                                        STATUS WORD IS CLEARED TO ALLOW INTERRUPTS TO OCCUR.
                                        A DELAY LOOP IS THEN ENTERED, AND IF THE DELAY TIMES
                                        OUT BEFORE AN INTERRUPT OCCURS, AN ERROR MESSAGE IS
                                        TYPED.  IF AN INTERRUPT DOES OCCUR, THE CONTROL REGISTER
                                        IS TESTED TO SEE IF THE TRANSMITTER DONE BIT
                                        HAS BEEN SET, THE BAR REGISTER IS CHECKED TO
                                        SEE THAT THE BAR BIT FOR THE SELECTED LIN HAS CLEARED.
                                        BYTE COUNT IS CHECKED TO SEE THAT IT WENT TO 0
                                        AND THE BUS ADDRESS REGISTER FOR THE SELECTED LINE
                                        IS CHECKED TO SEE THAT IT INCREMENTED TO 1.

                                        THE NEXT GROUP OF TESTS VERIFIES THAT A SINGLE SELECTED
                                        LINE WILL PERFORM TRANSMIT FUNCTIONS WITHOUT AFFECTING
                                        ANY OTHER LINE.  THIS IS DONE BY SETTING ALL BYTE
                                        COUNTS TO -1, AND VERIFYING THAT ONLY THE LINE SELECTED
                                        FOR TRANSMISSION HAD CHANGES MADE IN BYTE COUNT AND BUS ADDRESS
                                        WHEN TRANSMISSION HAS BEEN COMPLETED.

                                        THE NEXT TEST VERIFIES THAT A SINGLE CHARACTER CAN BE
                                        LOADED INTO THE SILO (IN MAINTENANCE MODE).
                                        THE TEST IS MADE WITH INTERRUPTS ENABLED AND CHECKS ARE
                                        MADE TO DETERMINE IF RECEIVER DONE WAS SET, IF THE SILO
                                        FILL LEVEL REGISTER WAS INCREMENTED, AND IF THE
                                        DATA RECEIVED IN MAINTENANCE MODE WAS CORRECT.
```

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                                        9.      (CONT'D)

                                                THE NEXT TEST VERIFIES THAT FROM 1 TO 63 CHARACTERS
                                                CAN BE LOADED INTO THE SILO, AND THAT THE SILO FILL
                                                LEVEL REGISTER INDICATES THE CORRECT NUMBER OF CHARACTERS
                                                IN THE SILO.

                                                THE NEXT TEST VERIFIES THAT 64 CHARACTERS CAN BE LOADED
                                                INTO THE SILO, FROM 1 TO 64 CHARACTERS CAN BE READ OUT OF
                                                THE SILO, AND THAT THE SILO FILL REGISTER INDICATES THE
                                                NUMBER OF CHARACTERS REMAINING IN THE SILO.

                                                THE FINAL TEST VERIFIES THAT THE CHARACTER AVAILABLE
                                                FLAG WILL NOT BE SET UNTIL THE SILO FILL LEVEL EXCEEDS THE
                                                SILO ALARM LEVEL, FOR ALL ALARM LEVELS 0-63.

                                        10.     LISTING


                                                !



                                        ;DH11 TRANSMITTER AND RECEIVER BASIC LOGIC TEST
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                                                ;STARTING PROCEDURE
                                                ;LOAD PROGRAM
                                                ;LOAD ADDRESS 000200
                                                ;PRESS START
                                                ;PROGRAM WILL TYPE DH11 TRANSMITTER AND RECEIVER BASIC LOGIC TEST
                                                ;PROGRAM WILL TYPE "VECTOR ADDRESS-"
                                                ;TYPE IN THE ADDRESS OF THE RECEIVER INTERRUPT VECTOR
                                                ;FOR THE DH11 TO BE TESTED, FOLLOWED BY <CARRIAGE RETURN>
                                                ;PROGRAM WILL TYPE "CONTROL REGISTER ADDRESS-"
                                                ;TYPE IN THE ADDRESS OF THE SYSTEM CONTROL REGISTER
                                                ;FOR THE DH11 TO BE TESTED, FOLLOWED BY <CARRIAGE RETURN>
                                                ;PROGRAM WILL TYPE "R" TO INDICATE THAT TESTING HAS STARTED
                                                ;AT THE END OF A PASS, PROGRAM WILL TYPE " DZDHC "
                                                ;AND THEN RESUM TESTING


                                        ;SWITCH REGISTER OPTIONS

100000                                  SW15=100000             ;=1,HALT ON ERROR
040000                                  SW14=40000              ;=1,LOOP ON CURRENT TEST
020000                                  SW13=20000              ;=1,INHIBIT ERROR TYPEOUT
010000                                  SW12=10000
004000                                  SW11=4000               ;=1,INHIBIT ITERATIONS
002000                                  SW10=2000               ;=1,ESCAPE TO NEXT TEST ON ERROR
001000                                  SW09=1000               ;=1,LOOP WITH CURRENT DATA
000400                                  SW08=400
000100                                  SW06=100
000040                                  SW05=40
000020                                  SW04=20
```

```
   553          000010                  SW03=10
   554          000004                  SW02=4
   555          000002                  SW01=2
   556          000001                  SW00=1
   557
```

```
;RESTART PROGRAM AT SELECTED TEST
;RESELECT VECTOR AND CONTROL REGISTER
;ADDRESS AFTER PROGRAM RESTART
```

```
                        ;REGISTER DEFINITIONS

000000                  R0=%0           ;GENERAL REGISTER
000001                  R1=%1           ;GENERAL REGISTER
000002                  R2=%2           ;GENERAL REGISTER
000003                  R3=%3           ;GENERAL REGISTER
000004                  R4=%4           ;GENERAL REGISTER
000005                  R5=%5           ;GENERAL REGISTER
000006                  SP=%6           ;PROCESSOR STACK POINTER
000007                  PC=%7           ;PROGRAM COUNTER

                        ;LOCATION EQUIVALENCIES

177570                  SWR=177570      ;CONSOLE SWITCH REGISTER
[illegible]             LIGHTS=177570   ;POP-11/45 DISPLAY REGISTER
177776                  PS=177776       ;PROCESSOR STATUS WORD
[illegible]             STACK=ENDCOD+200;START OF PROCESSOR STACK

                        ;INSTRUCTION DEFINITIONS

005746                  PUSH1SP=5746    ;DECREMENT PROCESSOR STACK 1 WORD
005726                  POP1SP=5726     ;INCREMENT PROCESSOR STACK 1 WORD
010046                  PUSHR0=10046    ;SAVE R0 ON STACK
012600                  POPR0=12600     ;RESTORE R0 FROM STACK
024646                  PUSH2SP=24646   ;DECREMENT STACK TWICE
022626                  POP2SP=22626    ;INCREMENT STACK TWICE
                        .EQUIV  EMT,HLT ;BASIC DEFINITION OF ERROR CALL


100000                  BIT15=100000
040000                  BIT14=40000
020000                  BIT13=20000
010000                  BIT12=10000
004000                  BIT11=4000
002000                  BIT10=2000
001000                  BIT09=1000
000400                  BIT08=400
000200                  BIT07=200
000100                  BIT06=100
000040                  BIT05=40
000020                  BIT04=20
000010                  BIT03=10
000004                  BIT02=4
000002                  BIT01=2
000001                  BIT00=1
```

```
                                                ;TRAPCATCHER FOR ILLEGAL INTERRUPTS
                                        .=0
000000 000002                           .+2             ;UNEXPECTED TRAP TO THIS LOCATION
000002 000000                           HALT            ;EXAMINE STACK TO FIND CAUSE
000004 000002                           .+2             ;UNEXPECTED TRAP TO THIS LOCATION
000006 000000                           HALT            ;EXAMINE STACK TO FIND CAUSE
000010 000002                           .+2             ;UNEXPECTED TRAP TO THIS LOCATION
000012 000000                           HALT            ;EXAMINE STACK TO FIND CAUSE
000014 000002                           .+2             ;UNEXPECTED TRAP TO THIS LOCATION
000016 000000                           HALT            ;EXAMINE STACK TO FIND CAUSE
000020 000002                           .+2             ;UNEXPECTED TRAP TO THIS LOCATION
000022 000000                           HALT            ;EXAMINE STACK TO FIND CAUSE
000024 000002                           .+2             ;UNEXPECTED TRAP TO THIS LOCATION
000026 000000                           HALT            ;EXAMINE STACK TO FIND CAUSE
000030 000002                           .+2             ;UNEXPECTED TRAP TO THIS LOCATION
000032 000000                           HALT            ;EXAMINE STACK TO FIND CAUSE
000034 000002                           .+2             ;UNEXPECTED TRAP TO THIS LOCATION
000036 000000                           HALT            ;EXAMINE STACK TO FIND CAUSE
000040 000002                           .+2             ;UNEXPECTED TRAP TO THIS LOCATION
000042 000000                           HALT            ;EXAMINE STACK TO FIND CAUSE
000044 000002                           .+2             ;UNEXPECTED TRAP TO THIS LOCATION
000046 000000                           HALT            ;EXAMINE STACK TO FIND CAUSE
000050 000002                           .+2             ;UNEXPECTED TRAP TO THIS LOCATION
000052 000000                           HALT            ;EXAMINE STACK TO FIND CAUSE
000054 000002                           .+2             ;UNEXPECTED TRAP TO THIS LOCATION
000056 000000                           HALT            ;EXAMINE STACK TO FIND CAUSE
000060 000002                           .+2             ;UNEXPECTED TRAP TO THIS LOCATION
000062 000000                           HALT            ;EXAMINE STACK TO FIND CAUSE
000064 000002                           .+2             ;UNEXPECTED TRAP TO THIS LOCATION
000066 000000                           HALT            ;EXAMINE STACK TO FIND CAUSE
000070 000002                           .+2             ;UNEXPECTED TRAP TO THIS LOCATION
000072 000000                           HALT            ;EXAMINE STACK TO FIND CAUSE
000074 000002                           .+2             ;UNEXPECTED TRAP TO THIS LOCATION
000076 000000                           HALT            ;EXAMINE STACK TO FIND CAUSE
000100 000002                           .+2             ;UNEXPECTED TRAP TO THIS LOCATION
000102 000000                           HALT            ;EXAMINE STACK TO FIND CAUSE
000104 000002                           .+2             ;UNEXPECTED TRAP TO THIS LOCATION
000106 000000                           HALT            ;EXAMINE STACK TO FIND CAUSE
000110 000002                           .+2             ;UNEXPECTED TRAP TO THIS LOCATION
000112 000000                           HALT            ;EXAMINE STACK TO FIND CAUSE
000114 000002                           .+2             ;UNEXPECTED TRAP TO THIS LOCATION
000116 000000                           HALT            ;EXAMINE STACK TO FIND CAUSE
000120 000002                           .+2             ;UNEXPECTED TRAP TO THIS LOCATION
000122 000000                           HALT            ;EXAMINE STACK TO FIND CAUSE
000124 000002                           .+2             ;UNEXPECTED TRAP TO THIS LOCATION
000126 000000                           HALT            ;EXAMINE STACK TO FIND CAUSE
000130 000002                           .+2             ;UNEXPECTED TRAP TO THIS LOCATION
000132 000000                           HALT            ;EXAMINE STACK TO FIND CAUSE
000134 000002                           .+2             ;UNEXPECTED TRAP TO THIS LOCATION
000136 000000                           HALT            ;EXAMINE STACK TO FIND CAUSE
000140 000002                           .+2             ;UNEXPECTED TRAP TO THIS LOCATION
000142 000000                           HALT            ;EXAMINE STACK TO FIND CAUSE
000144 000002                           .+2             ;UNEXPECTED TRAP TO THIS LOCATION
000146 000000                           HALT            ;EXAMINE STACK TO FIND CAUSE
000150 000002                           .+2             ;UNEXPECTED TRAP TO THIS LOCATION
000152 000000                           HALT            ;EXAMINE STACK TO FIND CAUSE
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000154  000156                  .+2             ;UNEXPECTED TRAP TO THIS LOCATION
000156  000000                  HALT            ;EXAMINE STACK TO FIND CAUSE
000160  000162                  .+2             ;UNEXPECTED TRAP TO THIS LOCATION
000162  000000                  HALT            ;EXAMINE STACK TO FIND CAUSE
000164  000166                  .+2             ;UNEXPECTED TRAP TO THIS LOCATION
000166  000000                  HALT            ;EXAMINE STACK TO FIND CAUSE
000170  000172                  .+2             ;UNEXPECTED TRAP TO THIS LOCATION
000172  000000                  HALT            ;EXAMINE STACK TO FIND CAUSE
000174  000176                  .+2             ;UNEXPECTED TRAP TO THIS LOCATION
000176  000000                  HALT            ;EXAMINE STACK TO FIND CAUSE
000200  000202                  .+2             ;UNEXPECTED TRAP TO THIS LOCATION
000202  000000                  HALT            ;EXAMINE STACK TO FIND CAUSE
000204  000206                  .+2             ;UNEXPECTED TRAP TO THIS LOCATION
000206  000000                  HALT            ;EXAMINE STACK TO FIND CAUSE
000210  000212                  .+2             ;UNEXPECTED TRAP TO THIS LOCATION
000212  000000                  HALT            ;EXAMINE STACK TO FIND CAUSE
000214  000216                  .+2             ;UNEXPECTED TRAP TO THIS LOCATION
000216  000000                  HALT            ;EXAMINE STACK TO FIND CAUSE
000220  000222                  .+2             ;UNEXPECTED TRAP TO THIS LOCATION
000222  000000                  HALT            ;EXAMINE STACK TO FIND CAUSE
000224  000226                  .+2             ;UNEXPECTED TRAP TO THIS LOCATION
000226  000000                  HALT            ;EXAMINE STACK TO FIND CAUSE
000230  000232                  .+2             ;UNEXPECTED TRAP TO THIS LOCATION
000232  000000                  HALT            ;EXAMINE STACK TO FIND CAUSE
000234  000236                  .+2             ;UNEXPECTED TRAP TO THIS LOCATION
000236  000000                  HALT            ;EXAMINE STACK TO FIND CAUSE
000240  000242                  .+2             ;UNEXPECTED TRAP TO THIS LOCATION
000242  000000                  HALT            ;EXAMINE STACK TO FIND CAUSE
000244  000246                  .+2             ;UNEXPECTED TRAP TO THIS LOCATION
000246  000000                  HALT            ;EXAMINE STACK TO FIND CAUSE
000250  000252                  .+2             ;UNEXPECTED TRAP TO THIS LOCATION
000252  000000                  HALT            ;EXAMINE STACK TO FIND CAUSE
000254  000256                  .+2             ;UNEXPECTED TRAP TO THIS LOCATION
000256  000000                  HALT            ;EXAMINE STACK TO FIND CAUSE
000260  000262                  .+2             ;UNEXPECTED TRAP TO THIS LOCATION
000262  000000                  HALT            ;EXAMINE STACK TO FIND CAUSE
000264  000266                  .+2             ;UNEXPECTED TRAP TO THIS LOCATION
000266  000000                  HALT            ;EXAMINE STACK TO FIND CAUSE
000270  000272                  .+2             ;UNEXPECTED TRAP TO THIS LOCATION
000272  000000                  HALT            ;EXAMINE STACK TO FIND CAUSE
000274  000276                  .+2             ;UNEXPECTED TRAP TO THIS LOCATION
000276  000000                  HALT            ;EXAMINE STACK TO FIND CAUSE
000300  000302                  .+2             ;UNEXPECTED TRAP TO THIS LOCATION
000302  000000                  HALT            ;EXAMINE STACK TO FIND CAUSE
000304  000306                  .+2             ;UNEXPECTED TRAP TO THIS LOCATION
000306  000000                  HALT            ;EXAMINE STACK TO FIND CAUSE
000310  000312                  .+2             ;UNEXPECTED TRAP TO THIS LOCATION
000312  000000                  HALT            ;EXAMINE STACK TO FIND CAUSE
000314  000316                  .+2             ;UNEXPECTED TRAP TO THIS LOCATION
000316  000000                  HALT            ;EXAMINE STACK TO FIND CAUSE
000320  000322                  .+2             ;UNEXPECTED TRAP TO THIS LOCATION
000322  000000                  HALT            ;EXAMINE STACK TO FIND CAUSE
000324  000326                  .+2             ;UNEXPECTED TRAP TO THIS LOCATION
000326  000000                  HALT            ;EXAMINE STACK TO FIND CAUSE
000330  000332                  .+2             ;UNEXPECTED TRAP TO THIS LOCATION
000332  000000                  HALT            ;EXAMINE STACK TO FIND CAUSE
```

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717  000334  000336                    .+2          ;UNEXPECTED TRAP TO THIS LOCATION
718  000336  000000                    HALT         ;EXAMINE STACK TO FIND CAUSE
719  000340  000342                    .+2          ;UNEXPECTED TRAP TO THIS LOCATION
720  000342  000000                    HALT         ;EXAMINE STACK TO FIND CAUSE
721  000344  000346                    .+2          ;UNEXPECTED TRAP TO THIS LOCATION
722  000346  000000                    HALT         ;EXAMINE STACK TO FIND CAUSE
723  000350  000352                    .+2          ;UNEXPECTED TRAP TO THIS LOCATION
724  000352  000000                    HALT         ;EXAMINE STACK TO FIND CAUSE
725  000354  000356                    .+2          ;UNEXPECTED TRAP TO THIS LOCATION
726  000356  000000                    HALT         ;EXAMINE STACK TO FIND CAUSE
727  000360  000362                    .+2          ;UNEXPECTED TRAP TO THIS LOCATION
728  000362  000000                    HALT         ;EXAMINE STACK TO FIND CAUSE
729  000364  000366                    .+2          ;UNEXPECTED TRAP TO THIS LOCATION
730  000366  000000                    HALT         ;EXAMINE STACK TO FIND CAUSE
731  000370  000372                    .+2          ;UNEXPECTED TRAP TO THIS LOCATION
732  000372  000000                    HALT         ;EXAMINE STACK TO FIND CAUSE
733  000374  000376                    .+2          ;UNEXPECTED TRAP TO THIS LOCATION
734  000376  000000                    HALT         ;EXAMINE STACK TO FIND CAUSE
735  000400  000402                    .+2          ;UNEXPECTED TRAP TO THIS LOCATION
736  000402  000000                    HALT         ;EXAMINE STACK TO FIND CAUSE
737  000404  000406                    .+2          ;UNEXPECTED TRAP TO THIS LOCATION
738  000406  000000                    HALT         ;EXAMINE STACK TO FIND CAUSE
739  000410  000412                    .+2          ;UNEXPECTED TRAP TO THIS LOCATION
740  000412  000000                    HALT         ;EXAMINE STACK TO FIND CAUSE
741  000414  000416                    .+2          ;UNEXPECTED TRAP TO THIS LOCATION
742  000416  000000                    HALT         ;EXAMINE STACK TO FIND CAUSE
743  000420  000422                    .+2          ;UNEXPECTED TRAP TO THIS LOCATION
744  000422  000000                    HALT         ;EXAMINE STACK TO FIND CAUSE
745  000424  000426                    .+2          ;UNEXPECTED TRAP TO THIS LOCATION
746  000426  000000                    HALT         ;EXAMINE STACK TO FIND CAUSE
747  000430  000432                    .+2          ;UNEXPECTED TRAP TO THIS LOCATION
748  000432  000000                    HALT         ;EXAMINE STACK TO FIND CAUSE
749  000434  000436                    .+2          ;UNEXPECTED TRAP TO THIS LOCATION
750  000436  000000                    HALT         ;EXAMINE STACK TO FIND CAUSE
751  000440  000442                    .+2          ;UNEXPECTED TRAP TO THIS LOCATION
752  000442  000000                    HALT         ;EXAMINE STACK TO FIND CAUSE
753  000444  000446                    .+2          ;UNEXPECTED TRAP TO THIS LOCATION
754  000446  000000                    HALT         ;EXAMINE STACK TO FIND CAUSE
755  000450  000452                    .+2          ;UNEXPECTED TRAP TO THIS LOCATION
756  000452  000000                    HALT         ;EXAMINE STACK TO FIND CAUSE
757  000454  000456                    .+2          ;UNEXPECTED TRAP TO THIS LOCATION
758  000456  000000                    HALT         ;EXAMINE STACK TO FIND CAUSE
759  000460  000462                    .+2          ;UNEXPECTED TRAP TO THIS LOCATION
760  000462  000000                    HALT         ;EXAMINE STACK TO FIND CAUSE
761  000464  000466                    .+2          ;UNEXPECTED TRAP TO THIS LOCATION
762  000466  000000                    HALT         ;EXAMINE STACK TO FIND CAUSE
763  000470  000472                    .+2          ;UNEXPECTED TRAP TO THIS LOCATION
764  000472  000000                    HALT         ;EXAMINE STACK TO FIND CAUSE
765  000474  000476                    .+2          ;UNEXPECTED TRAP TO THIS LOCATION
766  000476  000000                    HALT         ;EXAMINE STACK TO FIND CAUSE
767  000500  000502                    .+2          ;UNEXPECTED TRAP TO THIS LOCATION
768  000502  000000                    HALT         ;EXAMINE STACK TO FIND CAUSE
769  000504  000506                    .+2          ;UNEXPECTED TRAP TO THIS LOCATION
770  000506  000000                    HALT         ;EXAMINE STACK TO FIND CAUSE
771  000510  000512                    .+2          ;UNEXPECTED TRAP TO THIS LOCATION
772  000512  000000                    HALT         ;EXAMINE STACK TO FIND CAUSE
```

```
773  000514  000516                .+2             ;UNEXPECTED TRAP TO THIS LOCATION
774  000516  000000                HALT            ;EXAMINE STACK TO FIND CAUSE
775  000520  000522                .+2             ;UNEXPECTED TRAP TO THIS LOCATION
776  000522  000000                HALT            ;EXAMINE STACK TO FIND CAUSE
777  000524  000526                .+2             ;UNEXPECTED TRAP TO THIS LOCATION
778  000526  000000                HALT            ;EXAMINE STACK TO FIND CAUSE
779  000530  000532                .+2             ;UNEXPECTED TRAP TO THIS LOCATION
780  000532  000000                HALT            ;EXAMINE STACK TO FIND CAUSE
781  000534  000536                .+2             ;UNEXPECTED TRAP TO THIS LOCATION
782  000536  000000                HALT            ;EXAMINE STACK TO FIND CAUSE
783  000540  000542                .+2             ;UNEXPECTED TRAP TO THIS LOCATION
784  000542  000000                HALT            ;EXAMINE STACK TO FIND CAUSE
785  000544  000546                .+2             ;UNEXPECTED TRAP TO THIS LOCATION
786  000546  000000                HALT            ;EXAMINE STACK TO FIND CAUSE
787  000550  000552                .+2             ;UNEXPECTED TRAP TO THIS LOCATION
788  000552  000000                HALT            ;EXAMINE STACK TO FIND CAUSE
789  000554  000556                .+2             ;UNEXPECTED TRAP TO THIS LOCATION
790  000556  000000                HALT            ;EXAMINE STACK TO FIND CAUSE
791  000560  000562                .+2             ;UNEXPECTED TRAP TO THIS LOCATION
792  000562  000000                HALT            ;EXAMINE STACK TO FIND CAUSE
793  000564  000566                .+2             ;UNEXPECTED TRAP TO THIS LOCATION
794  000566  000000                HALT            ;EXAMINE STACK TO FIND CAUSE
795  000570  000572                .+2             ;UNEXPECTED TRAP TO THIS LOCATION
796  000572  000000                HALT            ;EXAMINE STACK TO FIND CAUSE
797  000574  000576                .+2             ;UNEXPECTED TRAP TO THIS LOCATION
798  000576  000000                HALT            ;EXAMINE STACK TO FIND CAUSE
799  000600  000602                .+2             ;UNEXPECTED TRAP TO THIS LOCATION
800  000602  000000                HALT            ;EXAMINE STACK TO FIND CAUSE
801  000604  000606                .+2             ;UNEXPECTED TRAP TO THIS LOCATION
802  000606  000000                HALT            ;EXAMINE STACK TO FIND CAUSE
803  000610  000612                .+2             ;UNEXPECTED TRAP TO THIS LOCATION
804  000612  000000                HALT            ;EXAMINE STACK TO FIND CAUSE
805  000614  000616                .+2             ;UNEXPECTED TRAP TO THIS LOCATION
806  000616  000000                HALT            ;EXAMINE STACK TO FIND CAUSE
807  000620  000622                .+2             ;UNEXPECTED TRAP TO THIS LOCATION
808  000622  000000                HALT            ;EXAMINE STACK TO FIND CAUSE
809  000624  000626                .+2             ;UNEXPECTED TRAP TO THIS LOCATION
810  000626  000000                HALT            ;EXAMINE STACK TO FIND CAUSE
811  000630  000632                .+2             ;UNEXPECTED TRAP TO THIS LOCATION
812  000632  000000                HALT            ;EXAMINE STACK TO FIND CAUSE
813  000634  000536                .+2             ;UNEXPECTED TRAP TO THIS LOCATION
814  000636  000000                HALT            ;EXAMINE STACK TO FIND CAUSE
815  000640  000642                .+2             ;UNEXPECTED TRAP TO THIS LOCATION
816  000642  000000                HALT            ;EXAMINE STACK TO FIND CAUSE
817  000644  000646                .+2             ;UNEXPECTED TRAP TO THIS LOCATION
818  000646  000000                HALT            ;EXAMINE STACK TO FIND CAUSE
819  000650  000652                .+2             ;UNEXPECTED TRAP TO THIS LOCATION
820  000652  000000                HALT            ;EXAMINE STACK TO FIND CAUSE
821  000654  000656                .+2             ;UNEXPECTED TRAP TO THIS LOCATION
822  000656  000000                HALT            ;EXAMINE STACK TO FIND CAUSE
823  000660  000662                .+2             ;UNEXPECTED TRAP TO THIS LOCATION
824  000662  000000                HALT            ;EXAMINE STACK TO FIND CAUSE
825  000664  000666                .+2             ;UNEXPECTED TRAP TO THIS LOCATION
826  000666  000000                HALT            ;EXAMINE STACK TO FIND CAUSE
827  000670  000672                .+2             ;UNEXPECTED TRAP TO THIS LOCATION
828  000672  000000                HALT            ;EXAMINE STACK TO FIND CAUSE
```

```
829  000674  000676                .+2             ;UNEXPECTED TRAP TO THIS LOCATION
830  000676  000000                HALT            ;EXAMINE STACK TO FIND CAUSE
831  000700  000702                .+2             ;UNEXPECTED TRAP TO THIS LOCATION
832  000702  000000                HALT            ;EXAMINE STACK TO FIND CAUSE
833  000704  000706                .+2             ;UNEXPECTED TRAP TO THIS LOCATION
834  000706  000000                HALT            ;EXAMINE STACK TO FIND CAUSE
835  000710  000712                .+2             ;UNEXPECTED TRAP TO THIS LOCATION
836  000712  000000                HALT            ;EXAMINE STACK TO FIND CAUSE
837  000714  000716                .+2             ;UNEXPECTED TRAP TO THIS LOCATION
838  000716  000000                HALT            ;EXAMINE STACK TO FIND CAUSE
839  000720  000722                .+2             ;UNEXPECTED TRAP TO THIS LOCATION
840  000722  000000                HALT            ;EXAMINE STACK TO FIND CAUSE
841  000724  000726                .+2             ;UNEXPECTED TRAP TO THIS LOCATION
842  000726  000000                HALT            ;EXAMINE STACK TO FIND CAUSE
843  000730  000732                .+2             ;UNEXPECTED TRAP TO THIS LOCATION
844  000732  000000                HALT            ;EXAMINE STACK TO FIND CAUSE
845  000734  000736                .+2             ;UNEXPECTED TRAP TO THIS LOCATION
846  000736  000000                HALT            ;EXAMINE STACK TO FIND CAUSE
847  000740  000742                .+2             ;UNEXPECTED TRAP TO THIS LOCATION
848  000742  000000                HALT            ;EXAMINE STACK TO FIND CAUSE
849  000744  000746                .+2             ;UNEXPECTED TRAP TO THIS LOCATION
850  000746  000000                HALT            ;EXAMINE STACK TO FIND CAUSE
851  000750  000752                .+2             ;UNEXPECTED TRAP TO THIS LOCATION
852  000752  000000                HALT            ;EXAMINE STACK TO FIND CAUSE
853  000754  000756                .+2             ;UNEXPECTED TRAP TO THIS LOCATION
854  000756  000000                HALT            ;EXAMINE STACK TO FIND CAUSE
855  000760  000762                .+2             ;UNEXPECTED TRAP TO THIS LOCATION
856  000762  000000                HALT            ;EXAMINE STACK TO FIND CAUSE
857  000764  000766                .+2             ;UNEXPECTED TRAP TO THIS LOCATION
858  000766  000000                HALT            ;EXAMINE STACK TO FIND CAUSE
859  000770  000772                .+2             ;UNEXPECTED TRAP TO THIS LOCATION
860  000772  000000                HALT            ;EXAMINE STACK TO FIND CAUSE
861  000774  000776                .+2             ;UNEXPECTED TRAP TO THIS LOCATION
862  000776  000000                HALT            ;EXAMINE STACK TO FIND CAUSE
```

```
                                        ;STANDARD INTERPRUPT VECTORS


                000024          .=24
000024  015460                  PFAIL                   ;POWER FAIL HANDLER
000026  000340                  340                     ;SERVICE AT LEVEL 7
000030  014240                  ERRORS                  ;ERROR HANDLER
000032  000340                  340                     ;SERVICE AT LEVEL 7
000034  014442                  TRPSRV                  ;GENERAL HANDLER DISPATCH SERVICE
000036  000340                  340                     ;SERVICE AT LEVEL 7
                000200          .=200
000200  000167  000574          JMP     START           ;GO TO START OF PROGRAM


                                        ;DEFINITIONS FOR TRAP SUBROUTINE CALLS
                                        ;POINTERS TO SUBROUTINES CAN BE FOUND STARTING
                                        ;AT LOCATION "TRPTAB"

                104400                  SCOPE=TRAP+Y            ;SCOPE LOOP AND ITERATION HANDLER
                104401                  TYPE=TRAP+Y             ;TELETYPE OUTPUT ROUTINE
                104402                  OCTASC=TRAP+Y           ;OCTAL TO ASCII CONVERSION
                104403                  INSTR=TRAP+Y            ;INPUT ASCII STRING
                104404                  INSTER=TRAP+Y           ;STRING INPUT ERROR
                104405                  PARAM=TRAP+Y            ;CONVERT STRING TO OCTAL, CHECK LIMITS
                104406                  SAVSP=TRAP+Y            ;SAVE R0-R5, PC
                104407                  RESDE=TRAP+Y            ;RESTORE R0-R5
                104410                  SCOPE1=TRAP+Y           ;CHECK FOR FREEZE ON CURRENT DATA
                000046          .=46
000046  014106                  LOGICAL
                000052          .=52
000052  040000                  40000
```

```
                    001000                      .=1000
                                                ;PROGRAM INITIALIZATION
                                                ;LOCK OUT INTERRUPTS
                                                ;SET UP PROCESSOR STACK
                                                ;SET UP POWER FAIL VECTOR
                                                ;CLEAR PROGRAM FLAGS AND COUNTS
                                                ;TYPE TITLE MESSAGE
                                                ;DETERMINE MEMORY SIZE

001000  012767  000340  176770  START:  MOV     #340,PS             ;LOCK OUT INTERRUPTS
001006  012706  017102                  MOV     #STACK,SP           ;SET UP PROCESSOR STACK
001012  012737  015460  000024          MOV     #PFAIL,@#24         ;SET UP POWER FAIL TRAP
001020  005067  014426                  CLR     STFLG               ;CLEAR TEST START FLAG
001024  005067  014362                  CLR     PASCNT              ;CLEAR PASS COUNT
001030  005067  014360                  CLR     ERRCNT              ;CLEAR ERROR COUNT
001034  005067  014350                  CLR     ERRFLG              ;CLEAR ERROR FLAG
001040  005067  014344                  CLR     ERRFLG              ;CLEAR LAST ERROR PC
001044  104401  015624                  TYPE    ,MTITLE             ;TYPE TITLE MESSAGE
001050  005767  014374                  TST     INIFLG              ;CHECK INITIALIZATION FLAG
001054  001021                          BNE     VEC1                ;IF NOT 0, CHECK SWITCHES
                                                                    ;FOR REINITIALIZATION
001056  005000                  SIZE:   CLR     R0
001060  012737  001072  000004          MOV     #2$,@#4             ;SET UP TIME OUT RETURN
001066  005720                  1$:     TST     (R0)+               ;WILL TRAP WHEN NO MEMORY
001070  000776                          BR      1$                  ;LOCATION RESPONDED, CONTINUE
001072  010067  014360          2$:     MOV     R0,HCORE            ;R0 CONTAINS ADDRESS OF
001076  162767  000002  014352          SUB     #2,HCORE            ;NON EXISTATN MEMORY
001104  012737  000006  000004          MOV     #6,@#4              ;RESTORE TRAPCATCHER

001112  005767  014332                  TST     INIFLG              ;IF INITIALIZE FLAG=0
001116  001404                          BEQ     VEC2                ;GET VECTOR AND CSR ADDRESS
001120  032767  000001  176442  VEC1:   BIT     #SW00,SWR           ;IF SW00=1, GET NEW VECTOR
001126  001475                          BEQ     BEGIN               ;AND CSR
001130  012701  000300          VEC2:   MOV     #300,R1
001134  012702  000302                  MOV     #302,R2
001140  012703  000004                  MOV     #4,R3
001144  010211                  1$:     MOV     R2,(R1)             ;RESTORE TRAPCATCHER
001146  005012                          CLR     (R2)                ;IN FLOATING VECTOR AREA
001150  060301                          ADD     R3,R1
001152  060302                          ADD     R3,R2
001154  020127  001000                  CMP     R1,#1000
001160  001371                          BNE     1$
001162  104403                          INSTR                       ;INPUT ADDRESS OF DEVICE VECTOR
001164  015703                          MVECTOR                     ;MESSAGE "VECTOR ADDRESS-"
001166  104405                          PARAM                       ;CONVERT STRING TO OCTAL
001170  000300                          300                         ;LOW LIMIT
001172  000770                          770                         ;HIGH  LIMIT
001174  015400                          DHRVEC                      ;LOCATIONS TO BE FILLED
001176     003                  .BYTE   3                           ;NUMBER OF LOCATIONS
001177     004                  .BYTE   4                           ;LSB MASK
001200  104403                          INSTR                       ;INPUT ADDRESS OF DEVICE CSR
001202  015725                          MREGAD                      ;MESSAGE "CONTROL REGISTER ADDRESS-"
001204  104405                          PARAM                       ;CONVERT STRING TO OCTAL
001206  000000                          0                           ;LOW LIMIT
001210  177776                          177776                      ;HIGH LIMIT
```

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   951  001212  015356                          DHSCR                           ;LOCATIONS TO BE FILLED
   952  001214     007                .BYTE     7                               ;NUMBER OF LOCATIONS
   953  001215     010                .BYTE     10                              ;LSB MASK
   954  001216  016767  014152  014152          MOV       DHSSR,DHSLR           ;SET UP ADDRESS OF SILO
   955  001224  005267  014146                  INC       DHSLR                 ;STATUS REGISTER HIGH BYTE
   956  001230  005767  014214                  TST       INIFLG                ;IF INITIALIZATION FLAG
   957  001234  001002                          BNE       BEGIN                 ;IS CLEARED
   958  001236  005167  014206                  COM       INIFLG                ;SET IT
   959
   960                                          ;PROGRAM START
   961                                          ;CHECK FOR PROGRAM START AT SELECTED ADDRESS
   962
   963  001242  012767  000340  176526  BEGIN:  MOV       #340,PS               ;LOCK OUT INTERRUPTS
   964  001250  012706  017102                  MOV       #STACK,SP             ;SET UP PROCESSOR STACK
   965  001254  032767  000002  176306          BIT       #SW01,SWR             ;IF SW01=1
   966  001262  001410                          BEQ       1$                    ;GET PC FOR PROGRAM START
   967  001264  104403                          INSTR                           ;GET PC
   968  001266  016071                          MTSTPC                          ;MESSAGE "TEST PC"
   969  001270  104405                          PARAM                           ;CONVERT STRING TO OCTAL
   970  001272  000000                          0
   971  001274  017500                          17500
   972  001276  000207                          RETURN
   973  001300     001                .BYTE     1
   974  001301     001                .BYTE     1
   975  001302  000410                          BR        2$
   976  001304  012767  001334  014104  1$:     MOV       #T1,RETURN            ;NORMAL START, TEST 1
   977  001312  005767  014134                  TST       STFLG                 ;IF LOOPING, BYPASS TYPEOUT
   978  001316  001004                          BNE       3$
   979  001320  005167  014126                  COM       STFLG
   980  001324  104401  016065          2$:     TYPE      ,MR                   ;TYPE "R" TO INDICATE START
   981  001330  000177  014062          3$:     JMP       @RETURN               ;START TESTING
```

```
                                        ;INTERRUPT LOGIC TEST
                                        ;SET CHARACTER AVAILABLE INTERRUPT ENABLE
                                        ;VERIFY THAT NO INTERRUPTS OCCUR

001334  012767  000340  176434  T1:   MOV     #340,PS           ;DISABLE ALL INTERRUPTS
001342  012767  004000  014054        MOV     #4000,ICOUNT      ;SET UP FOR 4000 ITERATIONS
001350  012767  001470  014042        MOV     #3$,ESCAPE        ;SET UP TO ESCAPE TO NEXT TEST
001356  012777  004000  013772        MOV     #BIT11,@DHSCR     ;MASTER CLEAR INTERFACE
001364  012777  001440  014006        MOV     #1$,@DHRVEC       ;SET UP FOR POSSIBLE
                                                                ;RECEIVER INTERRUPT
001372  012777  000340  014002        MOV     #340,@DHRLVL
001400  012777  001454  013776        MOV     #2$,@DHTVEC       ;SET UP FOR POSSIBLE
                                                                ;TRANSMITTER INTERRUPT
001406  012777  000340  013772        MOV     #340,@DHTLVL
001414  012777  000100  013734        MOV     #BIT6,@DHSCR      ;SET CHARACTER AVAILABLE
                                                                ;INTERRUPT ENABLE
001422  005067  176350                CLR     PS                ;ALLOW INTERRUPTS
001426  000240                        NOP                       ;WINDOW FOR INTERRUPTS
001430  012767  000340  176340        MOV     #340,PS           ;NO INTERRUPT OCCURED
001436  000414                        BR      3$                ;CONTINUE
001440  017705  013712          1$:   MOV     @DHSCR,R5         ;GET CONTENTS OF SYSTEM CONTROL REGISTER
001444  104000                        HLT     0                 ;UNEXPECTED INTERRUPT
001446  012716  001470                MOV     #3$,(SP)                ;SET UP TO
001452  000002                        RTI                       ;RETURN FROM INTERRUPT
001454  017705  013676          2$:   MOV     @DHSCR,R5         ;GET CONTENTS OF SYSTEM CONTROL REGISTER
001460  104000                        HLT     0                 ;UNEXPECTED INTERRUPT
001462  012716  001470                MOV     #3$,(SP)                ;SET UPT TO
001466  000002                        RTI                       ;RETURN FROM INTERRUPT
001470  016777  013706  013702  3$:   MOV     DHRLVL,@DHRVEC    ;RESTORE TRAPCATCHER
001476  005077  013700                CLR     @DHRLVL
001502  016777  013700  013674        MOV     DHTLVL,@DHTVEC
001510  005077  013672                CLR     @DHTLVL
001514  104400                        SCOPE                     ;CHECK FOR ITERATIONS, LOOP

                                        ;INTERRUPT LOGIC TEST
                                        ;SET SILO OVERFLOW INTERRUPT ENABLE
                                        ;VERIFY THAT NO INTERRUPTS OCCUR

001516  012767  000340  176252  T2:   MOV     #340,PS           ;DISABLE ALL INTERRUPTS
001524  012767  004000  013672        MOV     #4000,ICOUNT      ;SET UP FOR 4000 ITERATIONS
001532  012767  001652  013660        MOV     #3$,ESCAPE        ;SET UP TO ESCAPE TO NEXT TEST
001540  012777  004000  013610        MOV     #BIT11,@DHSCR     ;MASTER CLEAR INTERFACE
001546  012777  001622  013624        MOV     #1$,@DHRVEC       ;SET UP FOR POSSIBLE
                                                                ;RECEIVER INTERRUPT
001554  012777  000340  013620        MOV     #340,@DHRLVL
001562  012777  001636  013614        MOV     #2$,@DHTVEC       ;SET UP FOR POSSIBLE
                                                                ;TRANSMITTER INTERRUPT
001570  012777  000340  013610        MOV     #340,@DHTLVL
001576  012777  010000  013552        MOV     #BIT12,@DHSCR     ;SET SILO OVERFLOW
                                                                ;INTERRUPT ENABLE
001604  005067  176166                CLR     PS                ;ALLOW INTERRUPTS
001610  000240                        NOP                       ;WINDOW FOR INTERRUPTS
001612  012767  000340  176156        MOV     #340,PS           ;NO INTERRUPT OCCURED
001620  000414                        BR      3$                ;CONTINUE
001622  017705  013530          1$:   MOV     @DHSCR,R5         ;GET CONTENTS OF SYSTEM CONTROL REGISTER
```

```
1038  001626  004000                          HLT     0                       ;UNEXPECTED INTERRUPT
1039  001630  012716  001652                  MOV     #3$,(SP)                        ;SET UP TO
1040  001634  000002                          RTI                             ;RETURN FROM INTERRUPT
1041  001636  017705  013514          2$:     MOV     @DHSCR,R5               ;GET CONTENTS OF SYSTEM CONTROL REGISTER
1042  001642  104000                          HLT     0                       ;UNEXPECTED INTERRUPT
1043  001644  012716  001652                  MOV     #3$,(SP)                        ;SET UPT TO
1044  001650  000002                          RTI                             ;RETURN FROM INTERRUPT
1045  001652  016777  013524  013520  3$:     MOV     DHRLVL,@DHRVEC          ;RESTORE TRAPCATCHER
1046  001660  005077  013516                  CLR     @DHRLVL
1047  001664  016777  013516  013512          MOV     DHTLVL,@DHTVEC
1048  001672  005077  013510                  CLR     @DHTLVL
1049  001676  104400                          SCOPE                           ;CHECK FOR ITERATIONS, LOOP
1050
1051                                          ;INTERRUPT LOGIC TEST
1052                                          ;SET TRANSMITTER DONE INTERRUPT ENABLE
1053                                          ;VERIFY THAT NO INTERRUPTS OCCUR
1054
1055  001700  012767  000340  176070  T3:     MOV     #340,PS                 ;DISABLE ALL INTERRUPTS
1056  001706  012767  004000  013510          MOV     #4000,ICOUNT            ;SET UP FOR 4000 ITERATIONS
1057  001714  012767  002034  013476          MOV     #3$,ESCAPE              ;SET UP TO ESCAPE TO NEXT TEST
1058  001722  012777  004000  013426          MOV     #BIT11,@DHSCR           ;MASTER CLEAR INTERFACE
1059  001730  012777  002004  013442          MOV     #1$,@DHRVEC             ;SET UP FOR POSSIBLE
1060                                                                          ;RECEIVER INTERRUPT
1061  001736  012777  000340  013436          MOV     #340,@DHRLVL
1062  001744  012777  002020  013432          MOV     #2$,@DHTVEC             ;SET UP FOR POSSIBLE
1063                                                                          ;TRANSMITTER INTERRUPT
1064  001752  012777  000340  013426          MOV     #340,@DHTLVL
1065  001760  012777  020000  013370          MOV     #BIT13,@DHSCR           ;SET TRANSMITTER DONE
1066                                                                          ;INTERRUPT ENABLE
1067  001766  005067  176004                  CLR     PS                      ;ALLOW INTERRUPTS
1068  001772  000240                          NOP                             ;WINDOW FOR INTERRUPTS
1069  001774  012767  000340  175774          MOV     #340,PS                 ;NO INTERRUPT OCCURED
1070  002002  000414                          BR      3$                      ;CONTINUE
1071  002004  017705  013346          1$:     MOV     @DHSCR,R5               ;GET CONTENTS OF SYSTEM CONTROL REGISTER
1072  002010  104000                          HLT     0                       ;UNEXPECTED INTERRUPT
1073  002012  012716  002034                  MOV     #3$,(SP)                        ;SET UP TO
1074  002016  000002                          RTI                             ;RETURN FROM INTERRUPT
1075  002020  017705  013332          2$:     MOV     @DHSCR,R5               ;GET CONTENTS OF SYSTEM CONTROL REGISTER
1076  002024  104000                          HLT     0                       ;UNEXPECTED INTERRUPT
1077  002026  012716  002034                  MOV     #3$,(SP)                        ;SET UPT TO
1078  002032  000002                          RTI                             ;RETURN FROM INTERRUPT
1079  002034  016777  013342  013336  3$:     MOV     DHRLVL,@DHRVEC          ;RESTORE TRAPCATCHER
1080  002042  005077  013334                  CLR     @DHRLVL
1081  002046  016777  013334  013330          MOV     DHTLVL,@DHTVEC
1082  002054  005077  013326                  CLR     @DHTLVL
1083  002060  104400                          SCOPE                           ;CHECK FOR ITERATIONS, LOOP
1084
1085                                          ;INTERRUPT LOGIC TEST
1086                                          ;SET CHARACTER AVAILABLE INTERRUPT ENABLE
1087                                          ;SET CHARACTER AVAILABLE (MAINTENANCE MODE IS ENABLED
1088                                          ;VERIFY THAT AN INTERRUPT OCCURS
1089
1090  002062  012767  000340  175706  T4:     MOV     #340,PS                 ;DISABLE ALL INTERRUPTS
1091  002070  012767  004000  013326          MOV     #4000,ICOUNT            ;SET UP FOR 4000 ITERATIONS
1092  002076  012767  002226  013314          MOV     #3$,ESCAPE              ;SET UP TO ESCAPE TO NEXT TEST
1093  002104  012777  004000  013244          MOV     #BIT11,@DHSCR           ;MASTER CLEAR INTERFACE
```

```
1094  002112  012777  002204  013260          MOV     #1$,@DHRVEC             ;SET UP FOR RECEIVER INTERRUPT
1095  002120  012777  000340  013254          MOV     #3$,@DHRLVL
1096  002126  012777  002212  013250          MOV     #2$,@DHTVEC             ;SET UP FOR TRANSMITTER INTERRUPT
1097  002134  012777  000340  013244          MOV     #340,@DHTLVL
1098  002142  012777  001000  013206          MOV     #BIT09,@DHSCR           ;SET MAINTENANCE MODE
1099  002150  052777  000100  013200          BIS     #BIT06,@DHSCR           ;SET CHARACTER AVAILABLE
1100                                                                          ;INTERRUPT ENABLE
1101  002156  052777  000200  013172          BIS     #BIT07,@DHSCR           ;FORCE INTERRUPT BY
1102                                                                          ;SETTING CHARACTER AVAILABLE
1103  002164  005067  175606                  CLR     PS                      ;ALLOW INTERRUPTS
1104  002170  000240                          NOP                             ;WINDOW FOR INTERRUPTS
1105  002172  012767  000340  175576          MOV     #340,PS                 ;NO INTERRUPT OCCURED
1106  002200  104001                          HLT     1                       ;WITH CHARACTER AVAILABLE INTERRUPT
1107                                                                          ;ENABLE AND CHARACTER AVAILABLE SET
1108                                                                          ;ERROR
1109  002202  000411                          BR      3$
1110  002204  012716  002226          1$:     MOV     #3$,(SP)                ;SET UP TO RETURN
1111  002210  000002                          RTI                             ;FROM VALID INTERRUPT
1112  002212  017705  013140          2$:     MOV     @DHSCR,R5               ;GET CONTENTS OF SYSTEM CONTROL REGISTER
1113  002216  104000                          HLT     0                       ;UNEXPECTED INTERRUPT
1114  002220  012716  002226                  MOV     #3$,(SP)                        ;SET UP TO RETURN
1115  002224  000002                          RTI                             ;FROM UNEXPECTED INTERRUPT
1116  002226  016777  013150  013144  3$:     MOV     DHRLVL,@DHRVEC          ;RESTORE TRAPCATCHER
1117  002234  005077  013142                  CLR     @DHRLVL
1118  002240  016777  013142  013136          MOV     DHTLVL,@DHTVEC
1119  002246  005077  013134                  CLR     @DHTLVL
1120  002252  104400                          SCOPE
1121
1122                                          ;INTERRUPT LOGIC TEST
1123                                          ;SET SILO OVERFLOW INTERRUPT ENABLE
1124                                          ;SET SILO OVERFLOW (MAINTENANCE MODE IS ENABLED
1125                                          ;VERIFY THAT AN INTERRUPT OCCURS
1126
1127  002254  012767  000340  175514  T5:     MOV     #340,PS                 ;DISABLE ALL INTERRUPTS
1128  002262  012767  004000  013134          MOV     #4000,ICOUNT            ;SET UP FOR 4000 ITERATIONS
1129  002270  012767  002420  013122          MOV     #3$,ESCAPE              ;SET UP TO ESCAPE TO NEXT TEST
1130  002276  012777  004000  013052          MOV     #BIT11,@DHSCR           ;MASTER CLEAR INTERFACE
1131  002304  012777  002376  013066          MOV     #1$,@DHRVEC             ;SET UP FOR RECEIVER INTERRUPT
1132  002312  012777  000340  013062          MOV     #340,@DHRLVL
1133  002320  012777  002404  013056          MOV     #2$,@DHTVEC             ;SET UP FOR TRANSMITTER INTERRUPT
1134  002326  012777  000340  013052          MOV     #340,@DHTLVL
1135  002334  012777  001000  013014          MOV     #BIT09,@DHSCR           ;SET MAINTENANCE MODE
1136  002342  052777  040000  013006          BIS     #BIT14,@DHSCR           ;SET SILO OVERFLOW
1137                                                                          ;INTERRUPT ENABLE
1138  002350  052777  010000  013000          BIS     #BIT12,@DHSCR           ;FORCE INTERRUPT BY
1139                                                                          ;SETTING SILO OVERFLOW
1140  002356  005067  175414                  CLR     PS                      ;ALLOW INTERRUPTS
1141  002362  000240                          NOP                             ;WINDOW FOR INTERRUPTS
1142  002364  012767  000340  175404          MOV     #340,PS                 ;NO INTERRUPT OCCURED
1143  002372  104001                          HLT     1                       ;WITH SILO OVERFLOW INTERRUPT
1144                                                                          ;ENABLE AND SILO OVERFLOW SET
1145                                                                          ;ERROR
1146  002374  000411                          BR      3$
1147  002376  012716  002420          1$:     MOV     #3$,(SP)                ;SET UP TO RETURN
1148  002402  000002                          RTI                             ;FROM VALID INTERRUPT
1149  002404  017705  012746          2$:     MOV     @DHSCR,R5               ;GET CONTENTS OF SYSTEM CONTROL REGISTER
```

```
1150  002410  104000                          HLT     0                       ;UNEXPECTED INTERRUPT
1151  002412  012716  002420                  MOV     #3$,(SP)                        ;SET UP TO RETURN
1152  002416  000002                          RTI                             ;FROM UNEXPECTED INTERRUPT
1153  002420  016777  012756  012752  3$:     MOV     DHRLVL,@DHRVEC          ;RESTORE TRAPCATCHER
1154  002426  005077  012750                  CLR     @DHRLVL
1155  002432  016777  012750  012744          MOV     DHTLVL,@DHTVEC
1156  002440  005077  012742                  CLR     @DHTLVL
1157  002444  104400                          SCOPE
1158
1159                                          ;INTERRUPT LOGIC TEST
1160                                          ;SET TRANSMITTER INTERRUPT ENABLE
1161                                          ;SET NON EXISTATN MEMORY (MAINTENANCE MODE IS ENABLED
1162                                          ;VERIFY THAT AN INTERRUPT OCCURS
1163
1164  002446  012767  000340  175322  T6:     MOV     #340,PS                 ;DISABLE ALL INTERRUPTS
1165  002454  012767  004000  012742          MOV     #4000,ICOUNT            ;SET UP FOR 4000 ITERATIONS
1166  002462  012767  002612  012730          MOV     #3$,ESCAPE              ;SET UP TO ESCAPE TO NEXT TEST
1167  002470  012777  004000  012660          MOV     #BIT11,@DHSCR           ;MASTER CLEAR INTERFACE
1168  002476  012777  002576  012674          MOV     #2$,@DHRVEC             ;SET UP FOR RECEIVER INTERRUPT
1169  002504  012777  000340  012670          MOV     #340,@DHRLVL
1170  002512  012777  002570  012664          MOV     #1$,@DHTVEC             ;SET UP FOR TRANSMITTER INTERRUPT
1171  002520  012777  000340  012660          MOV     #340,@DHTLVL
1172  002526  012777  001000  012622          MOV     #BIT09,@DHSCR           ;SET MAINTENANCE MODE
1173  002534  052777  020000  012614          BIS     #BIT13,@DHSCR           ;SET TRANSMITTER
1174                                                                          ;INTERRUPT ENABLE
1175  002542  052777  002000  012606          BIS     #BIT10,@DHSCR           ;FORCE INTERRUPT BY
1176                                                                          ;SETTING NON EXISTATN MEMORY
1177  002550  005067  175222                  CLR     PS                      ;ALLOW INTERRUPTS
1178  002554  000240                          NOP                             ;WINDOW FOR INTERRUPTS
1179  002556  012767  000340  175212          MOV     #340,PS                 ;NO INTERRUPT OCCURED
1180  002564  104001                          HLT     1                       ;WITH TRANSMITTER INTERRUPT
1181                                                                          ;ENABLE AND NON EXISTATN MEMORY SET
1182                                                                          ;ERROR
1183  002566  000411                          BR      3$
1184  002570  012716  002612          1$:     MOV     #3$,(SP)                ;SET UP TO RETURN
1185  002574  000002                          RTI                             ;FROM VALID INTERRUPT
1186  002576  017705  012554          2$:     MOV     @DHSCR,R5               ;GET CONTENTS OF SYSTEM CONTROL REGISTER
1187  002602  104000                          HLT     0                       ;UNEXPECTED INTERRUPT
1188  002604  012716  002612                  MOV     #3$,(SP)                        ;SET UP TO RETURN
1189  002610  000002                          RTI                             ;FROM UNEXPECTED INTERRUPT
1190  002612  016777  012564  012560  3$:     MOV     DHRLVL,@DHRVEC          ;RESTORE TRAPCATCHER
1191  002620  005077  012556                  CLR     @DHRLVL
1192  002624  016777  012556  012552          MOV     DHTLVL,@DHTVEC
1193  002632  005077  012550                  CLR     @DHTLVL
1194  002636  104400                          SCOPE
1195
1196                                          ;INTERRUPT LOGIC TEST
1197                                          ;SET TRANSMITTER DONE INTERRUPT ENABLE
1198                                          ;SET TRANSMITTER DONE (MAINTENANCE MODE IS ENABLED
1199                                          ;VERIFY THAT AN INTERRUPT OCCURS
1200
1201  002640  012767  000340  175130  T7:     MOV     #340,PS                 ;DISABLE ALL INTERRUPTS
1202  002646  012767  004000  012550          MOV     #4000,ICOUNT            ;SET UP FOR 4000 ITERATIONS
1203  002654  012767  003004  012536          MOV     #3$,ESCAPE              ;SET UP TO ESCAPE TO NEXT TEST
1204  002662  012777  004000  012466          MOV     #BIT11,@DHSCR           ;MASTER CLEAR INTERFACE
1205  002670  012777  002770  012502          MOV     #2$,@DHRVEC             ;SET UP FOR RECEIVER INTERRUPT
```

```
[illegible]  002676  012777  000340  012476          MOV     #340,@DHRLVL
[illegible]  002704  012777  002762  012472          MOV     #1$,@DHTVEC             ;SET UP FOR TRANSMITTER INTERRUPT
[illegible]  002712  012777  000340  012466          MOV     #340,@DHTLVL
[illegible]  002720  012777  001000  012430          MOV     #BIT09,@DHSCR           ;SET MAINTENANCE MODE
[illegible]  002726  052777  020000  012422          BIS     #BIT13,@DHSCR           ;SET TRANSMITTER DONE
                                                                                    ;INTERRUPT ENABLE
[illegible]  002734  052777  100000  012414          BIS     #BIT15,@DHSCR           ;FORCE INTERRUPT BY
                                                                                    ;SETTING TRANSMITTER DONE
[illegible]  002742  005067  175030                  CLR     PS                      ;ALLOW INTERRUPTS
[illegible]  002746  000240                          NOP                             ;WINDOW FOR INTERRUPTS
[illegible]  002750  012767  000340  175020          MOV     #340,PS                 ;NO INTERRUPT OCCURED
[illegible]  002756  104001                          HLT     1                       ;WITH TRANSMITTER DONE INTERRUPT
                                                                                    ;ENABLE AND TRANSMITTER DONE SET
                                                                                    ;ERROR
[illegible]  002760  000411                          BR      3$
[illegible]  002762  012716  003004          1$:     MOV     #3$,(SP)                ;SET UP TO RETURN
[illegible]  002766  000002                          RTI                             ;FROM  VALID INTERRUPT
[illegible]  002770  017705  012362          2$:     MOV     @DHSCR,R5               ;GET CONTENTS OF SYSTEM CONTROL REGISTER
[illegible]  002774  104000                          HLT     0                       ;UNEXPECTED INTERRUPT
[illegible]  002776  012716  003004                  MOV     #3$,(SP)                        ;SET UP TO RETURN
[illegible]  003002  000002                          RTI                             ;FROM UNEXPECTED INTERRUPT
[illegible]  003004  016777  012372  012366  3$:     MOV     @DHRLVL,@DHRVEC         ;RESTORE TRAPCATCHER
[illegible]  003012  005077  012364                  CLR     @DHRLVL
[illegible]  003016  016777  012364  012360          MOV     @DHTLVL,@DHTVEC
[illegible]  003024  005077  012356                  CLR     @DHTLVL
[illegible]  003030  104400                          SCOPE

                                                     ;NPR LOGIC TEST
                                                     ;SET BYTE COUNT TO 1 FOR LINE 0
                                                     ;SET BAR BIT FOR LINE 0
                                                     ;DELAY FOR NPR
                                                     ;VERIFY THAT BAR BIT FOR LINE 0 CLEARS
                                                     ;VERIFY THAT TRANSMITTER DONE IS SET

[illegible]  003032  012767  000340  174736  T10:    MOV     #340,PS                 ;DISABLE ALL INTERRUPTS
[illegible]  003040  012767  000020  012356          MOV     #20.,ICOUNT             ;SET UP FOR 20 ITERATIONS
[illegible]  003046  012767  003262  012344          MOV     #6$,ESCAPE              ;SET UP TO ESCAPE TO NEXT TEST
[illegible]  003054  012777  004000  012274          MOV     #BIT11,@DHSCR           ;ISSUE MASTER CLEAR
[illegible]  003062  004767  012176                  JSR     PC,CLEAR                ;CLEAR ALL BUS ADDRESS
                                                                                    ;AND BYTE COUNT MEMORY LOCATIONS
[illegible]  003066  012777  003150  012310          MOV     #2$,@DHTVEC             ;SET UP TRANSMITTER
[illegible]  003074  012777  000340  012304          MOV     #340,@DHTLVL            ;INTERRUPT VECTOR
[illegible]  003102  012777  000000  012246          MOV     #0,@DHSCR               ;SELECT LINE 0
[illegible]  003110  012777  177777  012250          MOV     #-1,@DHBC               ;SET BYTE COUNT TO 1
[illegible]  003116  012700  001000                  MOV     #1000,R0
[illegible]  003122  012777  000001  012240          MOV     #1,@DHBAR               ;SET BAR BIT FOR
                                                                                    ;LINE 0
[illegible]  003130  052777  020000  012220          BIS     #BIT13,@DHSCR           ;SET TRANSMITTER INTERRUPT ENABLE
[illegible]  003136  005067  174634                  CLR     PS                      ;ALLOW INTERRUPTS
[illegible]  003142  005300                  1$:     DEC     R0                      ;DELAY FOR NPR
[illegible]  003144  001376                          BNE     1$
[illegible]  003146  104001                          HLT     1                       ;NO INTERRUPT OCCURED, ERROR
[illegible]  003150  005777  012202          2$:     TST     @DHSCR                  ;VERIFY THAT TRANSMITTER
                                                                                    ;DONE IS SET
[illegible]  003154  100401                          BMI     3$
[illegible]  003156  104002                          HLT     2                       ;TRANSMITTER DONE NOT SET, ERROR
```

```
                003160  005777  012204          3$:     TST     @DHBAR          ;WAS BAR BIT CLEARED FOR LINE 0
                003164  001404                          BEQ     4$
                003166  005005                          CLR     R5                      ;(R5)=EXPECTED DATA IN
                                                                                        ;BUFFER ACTIVE REGISTER, 0
                003170  017704  012174                  MOV     @DHBAR,R4               ;(R4)=ACTUAL CONTENTS OF
                                                                                        ;BUFFER ACTIVE REGISTER
                003174  104000                          HLT     0                       ;BUS ACTIVE BIT NOT CLEARED, ERROR
                003176  022777  000001  012160  4$:     CMP     #1,@DHBA                ;WAS BUS ADDRESS INCREMENTED
                003204  001405                          BEQ     5$
                003206  017704  012152                  MOV     @DHBA,R4                ;(R4)=ACTUAL CONTENTS
                                                                                        ;OF BUS ADDRESS MEMORY FOR
                                                                                        ;LINE 0
                003212  012705  000001                  MOV     #1,R5                   ;(R5)=EXPECTED VALUE OF
                                                                                        ;BUS ADDRESS MEMORY FOR
                                                                                        ;LINE 0, 1
                003216  104003                          HLT     3                       ;BUS ADDRESS NOT UPDATED
                                                                                        ;CORRECTLY, ERROR
                003220  005777  012142          5$:     TST     @DHBC                   ;DID BYTE COUNT DECREMENT TO 0
                003224  001416                          BEQ     6$
                003226  017704  012134                  MOV     @DHBC,R4                ;(R4)=ACTUAL VALUE OF BYTE
                                                                                        ;COUNT FOR LINE 0
                003232  005005                          CLR     R5                      ;(R5)=EXPECTED VALUE OF BYTE
                                                                                        ;COUNT FOR LINE 0, 0
                003234  104004                          HLT     4                       ;BYTE COUNT DID NOT DECREMENT TO 0, ERROR
                003236  016777  012140  012134          MOV     DHRLVL,@DHRVEC  ;RESTORE TRAPCATCHER
                003244  005077  012132                  CLR     @DHRLVL
                003250  016777  012132  012126          MOV     DHTLVL,@DHTVEC
                003256  005077  012124                  CLR     @DHTLVL
                003262  012706  017100          6$:     MOV     #STACK,SP               ;RESTORE STACK
                003266  104430                          SCOPE                           ;CHECK FOR ITERATIONS, LOOP

                                                        ;NPR LOGIC TEST
                                                        ;SET BYTE COUNT TO 1 FOR LINE 1
                                                        ;SET BAR BIT FOR LINE 1
                                                        ;DELAY FOR NPR
                                                        ;VERIFY THAT BAR BIT FOR LINE 1 CLEARS
                                                        ;VERIFY THAT TRANSMITTER DONE IS SET

13000   003270  012767  000340  174500  T11:    MOV     #340,PS                 ;DISABLE ALL INTERRUPTS
13001   003276  012767  000020  012120          MOV     #20.,ICOUNT             ;SET UP FOR 20 ITERATIONS
13002   003304  012767  003520  012106          MOV     #6$,ESCAPE              ;SET UP TO ESCAPE TO NEXT TEST
13003   003312  012777  004000  012036          MOV     #BIT11,@DHSCR           ;ISSUE MASTER CLEAR
13004   003320  004767  011740                  JSR     PC,CLEAR                ;CLEAR ALL BUS ADDRESS
13005                                                                           ;AND BYTE COUNT MEMORY LOCATIONS
13006   003324  012777  003406  012052          MOV     #2$,@DHTVEC             ;SET UP TRANSMITTER
13007   003332  012777  000340  012046          MOV     #340,@DHTLVL            ;INTERRUPT VECTOR
13008   003340  012777  000001  012010          MOV     #1,@DHSCR               ;SELECT LINE 1
13009   003346  012777  177777  012002          MOV     #-1,@DHBC               ;SET BYTE COUNT TO 1
13010   003354  012700  001000                  MOV     #1000,R0
13011   003360  012777  000002  012002          MOV     #2,@DHBAR               ;SET BAR BIT FOR
                                                                                ;LINE 1
13012   003366  052777  020000  011762          BIS     #BIT13,@DHSCR           ;SET TRANSMITTER INTERRUPT ENABLE
13013   003374  005067  174376                  CLR     PS                      ;ALLOW INTERRUPTS
13014   003400  005300                  1$:     DEC     R0                      ;DELAY FOR NPR
13015   003402  001376                          BNE     1$
13016   003404  104001                          HLT     1                       ;NO INTERRUPT OCCURED, ERROR
```

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1318  003406  005777  011744          2$:     TST     @DHSCR                  ;VERIFY THAT TRANSMITTER
1319                                                                          ;DONE IS SET
1320  003412  100401                          BMI     3$
1321  003414  104002                          HLT     2                       ;TRANSMITTER DONE NOT SET, ERROR
1322  003416  005777  011746          3$:     TST     @DHBAR          ;WAS BAR BIT CLEARED FOR LINE 1
1323  003422  001404                          BEQ     4$
1324  003424  005005                          CLR     R5                      ;(R5)=EXPECTED DATA IN
1325                                                                          ;BUFFER ACTIVE REGISTER, 0
1326  003426  017704  011736                  MOV     @DHBAR,R4               ;(R4)=ACTUAL CONTENTS OF
1327                                                                          ;BUFFER ACTIVE REGISTER
1328  003432  104000                          HLT     0                       ;BUS ACTIVE BIT NOT CLEARED, ERROR
1329  003434  022777  000001  011722  4$:     CMP     #1,@DHBA                ;WAS BUS ADDRESS INCREMENTED
1330  003442  001405                          BEQ     5$
1331  003444  017704  011714                  MOV     @DHBA,R4                ;(R4)=ACTUAL CONTENTS
1332                                                                          ;OF BUS ADDRESS MEMORY FOR
1333                                                                          ;LINE 1
1334  003450  012705  000001                  MOV     #1,R5                   ;(R5)=EXPECTED VALUE OF
1335                                                                          ;BUS ADDRESS MEMORY FOR
1336                                                                          ;LINE 1, 1
1337  003454  104003                          HLT     3                       ;BUS ADDRESS NOT UPDATED
1338                                                                          ;CORRECTLY, ERROR
1339  003456  005777  011704          5$:     TST     @DHBC                   ;DID BYTE COUNT DECREMENT TO 0
1340  003462  001416                          BEQ     6$
1341  003464  017704  011676                  MOV     @DHBC,R4                ;(R4)=ACTUAL VALUE OF BYTE
1342                                                                          ;COUNT FOR LINE 1
1343  003470  005005                          CLR     R5                      ;(R5)=EXPECTED VALUE OF BYTE
1344                                                                          ;COUNT FOR LINE 1, 0
1345  003472  104004                          HLT     4                       ;BYTE COUNT DID NOT DECREMENT TO 0, ERROR
1346  003474  016777  011702  011676          MOV     DHRLVL,@DHRVEC  ;RESTORE TRAPCATCHER
1347  003502  005077  011674                  CLR     @DHRLVL
1348  003506  016777  011674  011670          MOV     DHTLVL,@DHTVEC
1349  003514  005077  011666                  CLR     @DHTLVL
1350  003520  012706  017102          6$:     MOV     #STACK,SP               ;RESTORE STACK
1351  003524  104400                          SCOPE                           ;CHECK FOR ITERATIONS, LOOP
1352
1353                                          ;NPR LOGIC TEST
1354                                          ;SET BYTE COUNT TO 1 FOR LINE 2
1355                                          ;SET BAR BIT FOR LINE 2
1356                                          ;DELAY FOR NPR
1357                                          ;VERIFY THAT BAR BIT FOR LINE 2 CLEARS
1358                                          ;VERIFY THAT TRANSMITTER DONE IS SET
1359
1360  003526  012767  000340  174242  T12:     MOV     #340,PS                 ;DISABLE ALL INTERRUPTS
1361  003534  012767  000020  011662          MOV     #20,ICOUNT              ;SET UP FOR 20 ITERATIONS
1362  003542  012767  003756  011650          MOV     #6$,ESCAPE              ;SET UP TO ESCAPE TO NEXT TEST
1363  003550  012777  004000  011600          MOV     #BIT11,@DHSCR           ;ISSUE MASTER CLEAR
1364  003556  004767  011502                  JSR     PC,CLEAR                ;CLEAR ALL BUS ADDRESS
1365                                                                          ;AND BYTE COUNT MEMORY LOCATIONS
1366  003562  012777  003644  011614          MOV     #2$,@DHTVEC             ;SET UP TRANSMITTER
1367  003570  012777  000340  011610          MOV     #340,@DHTLVL            ;INTERRUPT VECTOR
1368  003576  012777  000002  011552          MOV     #2,@DHSCR               ;SELECT LINE 2
1369  003604  012777  177777  011554          MOV     #-1,@DHBC               ;SET BYTE COUNT TO 1
1370  003612  012700  001000                  MOV     #1000,R0
1371  003616  012777  000004  011544          MOV     #4,@DHBAR               ;SET BAR BIT FOR
1372                                                                          ;LINE 2
1373  003624  052777  020000  011524          BIS     #BIT13,@DHSCR           ;SET TRANSMITTER INTERRUPT ENABLE
```

```
1374  003632  005067  174140          CLR     PS                      ;ALLOW INTERRUPTS
1375  003636  005300                  DEC     R0                      ;DELAY FOR NPR
1376  003640  001376                  BNE     1$
1377  003642  104001                  HLT     1                       ;NO INTERRUPT OCCURED, ERROR
1378  003644  005777  011506    2$:   TST     @DHSCR                  ;VERIFY THAT TRANSMITTER
1379                                                                  ;DONE IS SET
1380  003650  100401                  BMI     3$
1381  003652  104002                  HLT     2                       ;TRANSMITTER DONE NOT SET, EPROR
1382  003654  005777  011510    3$:   TST     @DHBAR          ;WAS BAR BIT CLEARED FOR LINE 2
1383  003660  001404                  BEQ     4$
1384  003662  005005                  CLR     R5                      ;(R5)=EXPECTED DATA IN
1385                                                                  ;BUFFER ACTIVE REGISTER, 0
1386  003664  017704  011500          MOV     @DHBAR,R4               ;(R4)=ACTUAL CONTENTS OF
1387                                                                  ;BUFFER ACTIVE REGISTER
1388  003670  104000                  HLT     0                       ;BUS ACTIVE BIT NOT CLEARED, ERROR
1389  003672  022777  000001  011464  4$:   CMP     #1,@DHBA                ;WAS BUS ADDRESS INCREMENTED
1390  003700  001405                  BEQ     5$
1391  003702  017704  011456          MOV     @DHBA,R4                ;(R4)=ACTUAL CONTENTS
1392                                                                  ;OF BUS ADDRESS MEMORY FOR
1393                                                                  ;LINE 2
1394  003706  012705  000001          MOV     #1,R5                   ;(R5)=EXPECTED VALUE OF
1395                                                                  ;BUS ADDRESS MEMORY FOR
1396                                                                  ;LINE 2, 1
1397  003712  104003                  HLT     3                       ;BUS ADDRESS NOT UPDATED
1398                                                                  ;CORRECTLY, ERROR
1399  003714  005777  011446    5$:   TST     @DHBC                   ;DID BYTE COUNT DECREMENT TO 0
1400  003720  001416                  BEQ     6$
1401  003722  017704  011440          MOV     @DHBC,R4                ;(R4)=ACTUAL VALUE OF BYTE
1402                                                                  ;COUNT FOR LINE 2
1403  003726  005005                  CLR     R5                      ;(R5)=EXPECTED VALUE OF BYTE
1404                                                                  ;COUNT FOR LINE 2, 0
1405  003730  104004                  HLT     4                       ;BYTE COUNT DID NOT DECREMENT TO 0, ERROR
1406  003732  016777  011444  011440  MOV     DHRLVL,@DHRVEC  ;RESTORE TRAPCATCHER
1407  003740  005077  011436          CLR     @DHRLVL
1408  003744  016777  011436  011432  MOV     DHTLVL,@DHTVEC
1409  003752  005077  011430          CLR     @DHTLVL
1410  003756  012706  017102    6$:   MOV     #STACK,SP               ;RESTORE STACK
1411  003762  104400                  SCOPE                           ;CHECK FOR ITERATIONS, LOOP
1412
1413                                  ;NPR LOGIC TEST
1414                                  ;SET BYTE COUNT TO 1 FOR LINE 3
1415                                  ;SET BAR BIT FOR LINE 3
1416                                  ;DELAY FOR NPR
1417                                  ;VERIFY THAT BAR BIT FOR LINE 3 CLEARS
1418                                  ;VERIFY THAT TRANSMITTER DONE IS SET
1419
1420  003764  012767  000340  174004  T13:   MOV     #340,PS                 ;DISABLE ALL INTERRUPTS
1421  003772  012767  000020  011424          MOV     #20.,ICOUNT             ;SET UP FOR 20 ITERATIONS
1422  004000  012767  004214  011412          MOV     #6$,ESCAPE              ;SET UP TO ESCAPE TO NEXT TEST
1423  004006  012777  004000  011342          MOV     #BIT11,@DHSCR           ;ISSUE MASTER CLEAR
1424  004014  004767  011244                  JSR     PC,CLEAR                ;CLEAR ALL BUS ADDRESS
1425                                                                  ;AND BYTE COUNT MEMORY LOCATIONS
1426  004020  012777  004102  011356          MOV     #2$,@DHTVEC             ;SET UP TRANSMITTER
1427  004026  012777  000340  011352          MOV     #340,@DHTLVL            ;INTERRUPT VECTOR
1428  004034  012777  000003  011314          MOV     #3,@DHSCR               ;SELECT LINE 3
1429  004042  012777  177777  011316          MOV     #-1,@DHBC               ;SET BYTE COUNT TO 1
```

```
1430  004050  012700  001000                MOV     #1000,R0
1431  004054  012777  000010  011306        MOV     #10,@DHBAR              ;SET BAR BIT FOR
1432                                                                        ;LINE 3
1433  004062  052777  020000  011266        BIS     #BIT13,@DHSCR           ;SET TRANSMITTER INTERRUPT ENABLE
1434  004070  005067  173702                CLR     PS                      ;ALLOW INTERRUPTS
1435  004074  005300                1$:     DEC     R0                      ;DELAY FOR NPR
1436  004076  001376                        BNE     1$
1437  004100  104001                        HLT     1                       ;NO INTERRUPT OCCURED, ERROR
1438  004102  005777  011250        2$:     TST     @DHSCR                  ;VERIFY THAT TRANSMITTER
1439                                                                        ;DONE IS SET
1440  004106  100401                        BMI     3$
1441  004110  104002                        HLT     2                       ;TRANSMITTER DONE NOT SET, ERROR
1442  004112  005777  011252        3$:     TST     @DHBAR          ;WAS BAR BIT CLEARED FOR LINE 3
1443  004116  001404                        BEQ     4$
1444  004120  005005                        CLR     R5                      ;(R5)=EXPECTED DATA IN
1445                                                                        ;BUFFER ACTIVE REGISTER, 0
1446  004122  017704  011242                MOV     @DHBAR,R4               ;(R4)=ACTUAL CONTENTS OF
1447                                                                        ;BUFFER ACTIVE REGISTER
1448  004126  104000                        HLT     0                       ;BUS ACTIVE BIT NOT CLEARED, ERROR
1449  004130  022777  000001  011226  4$:     CMP     #1,@DHBA                ;WAS BUS ADDRESS INCREMENTED
1450  004136  001405                        BEQ     5$
1451  004140  017704  011220                MOV     @DHBA,R4                ;(R4)=ACTUAL CONTENTS
1452                                                                        ;OF BUS ADDRESS MEMORY FOR
1453                                                                        ;LINE 3
1454  004144  012705  000001                MOV     #1,R5                   ;(R5)=EXPECTED VALUE OF
1455                                                                        ;BUS ADDRESS MEMORY FOR
1456                                                                        ;LINE 3, 1
1457  004150  104003                        HLT     3                       ;BUS ADDRESS NOT UPDATED
1458                                                                        ;CORRECTLY, ERROR
1459  004152  005777  011210        5$:     TST     @DHBC                   ;DID BYTE COUNT DECREMENT TO 0
1460  004156  001416                        BEQ     6$
1461  004160  017704  011202                MOV     @DHBC,R4                ;(R4)=ACTUAL VALUE OF BYTE
1462                                                                        ;COUNT FOR LINE 3
1463  004164  005005                        CLR     R5                      ;(R5)=EXPECTED VALUE OF BY E
1464                                                                        ;COUNT FOR LINE 3, 0
1465  004166  104004                        HLT     4                       ;BYTE COUNT DID NOT DECREMENT TO 0, ERROR
1466  004170  016777  011206  011202        MOV     DHRLVL,@DHRVEC  ;RESTORE TRAPCATCHER
1467  004176  005077  011200                CLR     @DHRLVL
1468  004202  016777  011200  011174        MOV     DHTLVL,@DHTVEC
1469  004210  005077  011172                CLR     @DHTLVL
1470  004214  012706  017102        6$:     MOV     #STACK,SP               ;RESTORE STACK
1471  004220  104400                        SCOPE                           ;CHECK FOR ITERATIONS, LOOP
1472
1473                                        ;NPR LOGIC TEST
1474                                        ;SET BYTE COUNT TO 1 FOR LINE 4
1475                                        ;SET BAR BIT FOR LINE 4
1476                                        ;DELAY FOR NPR
1477                                        ;VERIFY THAT BAR BIT FOR LINE 4 CLEARS
1478                                        ;VERIFY THAT TRANSMITTER DONE IS SET
1479
1480  004222  012767  000340  173546  T14:   MOV     #340,PS                 ;DISABLE ALL INTERRUPTS
1481  004230  012767  000020  011166        MOV     #20.,ICOUNT             ;SET UP FOR 20 ITERATIONS
1482  004236  012767  004452  011154        MOV     #6$,ESCAPE              ;SET UP TO ESCAPE TO NEXT TEST
1483  004244  012777  004000  011104        MOV     #BIT11,@DHSCR           ;ISSUE MASTER CLEAR
1484  004252  004767  011006                JSR     PC,CLEAR                ;CLEAR ALL BUS ADDRESS
1485                                                                        ;AND BYTE COUNT MEMORY LOCATIONS
```

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1486  004256  012777  004340  011120          MOV     #2$,@DHTVEC             ;SET UP TRANSMITTER
1487  004264  012777  000340  011114          MOV     #340,@DHTLVL            ;INTERRUPT VECTOR
1488  004272  012777  000004  011056          MOV     #4,@DHSCR               ;SELECT LINE 4
1489  004300  012777  177777  011060          MOV     #-1,@DHBC               ;SET BYTE COUNT TO 1
1490  004306  012700  001000                  MOV     #1000,R0
1491  004312  012777  000020  011050          MOV     #20,@DHBAR              ;SET BAR BIT FOR
1492                                                                          ;LINE 4
1493  004320  052777  020000  011030          BIS     #BIT13,@DHSCR           ;SET TRANSMITTER INTERRUPT ENABLE
1494  004326  005067  173344                  CLR     PS                      ;ALLOW INTERRUPTS
1495  004332  005300                  1$:     DEC     R0                      ;DELAY FOR NPR
1496  004334  001376                          BNE     1$
1497  004336  104001                          HLT     1                       ;NO INTERRUPT OCCURED, ERROR
1498  004340  005777  011012          2$:     TST     @DHSCR                  ;VERIFY THAT TRANSMITTER
1499                                                                          ;DONE IS SET
1500  004344  100401                          BMI     3$
1501  004346  104002                          HLT     2                       ;TRANSMITTER DONE NOT SET, ERROR
1502  004350  005777  011014          3$:     TST     @DHBAR          ;WAS BAR BIT CLEARED FOR LINE 4
1503  004354  001404                          BEQ     4$
1504  004356  005005                          CLR     R5                      ;(R5)=EXPECTED DATA IN
1505                                                                          ;BUFFER ACTIVE REGISTER, 0
1506  004360  017704  011004                  MOV     @DHBAR,R4               ;(R4)=ACTUAL CONTENTS OF
1507                                                                          ;BUFFER ACTIVE REGISTER
1508  004364  104000                          HLT     0                       ;BUS ACTIVE BIT NOT CLEARED, ERROR
1509  004366  022777  000001  010770  4$:     CMP     #1,@DHBA                ;WAS BUS ADDRESS INCREMENTED
1510  004374  001405                          BEQ     5$
1511  004376  017704  010762                  MOV     @DHBA,R4                ;(R4)=ACTUAL CONTENTS
1512                                                                          ;OF BUS ADDRESS MEMORY FOR
1513                                                                          ;LINE 4
1514  004402  012705  000001                  MOV     #1,R5                   ;(R5)=EXPECTED VALUE OF
1515                                                                          ;BUS ADDRESS MEMORY FOR
1516                                                                          ;LINE 4, 1
1517  004406  104003                          HLT     3                       ;BUS ADDRESS NOT UPDATED
1518                                                                          ;CORRECTLY, ERROR
1519  004410  005777  010752          5$:     TST     @DHBC                   ;DID BYTE COUNT DECREMENT TO 0
1520  004414  001416                          BEQ     6$
1521  004416  017704  010744                  MOV     @DHBC,R4                ;(R4)=ACTUAL VALUE OF BYTE
1522                                                                          ;COUNT FOR LINE 4
1523  004422  005005                          CLR     R5                      ;(R5)=EXPECTED VALUE OF BYTE
1524                                                                          ;COUNT FOR LINE 4, 0
1525  004424  104004                          HLT     4                       ;BYTE COUNT DID NOT DECREMENT TO 0, ERROR
1526  004426  016777  010750  010744          MOV     DHRLVL,@DHRVEC  ;RESTORE TRAPCATCHER
1527  004434  005077  010742                  CLR     @DHRLVL
1528  004440  016777  010742  010736          MOV     DHTLVL,@DHTVEC
1529  004446  005077  010734                  CLR     @DHTLVL
1530  004452  012706  017102          6$:     MOV     #STACK,SP               ;RESTORE STACK
1531  004456  104400                          SCOPE                           ;CHECK FOR ITERATIONS, LOOP
1532
1533                                          ;NPR LOGIC TEST
1534                                          ;SET BYTE COUNT TO 1 FOR LINE 5
1535                                          ;SET BAR BIT FOR LINE 5
1536                                          ;DELAY FOR NPR
1537                                          ;VERIFY THAT BAR BIT FOR LINE 5 CLEARS
1538                                          ;VERIFY THAT TRANSMITTER DONE IS SET
1539
1540  004460  012767  000340  173310  T15:     MOV     #340,PS                 ;DISABLE ALL INTERRUPTS
1541  004466  012767  000020  010730          MOV     #20,ICOUNT              ;SET UP FOR 20 ITERATIONS
```

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1542  004474  012767  004710  010716          MOV     #6$,ESCAPE              ;SET UP TO ESCAPE TO NEXT TEST
1543  004502  012777  004000  010646          MOV     #BIT11,@DHSCR           ;ISSUE MASTER CLEAR
1544  004510  004767  010550                  JSR     PC,CLEAR                ;CLEAR ALL BUS ADDRESS
1545                                                                          ;AND BYTE COUNT MEMORY LOCATIONS
1546  004514  012777  004576  010662          MOV     #2$,@DHTVEC             ;SET UP TRANSMITTER
1547  004522  012777  000340  010656          MOV     #340,@DHTLVL            ;INTERRUPT VECTOR
1548  004530  012777  000005  010620          MOV     #5,@DHSCR               ;SELECT LINE 5
1549  004536  012777  177777  010622          MOV     #-1,@DHBC               ;SET BYTE COUNT TO 1
1550  004544  012700  001000                  MOV     #1000,R0
1551  004550  012777  000040  010612          MOV     #40,@DHBAR              ;SET BAR BIT FOR
1552                                                                          ;LINE 5
1553  004556  052777  020000  010572          BIS     #BIT13,@DHSCR           ;SET TRANSMITTER INTERRUPT ENABLE
1554  004564  005067  173206                  CLR     PS                      ;ALLOW INTERRUPTS
1555  004570  005300                  1$:     DEC     R0                      ;DELAY FOR NPR
1556  004572  001376                          BNE     1$
1557  004574  104001                          HLT     1                       ;NO INTERRUPT OCCURED, ERROR
1558  004576  005777  010554          2$:     TST     @DHSCR                  ;VERIFY THAT TRANSMITTER
1559                                                                          ;DONE IS SET
1560  004602  100401                          BMI     3$
1561  004604  104002                          HLT     2                       ;TRANSMITTER DONE NOT SET, ERROR
1562  004606  005777  010556          3$:     TST     @DHBAR          ;WAS BAR BIT CLEARED FOR LINE 5
1563  004612  001404                          BEQ     4$
1564  004614  005005                          CLR     R5                      ;(R5)=EXPECTED DATA IN
1565                                                                          ;BUFFER ACTIVE REGISTER, 0
1566  004616  017704  010546                  MOV     @DHBAR,R4               ;(R4)=ACTUAL CONTENTS OF
1567                                                                          ;BUFFER ACTIVE REGISTER
1568  004622  104000                          HLT     0                       ;BUS ACTIVE BIT NOT CLEARED, ERROR
1569  004624  022777  000001  010532  4$:     CMP     #1,@DHBA                ;WAS BUS ADDRESS INCREMENTED
1570  004632  001405                          BEQ     5$
1571  004634  017704  010524                  MOV     @DHBA,R4                ;(R4)=ACTUAL CONTENTS
1572                                                                          ;OF BUS ADDRESS MEMORY FOR
1573                                                                          ;LINE 5
1574  004640  012705  000001                  MOV     #1,R5                   ;(R5)=EXPECTED VALUE OF
1575                                                                          ;BUS ADDRESS MEMORY FOR
1576                                                                          ;LINE 5, 1
1577  004644  104003                          HLT     3                       ;BUS ADDRESS NOT UPDATED
1578                                                                          ;CORRECTLY, ERROR
1579  004646  005777  010514          5$:     TST     @DHBC                   ;DID BYTE COUNT DECREMENT TO 0
1580  004652  001416                          BEQ     6$
1581  004654  017704  010506                  MOV     @DHBC,R4                ;(R4)=ACTUAL VALUE OF BYTE
1582                                                                          ;COUNT FOR LINE 5
1583  004660  005005                          CLR     R5                      ;(R5)=EXPECTED VALUE OF BYTE
1584                                                                          ;COUNT FOR LINE 5, 0
1585  004662  104004                          HLT     4                       ;BYTE COUNT DID NOT DECREMENT TO 0, ERROR
1586  004664  016777  010512  010506          MOV     DHRLVL,@DHRVEC  ;RESTORE TRAPCATCHER
1587  004672  005077  010504                  CLR     @DHRLVL
1588  004676  016777  010504  010500          MOV     DHTLVL,@DHTVEC
1589  004704  005077  010476                  CLR     @DHTLVL
1590  004710  012706  017102          6$:     MOV     #STACK,SP               ;RESTORE STACK
1591  004714  104400                          SCOPE                           ;CHECK FOR ITERATIONS, LOOP
1592
1593                                          ;NPR LOGIC TEST
1594                                          ;SET BYTE COUNT TO 1 FOR LINE 6
1595                                          ;SET BAR BIT FOR LINE 6
1596                                          ;DELAY FOR NPR
1597                                          ;VERIFY THAT BAR BIT FOR LINE 6 CLEARS
```

```
1598                                                    ;VERIFY THAT TRANSMITTER DONE IS SET
1599
1600  004716  012767  000340  173052  T16:    MOV     #340,PS                 ;DISABLE ALL INTERRUPTS
1601  004724  012767  000020  010472          MOV     #20.,ICOUNT             ;SET UP FOR 20 ITERATIONS
1602  004732  012767  005146  010460          MOV     #6$,ESCAPE              ;SET UP TO ESCAPE TO NEXT TEST
1603  004740  012777  004000  010410          MOV     #BIT11,@DHSCR           ;ISSUE MASTER CLEAR
1604  004746  004767  010312                  JSR     PC,CLEAR                ;CLEAR ALL BUS ADDRESS
1605                                                                          ;AND BYTE COUNT MEMORY LOCATIONS
1606  004752  012777  005034  010424          MOV     #2$,@DHTVEC             ;SET UP TRANSMITTER
1607  004760  012777  000340  010420          MOV     #340,@DHTLVL            ;INTERRUPT VECTOR
1608  004766  012777  000006  010362          MOV     #6,@DHSCR               ;SELECT LINE 6
1609  004774  012777  177777  010364          MOV     #-1,@DHBC               ;SET BYTE COUNT TO 1
1610  005002  012700  001000                  MOV     #1000,R0
1611  005006  012777  000100  010354          MOV     #100,@DHBAR             ;SET BAR BIT FOR
1612                                                                          ;LINE 6
1613  005014  052777  020000  010334          BIS     #BIT13,@DHSCR           ;SET TRANSMITTER INTERRUPT ENABLE
1614  005022  005067  172750                  CLR     PS                      ;ALLOW INTERRUPTS
1615  005026  005300                  1$:     DEC     R0                      ;DELAY FOR NPR
1616  005030  001376                          BNE     1$
1617  005032  104001                          HLT     1                       ;NO INTERRUPT OCCURED, ERROR
1618  005034  005777  010316          2$:     TST     @CSR                    ;VERIFY THAT TRANSMITTER
1619                                                                          ;DONE IS SET
1620  005040  100401                          BMI     3$
1621  005042  104002                          HLT     2                       ;TRANSMITTER DONE NOT SET, ERROR
1622  005044  005777  010320          3$:     TST     @DHBAR          ;WAS BAR BIT CLEARED FOR LINE 6
1623  005050  001404                          BEQ     4$
1624  005052  005005                          CLR     R5                      ;(R5)=EXPECTED DATA IN
1625                                                                          ;BUFFER ACTIVE REGISTER, 0
1626  005054  017704  010310                  MOV     @DHBAR,R4               ;(R4)=ACTUAL CONTENTS OF
1627                                                                          ;BUFFER ACTIVE REGISTER
1628  005060  104000                          HLT     0                       ;BUS ACTIVE BIT NOT CLEARED, ERROR
1629  005062  022777  000001  010274  4$:     CMP     #1,@DHBA                ;WAS BUS ADDRESS INCREMENTED
1630  005070  001405                          BEQ     5$
1631  005072  017704  010266                  MOV     @DHBA,R4                ;(R4)=ACTUAL CONTENTS
1632                                                                          ;OF BUS ADDRESS MEMORY FOR
1633                                                                          ;LINE 6
1634  005076  012705  000001                  MOV     #1,R5                   ;(R5)=EXPECTED VALUE OF
1635                                                                          ;BUS ADDRESS MEMORY FOR
1636                                                                          ;LINE 6, 1
1637  005102  104003                          HLT     3                       ;BUS ADDRESS NOT UPDATED
1638                                                                          ;CORRECTLY, ERROR
1639  005104  005777  010256          5$:     TST     @DHBC                   ;DID BYTE COUNT DECREMENT TO 0
1640  005110  001416                          BEQ     6$
1641  005112  017704  010250                  MOV     @DHBC,R4                ;(R4)=ACTUAL VALUE OF BYTE
1642                                                                          ;COUNT FOR LINE 6
1643  005116  005005                          CLR     R5                      ;(R5)=EXPECTED VALUE OF BYTE
1644                                                                          ;COUNT FOR LINE 6, 0
1645  005120  104004                          HLT     4                       ;BYTE COUNT DID NOT DECREMENT TO 0, ERROR
1646  005122  016777  010254  010250          MOV     DHRLVL,@DHRVEC  ;RESTORE TRAPCATCHER
1647  005130  005077  010246                  CLR     @DHRLVL
1648  005134  016777  010246  010242          MOV     DHTLVL,@DHTVEC
1649  005142  005077  010240                  CLR     @DHTLVL
1650  005146  012706  017102          6$:     MOV     #STACK,SP               ;RESTORE STACK
1651  005152  104400                          SCOPE                           ;CHECK FOR ITERATIONS, LOOP
1652
1653                                                    ;NPR LOGIC TEST
```

```
                                        ;SET BYTE COUNT TO 1 FOR LINE 7
                                        ;SET BAR BIT FOR LINE 7
                                        ;DELAY FOR NPR
                                        ;VERIFY THAT BAR BIT FOR LINE 7 CLEARS
                                        ;VERIFY THAT TRANSMITTER DONE IS SET
005154  012767  000340  172614  T17:    MOV     #340,PS                 ;DISABLE ALL INTERRUPTS
005162  012767  000020  010234          MOV     #20.,ICOUNT             ;SET UP FOR 20 ITERATIONS
005170  012767  005404  010222          MOV     #6$,ESCAPE              ;SET UP TO ESCAPE TO NEXT TEST
005176  012777  004000  010152          MOV     #BIT11,@DHSCR           ;ISSUE MASTER CLEAR
005204  004767  010054                  JSR     PC,CLEAR                ;CLEAR ALL BUS ADDRESS
                                                                        ;AND BYTE COUNT MEMORY LOCATIONS
005210  012777  005272  010166          MOV     #2$,@DHTVEC             ;SET UP TRANSMITTER
005216  012777  000340  010162          MOV     #340,@DHTLVL            ;INTERRUPT VECTOR
005224  012777  000007  010124          MOV     #7,@DHSCR               ;SELECT LINE 7
005232  012777  177777  010126          MOV     #-1,@DHBC               ;SET BYTE COUNT TO 1
005240  012700  001000                  MOV     #1000,R0
005244  012777  000200  010116          MOV     #200,@DHBAR             ;SET BAR BIT FOR
                                                                        ;LINE 7
005252  052777  020000  010076          BIS     #BIT13,@DHSCR           ;SET TRANSMITTER INTERRUPT ENABLE
005260  005067  172512                  CLR     PS                      ;ALLOW INTERRUPTS
005264  005300                  1$:     DEC     R0                      ;DELAY FOR NPR
005266  001376                          BNE     1$
005270  104001                          HLT     1                       ;NO INTERRUPT OCCURED, ERROR
005272  005777  010060          2$:     TST     @DHSCR                  ;VERIFY THAT TRANSMITTER
                                                                        ;DONE IS SET
005276  100401                          BMI     3$
005300  104002                          HLT     2                       ;TRANSMITTER DONE NOT SET, ERROR
005302  005777  010062          3$:     TST     @DHBAR          ;WAS BAR BIT CLEARED FOR LINE 7
005306  001404                          BEQ     4$
005310  005005                          CLR     R5                      ;(R5)=EXPECTED DATA IN
                                                                        ;BUFFER ACTIVE REGISTER, 0
005312  017704  010052                  MOV     @DHBAR,R4               ;(R4)=ACTUAL CONTENTS OF
                                                                        ;BUFFER ACTIVE REGISTER
005316  104000                          HLT     0                       ;BUS ACTIVE BIT NOT CLEARED, ERROR
005320  022777  000001  010036  4$:     CMP     #1,@DHBA                ;WAS BUS ADDRESS INCREMENTED
005326  001405                          BEQ     5$
005330  017704  010030                  MOV     @DHBA,R4                ;(R4)=ACTUAL CONTENTS
                                                                        ;OF BUS ADDRESS MEMORY FOR
                                                                        ;LINE 7
005334  012705  000001                  MOV     #1,R5                   ;(R5)=EXPECTED VALUE OF
                                                                        ;BUS ADDRESS MEMORY FOR
                                                                        ;LINE 7, 1
005340  104003                          HLT     3                       ;BUS ADDRESS NOT UPDATED
                                                                        ;CORRECTLY, ERROR
005342  005777  010020          5$:     TST     @DHBC                   ;DID BYTE COUNT DECREMENT TO 0
005346  001416                          BEQ     6$
005350  017704  010012                  MOV     @DHBC,R4                ;(R4)=ACTUAL VALUE OF BYTE
                                                                        ;COUNT FOR LINE 7
005354  005005                          CLR     R5                      ;(R5)=EXPECTED VALUE OF BYTE
                                                                        ;COUNT FOR LINE 7, 0
005356  104004                          HLT     4                       ;BYTE COUNT DID NOT DECREMENT TO 0, ERROR
005360  016777  010016  010012          MOV     DHRLVL,@DHRVEC  ;RESTORE TRAPCATCHER
005366  005077  010010                  CLR     @DHRLVL
005372  016777  010010  010004          MOV     DHTLVL,@DHTVEC
005400  005077  010002                  CLR     @DHTLVL
```

```
1710  005404  012706  017102          6$:     MOV     #STACK,SP               ;RESTORE STACK
1711  005410  104400                          SCOPE                           ;CHECK FOR ITERATIONS, LOOP
1712
1713                                          ;NPR LOGIC TEST
1714                                          ;SET BYTE COUNT TO 1 FOR LINE 10
1715                                          ;SET BAR BIT FOR LINE 10
1716                                          ;DELAY FOR NPR
1717                                          ;VERIFY THAT BAR BIT FOR LINE 10 CLEARS
1718                                          ;VERIFY THAT TRANSMITTER DONE IS SET
1719
1720  005412  012767  000340  172356  T20:     MOV     #340,PS                 ;DISABLE ALL INTERRUPTS
1721  005420  012767  000020  007776          MOV     #20,ICOUNT              ;SET UP FOR 20 ITERATIONS
1722  005426  012767  005642  007764          MOV     #6$,ESCAPE              ;SET UP TO ESCAPE TO NEXT TEST
1723  005434  012777  004000  007714          MOV     #BIT11,@DHSCR           ;ISSUE MASTER CLEAR
1724  005442  004767  007616                  JSR     PC,CLEAR                ;CLEAR ALL BUS ADDRESS
1725                                                                          ;AND BYTE COUNT MEMORY LOCATIONS
1726  005446  012777  005530  007730          MOV     #2$,@DHTVEC             ;SET UP TRANSMITTER
1727  005454  012777  000340  007724          MOV     #340,@DHTLVL            ;INTERRUPT VECTOR
1728  005462  012777  000010  007666          MOV     #10,@DHSCR              ;SELECT LINE 10
1729  005470  012777  177777  007670          MOV     #-1,@DHBC               ;SET BYTE COUNT TO 1
1730  005476  012700  001000                  MOV     #1000,R0
1731  005502  012777  000400  007660          MOV     #400,@DHBAR             ;SET BAR BIT FOR
1732                                                                          ;LINE 10
1733  005510  052777  020000  007640          BIS     #BIT13,@DHSCR           ;SET TRANSMITTER INTERRUPT ENABLE
1734  005516  005067  172254                  CLR     PS                      ;ALLOW INTERRUPTS
1735  005522  005300                  1$:     DEC     R0                      ;DELAY FOR NPR
1736  005524  001376                          BNE     1$
1737  005526  104001                          HLT     1                       ;NO INTERRUPT OCCURED, ERROR
1738  005530  005777  007622          2$:     TST     @DHSCR                  ;VERIFY THAT TRANSMITTER
1739                                                                          ;DONE IS SET
1740  005534  100401                          BMI     3$
1741  005536  104002                          HLT     2                       ;TRANSMITTER DONE NOT SET, ERROR
1742  005540  005777  007624          3$:     TST     @DHBAR          ;WAS BAR BIT CLEARED FOR LINE 10
1743  005544  001404                          BEQ     4$
1744  005546  005005                          CLR     R5                      ;(R5)=EXPECTED DATA IN
1745                                                                          ;BUFFER ACTIVE REGISTER, 0
1746  005550  017704  007614                  MOV     @DHBAR,R4               ;(R4)=ACTUAL CONTENTS OF
1747                                                                          ;BUFFER ACTIVE REGISTER
1748  005554  104000                          HLT     0                       ;BUS ACTIVE BIT NOT CLEARED, ERROR
1749  005556  022777  000001  007600  4$:     CMP     #1,@DHBA                ;WAS BUS ADDRESS INCREMENTED
1750  005564  001405                          BEQ     5$
1751  005566  017704  007572                  MOV     @DHBA,R4                ;(R4)=ACTUAL CONTENTS
1752                                                                          ;OF BUS ADDRESS MEMORY FOR
1753                                                                          ;LINE 10
1754  005572  012705  000001                  MOV     #1,R5                   ;(R5)=EXPECTED VALUE OF
1755                                                                          ;BUS ADDRESS MEMORY FOR
1756                                                                          ;LINE 10, 1
1757  005576  104003                          HLT     3                       ;BUS ADDRESS NOT UPDATED
1758                                                                          ;CORRECTLY, ERROR
1759  005600  005777  007562          5$:     TST     @DHBC                   ;DID BYTE COUNT DECREMENT TO 0
1760  005604  001416                          BEQ     6$
1761  005606  017704  007554                  MOV     @DHBC,R4                ;(R4)=ACTUAL VALUE OF BYTE
1762                                                                          ;COUNT FOR LINE 10
1763  005612  005005                          CLR     R5                      ;(R5)=EXPECTED VALUE OF BYTE
1764                                                                          ;COUNT FOR LINE 10, 0
1765  005614  104004                          HLT     4                       ;BYTE COUNT DID NOT DECREMENT TO 0, ERROR
```

```
1766  005616  016777  007560  007554          MOV     DHRLVL,@DHRVEC  ;RESTORE TRAPCATCHER
1767  005624  005077  007552                  CLR     @DHRLVL
1768  005630  016777  007552  007546          MOV     DHTLVL,@DHTVEC
1769  005636  005077  007544                  CLR     @DHTLVL
1770  005642  012706  017102          6$:     MOV     #STACK,SP               ;RESTORE STACK
1771  005646  104400                          SCOPE                           ;CHECK FOR ITERATIONS, LOOP
1772
1773                                          ;NPR LOGIC TEST
1774                                          ;SET BYTE COUNT TO 1 FOR LINE 11
1775                                          ;SET BAR BIT FOR LINE 11
1776                                          ;DELAY FOR NPR
1777                                          ;VERIFY THAT BAR BIT FOR LINE 11 CLEARS
1778                                          ;VERIFY THAT TRANSMITTER DONE IS SET
1779
1780  005650  012767  000340  172120  T21:     MOV     #340,PS                 ;DISABLE ALL INTERRUPTS
1781  005656  012767  000020  007540          MOV     #20,ICOUNT              ;SET UP FOR 20 ITERATIONS
1782  005664  012767  006100  007526          MOV     #6$,ESCAPE              ;SET UP TO ESCAPE TO NEXT TEST
1783  005672  012777  004000  007456          MOV     #BIT11,@DHSCR           ;ISSUE MASTER CLEAR
1784  005700  004767  007360                  JSR     PC,CLEAR                ;CLEAR ALL BUS ADDRESS
1785                                                                          ;AND BYTE COUNT MEMORY LOCATIONS
1786  005704  012777  005766  007472          MOV     #2$,@DHTVEC             ;SET UP TRANSMITTER
1787  005712  012777  000340  007466          MOV     #340,@DHTLVL            ;INTERRUPT VECTOR
1788  005720  012777  000011  007430          MOV     #11,@DHSCR              ;SELECT LINE 11
1789  005726  012777  177777  007432          MOV     #-1,@DHBC               ;SET BYTE COUNT TO 1
1790  005734  012700  001000                  MOV     #1000,R0
1791  005740  012777  001000  007422          MOV     #1000,@DHBAR            ;SET BAR BIT FOR
1792                                                                          ;LINE 11
1793  005746  052777  020000  007402          BIS     #BIT13,@DHSCR           ;SET TRANSMITTER INTERRUPT ENABLE
1794  005754  005067  172016                  CLR     PS                      ;ALLOW INTERRUPTS
1795  005760  005300                  1$:     DEC     R0                      ;DELAY FOR NPR
1796  005762  001376                          BNE     1$
1797  005764  104001                          HLT     1                       ;NO INTERRUPT OCCURED, ERROR
1798  005766  005777  007364          2$:     TST     @DHSCR                  ;VERIFY THAT TRANSMITTER
1799                                                                          ;DONE IS SET
1800  005772  100401                          BMI     3$
1801  005774  104002                          HLT     2                       ;TRANSMITTER DONE NOT SET, ERROR
1802  005776  005777  007366          3$:     TST     @DHBAR          ;WAS BAR BIT CLEARED FOR LINE 11
1803  006002  001404                          BEQ     4$
1804  006004  005005                          CLR     R5                      ;(R5)=EXPECTED DATA IN
1805                                                                          ;BUFFER ACTIVE REGISTER, 0
1806  006006  017704  007356                  MOV     @DHBAR,R4               ;(R4)=ACTUAL CONTENTS OF
1807                                                                          ;BUFFER ACTIVE REGISTER
1808  006012  104000                          HLT     0                       ;BUS ACTIVE BIT NOT CLEARED, ERROR
1809  006014  022777  000001  007342  4$:     CMP     #1,@DHBA                ;WAS BUS ADDRESS INCREMENTED
1810  006022  001405                          BEQ     5$
1811  006024  017704  007334                  MOV     @DHBA,R4                ;(R4)=ACTUAL CONTENTS
1812                                                                          ;OF BUS ADDRESS MEMORY FOR
1813                                                                          ;LINE 11
1814  006030  012705  000001                  MOV     #1,R5                   ;(R5)=EXPECTED VALUE OF
1815                                                                          ;BUS ADDRESS MEMORY FOR
1816                                                                          ;LINE 11, 1
1817  006034  104003                          HLT     3                       ;BUS ADDRESS NOT UPDATED
1818                                                                          ;CORRECTLY, ERROR
1819  006036  005777  007324          5$:     TST     @DHBC                   ;DID BYTE COUNT DECREMENT TO 0
1820  006042  001416                          BEQ     6$
1821  006044  017704  007316                  MOV     @DHBC,R4                ;(R4)=ACTUAL VALUE OF BYTE
```

```
1822                                                            ;COUNT FOR LINE 11
1823  006050  005005                       CLR     R5           ;(R5)=EXPECTED VALUE OF BYTE
1824                                                            ;COUNT FOR LINE 11, 0
1825  006052  104004                       HLT     4            ;BYTE COUNT DID NOT DECREMENT TO 0, ERROR
1826  006054  016777  007322  007316       MOV     DHRLVL,@DHRVEC  ;RESTORE TRAPCATCHER
1827  006062  005077  007314               CLR     @DHRLVL
1828  006066  016777  007314  007310       MOV     DHTLVL,@DHTVEC
1829  006074  005077  007306               CLR     @DHTLVL
1830  006100  012706  017102        6$:    MOV     #STACK,SP       ;RESTORE STACK
1831  006104  104400                       SCOPE                   ;CHECK FOR ITERATIONS, LOOP
1832
1833                                       ;NPR LOGIC TEST
1834                                       ;SET BYTE COUNT TO 1 FOR LINE 12
1835                                       ;SET BAR BIT FOR LINE 12
1836                                       ;DELAY FOR NPR
1837                                       ;VERIFY THAT BAR BIT FOR LINE 12 CLEARS
1838                                       ;VERIFY THAT TRANSMITTER DONE IS SET
1839
1840  006106  012767  000340  171662  T22: MOV     #340,PS         ;DISABLE ALL INTERRUPTS
1841  006114  012767  000020  007302       MOV     #20,ICOUNT      ;SET UP FOR 20 ITERATIONS
1842  006122  012767  006336  007270       MOV     #6$,ESCAPE      ;SET UP TO ESCAPE TO NEXT TEST
1843  006130  012777  004000  007220       MOV     #BIT11,@DHSCR   ;ISSUE MASTER CLEAR
1844  006136  004767  007122               JSR     PC,CLEAR        ;CLEAR ALL BUS ADDRESS
1845                                                            ;AND BYTE COUNT MEMORY LOCATIONS
1846  006142  012777  006224  007234       MOV     #2$,@DHTVEC     ;SET UP TRANSMITTER
1847  006150  012777  000340  007230       MOV     #340,@DHTLVL    ;INTERRUPT VECTOR
1848  006156  012777  000012  007172       MOV     #12,@DHSCR      ;SELECT LINE 12
1849  006164  012777  177777  007174       MOV     #-1,@DHBC       ;SET BYTE COUNT TO 1
1850  006172  012700  001000               MOV     #1000,R0
1851  006176  012777  002000  007164       MOV     #2000,@DHBAR    ;SET BAR BIT FOR
1852                                                            ;LINE 12
1853  006204  052777  020000  007144       BIS     #BIT13,@DHSCR   ;SET TRANSMITTER INTERRUPT ENABLE
1854  006212  005067  171560               CLR     PS              ;ALLOW INTERRUPTS
1855  006216  005300                1$:    DEC     R0              ;DELAY FOR NPR
1856  006220  001376                       BNE     1$
1857  006222  104001                       HLT     1               ;NO INTERRUPT OCCURED, ERROR
1858  006224  005777  007126        2$:    TST     @DHSCR          ;VERIFY THAT TRANSMITTER
1859                                                            ;DONE IS SET
1860  006230  100401                       BMI     3$
1861  006232  104002                       HLT     2               ;TRANSMITTER DONE NOT SET, ERROR
1862  006234  005777  007130        3$:    TST     @DHBAR      ;WAS BAR BIT CLEARED FOR LINE 12
1863  006240  001404                       BEQ     4$
1864  006242  005005                       CLR     R5              ;(R5)=EXPECTED DATA IN
1865                                                            ;BUFFER ACTIVE REGISTER, 0
1866  006244  017704  007120               MOV     @DHBAR,R4       ;(R4)=ACTUAL CONTENTS OF
1867                                                            ;BUFFER ACTIVE REGISTER
1868  006250  104000                       HLT     0               ;BUS ACTIVE BIT NOT CLEARED, ERROR
1869  006252  022777  000001  007104  4$:  CMP     #1,@DHBA        ;WAS BUS ADDRESS INCREMENTED
1870  006260  001405                       BEQ     5$
1871  006262  017704  007076               MOV     @DHBA,R4        ;(R4)=ACTUAL CONTENTS
1872                                                            ;OF BUS ADDRESS MEMORY FOR
1873                                                            ;LINE 12
1874  006266  012705  000001               MOV     #1,R5           ;(R5)=EXPECTED VALUE OF
1875                                                            ;BUS ADDRESS MEMORY FOR
1876                                                            ;LINE 12, 1
1877  006272  104003                       HLT     3               ;BUS ADDRESS NOT UPDATED
```

```
1878                                                                    ;CORRECTLY, ERROR
1879  006274  005777  007066          5$:     TST     @DHBC             ;DID BYTE COUNT DECREMENT TO 0
1880  006300  001416                          BEQ     6$
1881  006302  017704  007060                  MOV     @DHBC,R4          ;(R4)=ACTUAL VALUE OF BYTE
1882                                                                    ;COUNT FOR LINE 12
1883  006306  005005                          CLR     R5                ;(R5)=EXPECTED VALUE OF BYTE
1884                                                                    ;COUNT FOR LINE 12, 0
1885  006310  104004                          HLT     4                 ;BYTE COUNT DID NOT DECREMENT TO 0, ERROR
1886  006312  016777  007064  007060          MOV     DHRLVL,@DHRVEC  ;RESTORE TRAPCATCHER
1887  006320  005077  007056                  CLR     @DHRLVL
1888  006324  016777  007056  007052          MOV     DHTLVL,@DHTVEC
1889  006332  005077  007050                  CLR     @DHTLVL
1890  006336  012706  017102          6$:     MOV     #STACK,SP         ;RESTORE STACK
1891  006342  104400                          SCOPE                     ;CHECK FOR ITERATIONS, LOOP
1892
1893                                          ;NPR LOGIC TEST
1894                                          ;SET BYTE COUNT TO 1 FOR LINE 13
1895                                          ;SET BAR BIT FOR LINE 13
1896                                          ;DELAY FOR NPR
1897                                          ;VERIFY THAT BAR BIT FOR LINE 13 CLEARS
1898                                          ;VERIFY THAT TRANSMITTER DONE IS SET
1899
1900  006344  012767  000340  171424  T23:     MOV     #340,PS           ;DISABLE ALL INTERRUPTS
1901  006352  012767  000020  007044          MOV     #20,ICOUNT        ;SET UP FOR 20 ITERATIONS
1902  006360  012767  006574  007032          MOV     #6$,ESCAPE        ;SET UP TO ESCAPE TO NEXT TEST
1903  006366  012777  004000  006762          MOV     #BIT11,@DHSCR     ;ISSUE MASTER CLEAR
1904  006374  004767  006664                  JSR     PC,CLEAR          ;CLEAR ALL BUS ADDRESS
1905                                                                    ;AND BYTE COUNT MEMORY LOCATIONS
1906  006400  012777  006462  006776          MOV     #2$,@DHTVEC       ;SET UP TRANSMITTER
1907  006406  012777  000340  006772          MOV     #340,@DHTLVL      ;INTERRUPT VECTOR
1908  006414  012777  000013  006734          MOV     #13,@DHSCR        ;SELECT LINE 13
1909  006422  012777  177777  006736          MOV     #-1,@DHBC         ;SET BYTE COUNT TO 1
1910  006430  012700  001000                  MOV     #1000,R0
1911  006434  012777  004000  006726          MOV     #4000,@DHBAR      ;SET BAR BIT FOR
1912                                                                    ;LINE 13
1913  006442  052777  020000  006706          BIS     #BIT13,@DHSCR     ;SET TRANSMITTER INTERRUPT ENABLE
1914  006450  005067  171322                  CLR     PS                ;ALLOW INTERRUPTS
1915  006454  005300                  1$:     DEC     R0                ;DELAY FOR NPR
1916  006456  001376                          BNE     1$
1917  006460  104001                          HLT     1                 ;NO INTERRUPT OCCURED, ERROR
1918  006462  005777  006670          2$:     TST     @DHSCR            ;VERIFY THAT TRANSMITTER
1919                                                                    ;DONE IS SE
1920  006466  100401                          BMI     3$
1921  006470  104002                          HLT     2                 ;TRANSMITTER DONE NOT SET, ERROR
1922  006472  005777  006672          3$:     TST     @DHBAR          ;WAS BAR BIT CLEARED FOR LINE 13
1923  006476  001404                          BEQ     4$
1924  006500  005005                          CLR     R5                ;(R5)=EXPECTED DATA IN
1925                                                                    ;BUFFER ACTIVE REGISTER, 0
1926  006502  017704  006662                  MOV     @DHBAR,R4         ;(R4)=ACTUAL CONTENTS OF
1927                                                                    ;BUFFER ACTIVE REGISTER
1928  006506  104000                          HLT     0                 ;BUS ACTIVE BIT NOT CLEARED, ERROR
1929  006510  022777  000001  006646  4$:     CMP     #1,@DHBA          ;WAS BUS ADDRESS INCREMENTED
1930  006516  001405                          BEQ     5$
1931  006520  017704  006640                  MOV     @DHBA,R4          ;(R4)=ACTUAL CONTENTS
1932                                                                    ;OF BUS ADDRESS MEMORY FOR
1933                                                                    ;LINE 13
```

```
                                        MOV     #1,R5                   ;(R5)=EXPECTED VALUE OF
                                                                        ;BUS ADDRESS MEMORY FOR
                                                                        ;LINE 13, 1
                                        HLT     3                       ;BUS ADDRESS NOT UPDATED
                                                                        ;CORRECTLY, ERROR
006532  005777  006630          5$:    TST     @DHBC                   ;DID BYTE COUNT DECREMENT TO 0
006536  001416                         BEQ     6$
006540  017704  006622                 MOV     @DHBC,R4                ;(R4)=ACTUAL VALUE OF BYTE
                                                                        ;COUNT FOR LINE 13
006544  005005                         CLR     R5                      ;(R5)=EXPECTED VALUE OF BYTE
                                                                        ;COUNT FOR LINE 13, 0
006546  104004                         HLT     4                       ;BYTE COUNT DID NOT DECREMENT TO 0, ERROR
006550  016777  006626  006622         MOV     DHRLVL,@DHRVEC  ;RESTORE TRAPCATCHER
006556  005077  006620                 CLR     @DHRLVL
006562  016777  006620  006614         MOV     DHTLVL,@DHTVEC
006570  005077  006616                 CLR     @DHTLVL
006574  012706  017102          6$:    MOV     #STACK,SP               ;RESTORE STACK
006600  104400                         SCOPE                           ;CHECK FOR ITERATIONS, LOOP

                                        ;NPR LOGIC TEST
                                        ;SET BYTE COUNT TO 1 FOR LINE 14
                                        ;SET BAR BIT FOR LINE 14
                                        ;DELAY FOR NPR
                                        ;VERIFY THAT BAR BIT FOR LINE 14 CLEARS
                                        ;VERIFY THAT TRANSMITTER DONE IS SET

006602  012767  000340  171166  T24:    MOV     #340,PS                 ;DISABLE ALL INTERRUPTS
006610  012767  000020  006606         MOV     #20,ICOUNT              ;SET UP FOR 20 ITERATIONS
006616  012767  007032  006574         MOV     #6$,ESCAPE              ;SET UP TO ESCAPE TO NEXT TEST
006624  012777  004000  006524         MOV     #BIT11,@DHSCR           ;ISSUE MASTER CLEAR
006632  004767  006426                 JSR     PC,CLEAR                ;CLEAR ALL BUS ADDRESS
                                                                        ;AND BYTE COUNT MEMORY LOCATIONS
006636  012777  006720  006540         MOV     #2$,@DHTVEC             ;SET UP TRANSMITTER
006644  012777  000340  006534         MOV     #340,@DHTLVL            ;INTERRUPT VECTOR
006652  012777  000014  006476         MOV     #14,@DHSCR              ;SELECT LINE 14
006660  012777  177777  006500         MOV     #-1,@DHBC               ;SET BYTE COUNT TO 1
006666  012700  001000                 MOV     #1000,R0
006672  012777  010000  006470         MOV     #10000,@DHBAR           ;SET BAR BIT FOR
                                                                        ;LINE 14
006700  052777  020000  006450         BIS     #BIT13,@DHSCR           ;SET TRANSMITTER INTERRUPT ENABLE
006706  005067  171064                 CLR     PS                      ;ALLOW INTERRUPTS
006712  005300                  1$:    DEC     R0                      ;DELAY FOR NPR
006714  001376                         BNE     1$
006716  104001                         HLT     1                       ;NO INTERRUPT OCCURED, ERROR
006720  005777  006432          2$:    TST     @DHSCR                  ;VERIFY THAT TRANSMITTER
                                                                        ;DONE IS SET
006724  100401                         BMI     3$
006726  104002                         HLT     2                       ;TRANSMITTER DONE NOT SET, ERROR
006730  005777  006434          3$:    TST     @DHBAR          ;WAS BAR BIT CLEARED FOR LINE 14
006734  001404                         BEQ     4$
006736  005005                         CLR     R5                      ;(R5)=EXPECTED DATA IN
                                                                        ;BUFFER ACTIVE REGISTER, 0
006740  017704  006424                 MOV     @DHBAR,R4               ;(R4)=ACTUAL CONTENTS OF
                                                                        ;BUFFER ACTIVE REGISTER
006744  104000                         HLT     0                       ;BUS ACTIVE BIT NOT CLEARED, ERROR
006746  022777  000001  006410  4$:    CMP     #1,@DHBA                ;WAS BUS ADDRESS INCREMENTED
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1990  006754  001405                        BEQ     5$
1991  006756  017704  006402                MOV     @DHBA,R4                ;(R4)=ACTUAL CONTENTS
1992                                                                          ;OF BUS ADDRESS MEMORY FOR
1993                                                                          ;LINE 14
1994  006762  012705  000001                MOV     #1,R5                   ;(R5)=EXPECTED VALUE OF
1995                                                                          ;BUS ADDRESS MEMOR. FOR
1996                                                                          ;LINE 14, 1
1997  006766  104003                        HLT     3                       ;BUS ADDRESS NOT UPDATED
1998                                                                          ;CORRECTLY, ERROR
1999  006770  005777  006372        5$:     TST     @DHBC                   ;DID BYTE COUNT DECREMENT TO 0
2000  006774  001416                        BEQ     6$
2001  006776  017704  006364                MOV     @DHBC,R4                ;(R4)=ACTUAL VALUE OF BYTE
2002                                                                          ;COUNT FOR LINE 14
2003  007002  005005                        CLR     R5                      ;(R5)=EXPECTED VALUE OF BYTE
2004                                                                          ;COUNT FOR LINE 14, 0
2005  007004  104004                        HLT     4                       ;BYTE COUNT DID NOT DECREMENT TO 0, ERROR
2006  007006  016777  006370  006364        MOV     DHRLVL,@DHRVEC  ;RESTORE TRAPCATCHER
2007  007014  005077  006362                CLR     @DHRLVL
2008  007020  016777  006362  006356        MOV     DHTLVL,@DHTVEC
2009  007026  005077  006354                CLR     @DHTLVL
2010  007032  012706  017102        6$:     MOV     #STACK,SP               ;RESTORE STACK
2011  007036  104400                        SCOPE                           ;CHECK FOR ITERATIONS, LOOP
2012
2013                                        ;NPR LOGIC TEST
2014                                        ;SET BYTE COUNT TO 1 FOR LINE 15
2015                                        ;SET BAR BIT FOR LINE 15
2016                                        ;DELAY FOR NPR
2017                                        ;VERIFY THAT BAR BIT FOR LINE 15 CLEARS
2018                                        ;VERIFY THAT TRANSMITTER DONE IS SET
2019
2020  007040  012767  000340  170730  T25:  MOV     #340,PS                 ;DISABLE ALL INTERRUPTS
2021  007046  012767  000020  006350        MOV     #20,ICOUNT              ;SET UP FOR 20 ITERATIONS
2022  007054  012767  007270  006336        MOV     #6$,ESCAPE              ;SET UP TO ESCAPE TO NEXT TEST
2023  007062  012777  004000  006266        MOV     #BIT11,@DHSCR           ;ISSUE MASTER CLEAR
2024  007070  004767  006170                JSR     PC,CLEAR                ;CLEAR ALL BUS ADDRESS
2025                                                                          ;AND BYTE COUNT MEMORY LOCATIONS
2026  007074  012777  007156  006302        MOV     #2$,@DHTVEC             ;SET UP TRANSMITTER
2027  007102  012777  000340  006276        MOV     #340,@DHTLVL            ;INTERRUPT VECTOR
2028  007110  012777  000015  006240        MOV     #15,@DHSCR              ;SELECT LINE 15
2029  007116  012777  177777  006242        MOV     #-1,@DHBC               ;SET BYTE COUNT TO 1
2030  007124  012700  001000                MOV     #1000,R0
2031  007130  012777  020000  006232        MOV     #20000,@DH3AR           ;SET BAR BIT FOR
2032                                                                          ;LINE 15
2033  007136  052777  020000  006212        BIS     #BIT13,@DHSCR           ;SET TRANSMITTER INTERRUPT ENABLE
2034  007144  005067  170626                CLR     PS                      ;ALLOW INTERRUPTS
2035  007150  005300                1$:     DEC     R0                      ;DELAY FOR NPR
2036  007152  001376                        BNE     1$
2037  007154  104001                        HLT     1                       ;NO INTERRUPT OCCURED, ERROR
2038  007156  005777  006174        2$:     TST     @DHSCR                  ;VERIFY THAT TRANSMITTER
2039                                                                          ;DONE IS SET
2040  007162  100401                        BMI     3$
2041  007164  104002                        HLT     2                       ;TRANSMITTER DONE NOT SET, ERROR
2042  007166  005777  006176        3$:     TST     @DHBAR          ;WAS BAR BIT CLEARED FOR LINE 15
2043  007172  001404                        BEQ     4$
2044  007174  005005                        CLR     R5                      ;(R5)=EXPECTED DATA IN
2045                                                                          ;BUFFER ACTIVE REGISTER, 0
```

```
2046  007176  012704  006166                MOV     @DHBAR,R4               ;(R4)=ACTUAL CONTENTS OF
2047                                                                          ;BUFFER ACTIVE REGISTER
2048  007202  104000                        HLT     0                       ;BUS ACTIVE BIT NOT CLEARED, ERROR
2049  007204  022777  000001  006152  4$:   CMP     #1,@DHBA                ;WAS BUS ADDRESS INCREMENTED
2050  007212  001405                        BEQ     5$
2051  007214  017704  006144                MOV     @DHBA,R4                ;(R4)=ACTUAL CONTENTS
2052                                                                          ;OF BUS ADDRESS MEMORY FOR
2053                                                                          ;LINE 15
2054  007220  012705  000001                MOV     #1,R5                   ;(R5)=EXPECTED VALUE OF
2055                                                                          ;BUS ADDRESS MEMORY FOR
2056                                                                          ;LINE 15, 1
2057  007224  104003                        HLT     3                       ;BUS ADDRESS NOT UPDATED
2058                                                                          ;CORRECTLY, ERROR
2059  007226  005777  006134          5$:   TST     @DHBC                   ;DID BYTE COUNT DECREMENT TO 0
2060  007232  001416                        BEQ     6$
2061  007234  017704  006126                MOV     @DHBC,R4                ;(R4)=ACTUAL VALUE OF BYTE
2062                                                                          ;COUNT FOR LINE 15
2063  007240  005005                        CLR     R5                      ;(R5)=EXPECTED VALUE OF BYTE
2064                                                                          ;COUNT FOR LINE 15, 0
2065  007242  104004                        HLT     4                       ;BYTE COUNT DID NOT DECREMENT TO 0, ERROR
2066  007244  016777  006132  006126        MOV     DHRLVL,@DHRVEC  ;RESTORE TRAPCATCHER
2067  007252  005077  006124                CLR     @DHRLVL
2068  007256  016777  006124  006120        MOV     DHTLVL,@DHTVEC
2069  007264  005077  006116                CLR     @DHTLVL
2070  007270  012706  017102          6$:   MOV     #STACK,SP               ;RESTORE STACK
2071  007274  104400                        SCOPE                           ;CHECK FOR ITERATIONS, LOOP
2072
2073                                        ;NPR LOGIC TEST
2074                                        ;SET BYTE COUNT TO 1 FOR LINE 16
2075                                        ;SET BAR BIT FOR LINE 16
2076                                        ;DELAY FOR NPR
2077                                        ;VERIFY THAT BAR BIT FOR LINE 16 CLEARS
2078                                        ;VERIFY THAT TRANSMITTER DONE IS SET
2079
2080  007276  012767  000340  170472  T26:   MOV     #340,PS                 ;DISABLE ALL INTERRUPTS
2081  007304  012767  000020  006112        MOV     #20,ICOUNT              ;SET UP FOR 20 ITERATIONS
2082  007312  012767  007526  006100        MOV     #6$,ESCAPE              ;SET UP TO ESCAPE TO NEXT TEST
2083  007320  012777  004000  006030        MOV     #BIT11,@DHSCR           ;ISSUE MASTER CLEAR
2084  007326  004767  005732                JSR     PC,CLEAR                ;CLEAR ALL BUS ADDRESS
2085                                                                          ;AND BYTE COUNT MEMORY LOCATIONS
2086  007332  012777  007414  006044        MOV     #2$,@DHTVEC             ;SET UP TRANSMITTER
2087  007340  012777  000340  006040        MOV     #340,@DHTLVL            ;INTERRUPT VECTOR
2088  007346  012777  000016  006002        MOV     #16,@DHSCR              ;SELECT LINE 16
2089  007354  012777  177777  006004        MOV     #-1,@DHBC               ;SET BYTE COUNT TO 1
2090  007362  012700  001000                MOV     #1000,R0
2091  007366  012777  040000  005774        MOV     #40000,@DHBAR           ;SET BAR BIT FOR
2092                                                                          ;LINE 16
2093  007374  052777  020000  005754        BIS     #BIT13,@DHSCR           ;SET TRANSMITTER INTERRUPT ENABLE
2094  007402  005067  170370                CLR     PS                      ;ALLOW INTERRUPTS
2095  007406  005300                  1$:   DEC     R0                      ;DELAY FOR NPR
2096  007410  001376                        BNE     1$
2097  007412  104001                        HLT     1                       ;NO INTERRUPT OCCURED, ERROR
2098  007414  005777  005736          2$:   TST     @DHSCR                  ;VERIFY THAT TRANSMITTER
2099                                                                          ;DONE IS SET
2100  007420  100401                        BMI     3$
2101  007422  104002                        HLT     2                       ;TRANSMITTER DONE NOT SET, ERROR
```

```
2102  007424  005777  005740        3$:   TST   @DHBAR          ;WAS BAR BIT CLEARED FOR LINE 16
2103  007430  001404                      BEQ   4$
2104  007432  005005                      CLR   R5                     ;(R5)=EXPECTED DATA IN
2105                                                                   ;BUFFER ACTIVE REGISTER, 0
2106  007434  017704  005730              MOV   @DHBAR,R4              ;(R4)=ACTUAL CONTENTS OF
2107                                                                   ;BUFFER ACTIVE REGISTER
2108  007440  104000                      HLT   0                      ;BUS ACTIVE BIT NOT CLEARED, ERROR
2109  007442  022777  000001  005714  4$:   CMP   #1,@DHBA            ;WAS BUS ADDRESS INCREMENTED
2110  007450  001405                      BEQ   5$
2111  007452  017704  005706              MOV   @DHBA,R4               ;(R4)=ACTUAL CONTENTS
2112                                                                   ;OF BUS ADDRESS MEMORY FOR
2113                                                                   ;LINE 16
2114  007456  012705  000001              MOV   #1,R5                  ;(R5)=EXPECTED VALUE OF
2115                                                                   ;BUS ADDRESS MEMORY FOR
2116                                                                   ;LINE 16, 1
2117  007462  104003                      HLT   3                      ;BUS ADDRESS NOT UPDATED
2118                                                                   ;CORRECTLY, ERROR
2119  007464  005777  005676        5$:   TST   @DHBC                  ;DID BYTE COUNT DECREMENT TO 0
2120  007470  001416                      BEQ   6$
2121  007472  017704  005670              MOV   @DHBC,R4               ;(R4)=ACTUAL VALUE OF BYTE
2122                                                                   ;COUNT FOR LINE 16
2123  007476  005005                      CLR   R5                     ;(R5)=EXPECTED VALUE OF BYTE
2124                                                                   ;COUNT FOR LINE 16, 0
2125  007500  104004                      HLT   4                      ;BYTE COUNT DID NOT DECREMENT TO 0, ERROR
2126  007502  016777  005674  005670      MOV   DHRLVL,@DHRVEC  ;RESTORE TRAPCATCHER
2127  007510  005077  005666              CLR   @DHRLVL
2128  007514  016777  005666  005662      MOV   DHTLVL,@DHTVEC
2129  007522  005077  005660              CLR   @DHTLVL
2130  007526  012706  017102        6$:   MOV   #STACK,SP              ;RESTORE STACK
2131  007532  104400                      SCOPE                        ;CHECK FOR ITERATIONS, LOOP
2132
2133                                      ;NPR LOGIC TEST
2134                                      ;SET BYTE COUNT TO 1 FOR LINE 17
2135                                      ;SET BAR BIT FOR LINE 17
2136                                      ;DELAY FOR NPR
2137                                      ;VERIFY THAT BAR BIT FOR LINE 17 CLEARS
2138                                      ;VERIFY THAT TRANSMITTER DONE IS SET
2139
2140  007534  012767  000340  170234  T27:   MOV   #340,PS               ;DISABLE ALL INTERRUPTS
2141  007542  012767  000020  005654        MOV   #20,ICOUNT             ;SET UP FOR 20 ITERATIONS
2142  007550  012767  007764  005642        MOV   #6$,ESCAPE             ;SET UP TO ESCAPE TO NEXT TEST
2143  007556  012777  004000  005572        MOV   #BIT11,@DHSCR          ;ISSUE MASTER CLEAR
2144  007564  004767  005474              JSR   PC,CLEAR               ;CLEAR ALL BUS ADDRESS
2145                                                                   ;AND BYTE COUNT MEMORY LOCATIONS
2146  007570  012777  007652  005606        MOV   #2$,@DHTVEC            ;SET UP TRANSMITTER
2147  007576  012777  000340  005602        MOV   #340,@DHTLVL           ;INTERRUPT VECTOR
2148  007604  012777  000017  005544        MOV   #17,@DHSCR             ;SELECT LINE 17
2149  007612  012777  177777  005546        MOV   #-1,@DHBC              ;SET BYTE COUNT TO 1
2150  007620  012700  001000              MOV   #1000,R0
2151  007624  012777  100000  005536        MOV   #100000,@DHBAR         ;SET BAR BIT FOR
2152                                                                   ;LINE 17
2153  007632  052777  020000  005516        BIS   #BIT13,@DHSCR          ;SET TRANSMITTER INTERRUPT ENABLE
2154  007640  005067  170132              CLR   PS                     ;ALLOW INTERRUPTS
2155  007644  005300                1$:   DEC   R0                     ;DELAY FOR NPR
2156  007646  001376                      BNE   1$
2157  007650  104001                      HLT   1                      ;NO INTERRUPT OCCURED, ERROR
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2158  007652  005777  005500          2$:     TST     @DHSCR                  ;VERIFY THAT TRANSMITTER
2159                                                                          ;DONE IS SET
2160  007656  100401                          BMI     3$
2161  007660  104002                          HLT     2                       ;TRANSMITTER DONE NOT SET, ERROR
2162  007662  005777  005502          3$:     TST     @DHBAR          ;WAS BAR BIT CLEARED FOR LINE 17
2163  007666  001404                          BEQ     4$
2164  007670  005005                          CLR     R5                      ;(R5)=EXPECTED DATA IN
2165                                                                          ;BUFFER ACTIVE REGISTER, 0
2166  007672  017704  005472                  MOV     @DHBAR,R4               ;(R4)=ACTUAL CONTENTS OF
2167                                                                          ;BUFFER ACTIVE REGISTER
2168  007676  104000                          HLT     0                       ;BUS ACTIVE BIT NOT CLEARED, ERROR
2169  007700  022777  000001  005456  4$:     CMP     #1,@DHBA                ;WAS BUS ADDRESS INCREMENTED
2170  007706  001405                          BEQ     5$
2171  007710  017704  005450                  MOV     @DHBA,R4                ;(R4)=ACTUAL CONTENTS
2172                                                                          ;OF BUS ADDRESS MEMORY FOR
2173                                                                          ;LINE 17
2174  007714  012705  000001                  MOV     #1,R5                   ;(R5)=EXPECTED VALUE OF
2175                                                                          ;BUS ADDRESS MEMORY FOR
2176                                                                          ;LINE 17, 1
2177  007720  104003                          HLT     3                       ;BUS ADDRESS NOT UPDATED
2178                                                                          ;CORRECTLY, ERROR
2179  007722  005777  005440          5$:     TST     @DHBC                   ;DID BYTE COUNT DECREMENT TO 0
2180  007726  001416                          BEQ     6$
2181  007730  017704  005432                  MOV     @DHBC,R4                ;(R4)=ACTUAL VALUE OF BYTE
2182                                                                          ;COUNT FOR LINE 17
2183  007734  005005                          CLR     R5                      ;(R5)=EXPECTED VALUE OF BYTE
2184                                                                          ;COUNT FOR LINE 17, 0
2185  007736  104004                          HLT     4                       ;BYTE COUNT DID NOT DECREMENT TO 0, ERROR
2186  007740  016777  005436  005432          MOV     DHRLVL,@DHRVEC  ;RESTORE TRAPCATCHER
2187  007746  005077  005430                  CLR     @DHRLVL
2188  007752  016777  005430  005424          MOV     DHTLVL,@DHTVEC
2189  007760  005077  005422                  CLR     @DHTLVL
2190  007764  012706  017102          6$:     MOV     #STACK,SP               ;RESTORE STACK
2191  007770  104400                          SCOPE                           ;CHECK FOR ITERATIONS, LOOP
2192
2193                                          ;NPR LOGIC TEST
2194                                          ;SET BYTE COUNT ON ALL LINES TO 1
2195                                          ;SET BAR BIT FOR LINE 0
2196                                          ;VERIFY THAT BYTE COUNT FOR LINE 0 GOES TO 0
2197                                          ;VERIFY THAT BUS ADDRESS FOR LINE 0 IS INCREMENTED
2198                                          ;VERIFY THAT BYTE COUNTS AND BUS ADDRESSES FOR ALL OTHER LINES
2199                                          ;ARE UNCHANGED
2200
2201  007772  012767  000340  167776  T30:    MOV     #340,PS                 ;DISABLE ALL INTERRUPTS
2202  010000  012767  000010  005416          MOV     #10,ICOUNT              ;SET UP FOR 10 ITERATIONS
2203  010006  012767  010140  005404          MOV     #8$,ESCAPE              ;SET UP TO ESCAPE TO NEXT TEST
2204  010014  012777  004000  005334          MOV     #BIT11,@DHSCR           ;MASTER CLEAR INTERFACE
2205                                                                          ;TO SET ALL TBMT BITS
2206  010022  004767  005236                  JSR     PC,CLEAR                ;CLEAR ALL BYTE COUNT AND
2207                                                                          ;BUS ADDRESS MEMORY LOCATIONS
2208  010026  004767  005264                  JSR     PC,LOAD                 ;SET ALL BYTE COUNT LOCATIONS TO -1
2209  010032  012777  000001  005330          MOV     #1,@DHBAR               ;SET BAR BIT FOR LINE 0
2210  010040  005777  005312          3$:     TST     @DHSCR                  ;WAIT FOR TRANSMITTER DONE
2211  010044  100375                          BPL     3$
2212  010046  012700  000020                  MOV     #20,R0                  ;SET UP TO CHECK ALL 16 LINES
2213  010052  005077  005300                  CLR     @DHSCR                  ;START AT LINE 0
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2214  010056  005001                        CLR     R1                      ;KEEP TRACK OF LINE NUMBER
2215  010060  012705  177777        4$:     MOV     #-1,R5                  ;(R5)=EXPECTED BYTE COUNT.
2216                                                                        ;IF LINE NUMBER NOT = 0
2217  010064  005003                        CLR     R3                      ;(R3)=EXPECTED BUS ADDRESS.
2218                                                                        ;IF LINE NUMBER NOT = 0
2219  010066  017704  005274                MOV     @DHBC,R4                ;(R4)=ACTUAL BYTE ACOUNT
2220  010072  017702  005266                MOV     @DHBA,R2                ;(R5)=ACTUAL BUS ADDRESS
2221  010076  027727  005254  000000        CMP     @DHSCR,#0       ;IF LINE BEING COMPARED IS LINE 0
2222  010104  001002                        BNE     5$
2223  010106  005005                        CLR     R5                      ;EXPECTED BYTE COUNT=0
2224  010110  005203                        INC     R3                      ;EXPECTED BUS ADDRESS = 1
2225  010112  020504                5$:     CMP     R5,R4                   ;IS BYTE COUNT CORRECT
2226  010114  001401                        BEQ     6$
2227  010116  104004                        HLT     4                       ;BYTE COUNT ERROR
2228  010120  020302                6$:     CMP     R3,R2                   ;IS BUS ADDRESS CORPECT
2229  010122  001401                        BEQ     7$
2230  010124  104003                        HLT     3                       ;BUS ADDRESS ERROR
2231  010126  005277  005224        7$:     INC     @DHSCR                  ;PREPARE TO CHECK NEXT LINE
2232  010132  005201                        INC     R1
2233  010134  005300                        DEC     R0                      ;CONTINUE IF ALL NOT DONE
2234  010136  001350                        BNE     4$
2235  010140  104400                8$:     SCOPE                           ;CHECK FOR ITERATIONS, LOOP
2236
2237                                        ;NPR LOGIC TEST
2238                                        ;SET BYTE COUNT ON ALL LINES TO 1
2239                                        ;SET BAR BIT FOR LINE 1
2240                                        ;VERIFY THAT BYTE COUNT FOR LINE 1 GOES TO 0
2241                                        ;VERIFY THAT BUS ADDRESS FOR LINE 1 IS INCREMENTED
2242                                        ;VERIFY THAT BYTE COUNTS AND BUS ADDRESSES FOR ALL OTHER LINES
2243                                        ;ARE UNCHANGED
2244
2245  010142  012767  000340  167626  T31:  MOV     #340,PS                 ;DISABLE ALL INTERRUPTS
2246  010150  012767  000010  005246        MOV     #10.,ICOUNT             ;SET UP FOR 10 ITERATIONS
2247  010156  012767  010310  005234        MOV     #8$,ESCAPE              ;SET UP TO ESCAPE TO NEXT TEST
2248  010164  012777  004000  005164        MOV     #BIT11,@DHSCR           ;MASTER CLEAR INTERFACE
2249                                                                        ;TO SET ALL TBMT BITS
2250  010172  004767  005066                JSR     PC,CLEAR                ;CLEAR ALL BYTE COUNT AND
2251                                                                        ;BUS ADDRESS MEMORY LOCATIONS
2252  010176  004767  005114                JSR     PC,LOAD                 ;SET ALL BYTE COUNT LOCATIONS TO -1
2253  010202  012777  000002  005160        MOV     #2,@DHBAR               ;SET BAR BIT FOR LINE 1
2254  010210  005777  005142        3$:     TST     @DHSCR                  ;WAIT FOR TRANSMITTER DONE
2255  010214  100375                        BPL     3$
2256  010216  012700  000020                MOV     #20,R0                  ;SET UP TO CHECK ALL 16 LINES
2257  010222  005077  005130                CLR     @DHSCR                  ;START AT LINE 0
2258  010226  005001                        CLR     R1                      ;KEEP TRACK OF LINE NUMBER
2259  010230  012705  177777        4$:     MOV     #-1,R5                  ;(R5)=EXPECTED BYTE COUNT.
2260                                                                        ;IF LINE NUMBER NOT = 1
2261  010234  005003                        CLR     R3                      ;(R3)=EXPECTED BUS ADDRESS.
2262                                                                        ;IF LINE NUMBER NOT = 1
2263  010236  017704  005124                MOV     @DHBC,R4                ;(R4)=ACTUAL BYTE ACOUNT
2264  010242  017702  005116                MOV     @DHBA,R2                ;(R5)=ACTUAL BUS ADDRESS
2265  010246  027727  005104  000001        CMP     @DHSCR,#1       ;IF LINE BEING COMPARED IS LINE 1
2266  010254  001002                        BNE     5$
2267  010256  005005                        CLR     R5                      ;EXPECTED BYTE COUNT=0
2268  010260  005203                        INC     R3                      ;EXPECTED BUS ADDRESS = 1
2269  010262  020504                5$:     CMP     R5,R4                   ;IS BYTE COUNT CORRECT
```

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2270  010264  001401                        BEQ     6$
2271  010266  104004                        HLT     4                       ;BYTE COUNT ERROR
2272  010270  020302              6$:       CMP     R3,R2                   ;IS BUS ADDRESS CORRECT
2273  010272  001401                        BEQ     7$
2274  010274  104003                        HLT     3                       ;BUS ADDRESS ERROR
2275  010276  005277  005054      7$:       INC     @DHSCR                  ;PREPARE TO CHECK NEXT LINE
2276  010302  005201                        INC     R1
2277  010304  005300                        DEC     R0                      ;CONTINUE IF ALL NOT DONE
2278  010306  001350                        BNE     4$
2279  010310  104400              8$:       SCOPE                           ;CHECK FOR ITERATIONS, LOOP
2280
2281                                        ;NPR LOGIC TEST
2282                                        ;SET BYTE COUNT ON ALL LINES TO 1
2283                                        ;SET BAR BIT FOR LINE 2
2284                                        ;VERIFY THAT BYTE COUNT FOR LINE 2 GOES TO 0
2285                                        ;VERIFY THAT BUS ADDRESS FOR LINE 2 IS INCREMENTED
2286                                        ;VERIFY THAT BYTE COUNTS AND BUS ADDRESSES FOR ALL OTHER LINES
2287                                        ;ARE UNCHANGED
2288
2289  010312  012767  000340  167456  T32:  MOV     #340,PS                 ;DISABLE ALL INTERRUPTS
2290  010320  012767  000010  005076        MOV     #10,ICOUNT              ;SET UP FOR 10 ITERATIONS
2291  010326  012767  010460  005064        MOV     #8$,ESCAPE              ;SET UP TO ESCAPE TO NEXT TEST
2292  010334  012777  004000  005014        MOV     #BIT11,@DHSCR           ;MASTER CLEAR INTERFACE
2293                                                                        ;TO SET ALL TBMT BITS
2294  010342  004767  004716                JSR     PC,CLEAR                ;CLEAR ALL BYTE COUNT AND
2295                                                                        ;BUS ADDRESS MEMORY LOCATIONS
2296  010346  004767  004744                JSR     PC,LOAD                 ;SET ALL BYTE COUNT LOCATIONS TO -1
2297  010352  012777  000004  005010        MOV     #4,@DHBAR               ;SET BAR BIT FOR LINE 2
2298  010360  005777  004772        3$:     TST     @DHSCR                  ;WAIT FOR TRANSMITTER DONE
2299  010364  100375                        BPL     3$
2300  010366  012700  000020                MOV     #20,R0                  ;SET UP TO CHECK ALL 16 LINES
2301  010372  005077  004760                CLR     @DHSCR                  ;START AT LINE 0
2302  010376  005001                        CLR     R1                      ;KEEP TRACK OF LINE NUMBER
2303  010400  012705  177777        4$:     MOV     #-1,R5                  ;(R5)=EXPECTED BYTE COUNT,
2304                                                                        ;IF LINE NUMBER NOT = 2
2305  010404  005003                        CLR     R3                      ;(R3)=EXPECTED BUS ADDRESS,
2306                                                                        ;IF LINE NUMBER NOT = 2
2307  010406  017704  004754                MOV     @DHBC,R4                ;(R4)=ACTUAL BYTE ACOUNT
2308  010412  017702  004746                MOV     @DHBA,R2                ;(R5)=ACTUAL BUS ADDRESS
2309  010416  027727  004734  000002        CMP     @DHSCR,#2       ;IF LINE BEING COMPARED IS LINE 2
2310  010424  001002                        BNE     5$
2311  010426  005005                        CLR     R5                      ;EXPECTED BYTE COUNT=0
2312  010430  005203                        INC     R3                      ;EXPECTED BUS ADDRESS = 1
2313  010432  020504              5$:       CMP     R5,R4                   ;IS BYTE COUNT CORRECT
2314  010434  001401                        BEQ     6$
2315  010436  104004                        HLT     4                       ;BYTE COUNT ERROR
2316  010440  020302              6$:       CMP     R3,R2                   ;IS BUS ADDRESS CORRECT
2317  010442  001401                        BEQ     7$
2318  010444  104003                        HLT     3                       ;BUS ADDRESS ERROR
2319  010446  005277  004704      7$:       INC     @DHSCR                  ;PREPARE TO CHECK NEXT LINE
2320  010452  005201                        INC     R1
2321  010454  005300                        DEC     R0                      ;CONTINUE IF ALL NOT DONE
2322  010456  001350                        BNE     4$
2323  010460  104400              8$:       SCOPE                           ;CHECK FOR ITERATIONS, LOOP
2324
2325                                        ;NPR LOGIC TEST
```

```
2326                                                ;SET BYTE COUNT ON ALL LINES TO 1
2327                                                ;SET BAR BIT FOR LINE 3
2328                                                ;VERIFY THAT BYTE COUNT FOR LINE 3 GOES TO 0
2329                                                ;VERIFY THAT BUS ADDRESS FOR LINE 3 IS INCREMENTED
2330                                                ;VERIFY THAT BYTE COUNTS AND BUS ADDRESSES FOR ALL OTHER LINES
2331                                                ;ARE UNCHANGED
2332
2333  010462  012767  000340  167306  T33:   MOV     #340,PS                 ;DISABLE ALL INTERRUPTS
2334  010470  012767  000010  004726         MOV     #10,ICOUNT              ;SET UP FOR 10 ITERATIONS
2335  010476  012767  010630  004714         MOV     #8$,ESCAPE              ;SET UP TO ESCAPE TO NEXT TEST
2336  010504  012777  004000  004644         MOV     #BIT11,@DHSCR           ;MASTER CLEAR INTERFACE
2337                                                                        ;TO SET ALL TBMT BITS
2338  010512  004767  004546                 JSR     PC,CLEAR                ;CLEAR ALL BYTE COUNT AND
2339                                                                        ;BUS ADDRESS MEMORY LOCATIONS
2340  010516  004767  004574                 JSR     PC,LOAD                 ;SET ALL BYTE COUNT LOCATIONS TO -1
2341  010522  012777  000010  004640         MOV     #10,@DHBAR              ;SET BAR BIT FOR LINE 3
2342  010530  005777  004622          3$:    TST     @DHSCR                  ;WAIT FOR TRANSMITTER DONE
2343  010534  100375                         BPL     3$
2344  010536  012700  000020                 MOV     #20,R0                  ;SET UP TO CHECK ALL 16 LINES
2345  010542  005077  004610                 CLR     @DHSCR                  ;START AT LINE 0
2346  010546  005001                         CLR     R1                      ;KEEP TRACK OF LINE NUMBER
2347  010550  012705  177777          4$:    MOV     #-1,R5                  ;(R5)=EXPECTED BYTE COUNT,
2348                                                                        ;IF LINE NUMBER NOT = 3
2349  010554  005003                         CLR     R3                      ;(R3)=EXPECTED BUS ADDRESS.
2350                                                                        ;IF LINE NUMBER NOT = 3
2351  010556  017704  004604                 MOV     @DHBC,R4                ;(R4)=ACTUAL BYTE ACOUNT
2352  010562  017702  004576                 MOV     @DHBA,R2                ;(R5)=ACTUAL BUS ADDRESS
2353  010566  027727  004564  000003         CMP     @DHSCR,#3       ;IF LINE BEING COMPARED IS LINE 3
2354  010574  001002                         BNE     5$
2355  010576  005005                         CLR     R5                      ;EXPECTED BYTE COUNT=0
2356  010600  005203                         INC     R3                      ;EXPECTED BUS ADDRESS = 1
2357  010602  020504          5$:    CMP     R5,R4                   ;IS BYTE COUNT CORRECT
2358  010604  001401                         BEQ     6$
2359  010606  104004                         HLT     4                       ;BYTE COUNT ERROR
2360  010610  020302          6$:    CMP     R3,R2                   ;IS BUS ADDRESS CORRECT
2361  010612  001401                         BEQ     7$
2362  010614  104003                         HLT     3                       ;BUS ADDRESS ERROR
2363  010616  005277  004534          7$:    INC     @DHSCR                  ;PREPARE TO CHECK NEXT LINE
2364  010622  005201                         INC     R1
2365  010624  005300                         DEC     R0                      ;CONTINUE IF ALL NOT DONE
2366  010626  001350                         BNE     4$
2367  010630  104400          8$:    SCOPE                           ;CHECK FOR ITERATIONS, LOOP
2368
2369                                                ;NPR LOGIC TEST
2370                                                ;SET BYTE COUNT ON ALL LINES TO 1
2371                                                ;SET BAR BIT FOR LINE 4
2372                                                ;VERIFY THAT BYTE COUNT FOR LINE 4 GOES TO 0
2373                                                ;VERIFY THAT BUS ADDRESS FOR LINE 4 IS INCREMENTED
2374                                                ;VERIFY THAT BYTE COUNTS AND BUS ADDRESSES FOR ALL OTHER LINES
2375                                                ;ARE UNCHANGED
2376
2377  010632  012767  000340  167136  T34:   MOV     #340,PS                 ;DISABLE ALL INTERRUPTS
2378  010640  012767  000010  004556         MOV     #10,ICOUNT              ;SET UP FOR 10 ITERATIONS
2379  010646  012767  011000  004544         MOV     #8$,ESCAPE              ;SET UP TO ESCAPE TO NEXT TEST
2380  010654  012777  004000  004474         MOV     #BIT11,@DHSCR           ;MASTER CLEAR INTERFACE
2381                                                                        ;TO SET ALL TBMT BITS
```

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2382  010662  004767  004376                JSR     PC,CLEAR                ;CLEAR ALL BYTE COUNT AND
2383                                                                          ;BUS ADDRESS MEMORY LOCATIONS
2384  010666  004767  004424                JSR     PC,LOAD                 ;SET ALL BYTE COUNT LOCATIONS TO -1
2385  010672  012777  000020  004470        MOV     #20,@DHBAR              ;SET BAR BIT FOR LINE 4
2386  010700  005777  004452          3$:   TST     @DHSCR                  ;WAIT FOR TRANSMITTER DONE
2387  010704  100375                       BPL     3$
2388  010706  012700  000020                MOV     #20,R0                  ;SET UP TO CHECK ALL 16 LINES
2389  010712  005077  004440                CLR     @DHSCR                  ;START AT LINE 0
2390  010716  005001                        CLR     R1                      ;KEEP TRACK OF LINE NUMBER
2391  010720  012705  177777          4$:   MOV     #-1,R5                  ;(R5)=EXPECTED BYTE COUNT,
2392                                                                          ;IF LINE NUMBER NOT = 4
2393  010724  005003                        CLR     R3                      ;(R3)=EXPECTED BUS ADDRESS,
2394                                                                          ;IF LINE NUMBER NOT = 4
2395  010726  017704  004434                MOV     @DHBC,R4                ;(R4)=ACTUAL BYTE ACOUNT
2396  010732  017702  004426                MOV     @DHBA,R2                ;(R5)=ACTUAL BUS ADDRESS
2397  010736  027727  004414  000004        CMP     @DHSCR,#4       ;IF LINE BEING COMPARED IS LINE 4
2398  010744  001002                        BNE     5$
2399  010746  005005                        CLR     R5                      ;EXPECTED BYTE COUNT=0
2400  010750  005203                        INC     R3                      ;EXPECTED BUS ADDRESS = 1
2401  010752  020504          5$:   CMP     R5,R4                   ;IS BYTE COUNT CORRECT
2402  010754  001401                        BEQ     6$
2403  010756  104004                        HLT     4                       ;BYTE COUNT ERROR
2404  010760  020302          6$:   CMP     R3,R2                   ;IS BUS ADDRESS CORRECT
2405  010762  001401                        BEQ     7$
2406  010764  104003                        HLT     3                       ;BUS ADDRESS ERROR
2407  010766  005277  004364          7$:   INC     @DHSCR                  ;PREPARE TO CHECK NEXT LINE
2408  010772  005201                        INC     R1
2409  010774  005300                        DEC     R0                      ;CONTINUE IF ALL NOT DONE
2410  010776  001350                        BNE     4$
2411  011000  104400          8$:   SCOPE                                   ;CHECK FOR ITERATIONS, LOOP
2412
2413                                        ;NPR LOGIC TEST
2414                                        ;SET BYTE COUNT ON ALL LINES TO 1
2415                                        ;SET BAR BIT FOR LINE 5
2416                                        ;VERIFY THAT BYTE COUNT FOR LINE 5 GOES TO 0
2417                                        ;VERIFY THAT BUS ADDRESS FOR LINE 5 IS INCREMENTED
2418                                        ;VERIFY THAT BYTE COUNTS AND BUS ADDRESSES FOR ALL OTHER LINES
2419                                        ;ARE UNCHANGED
2420
2421  011002  012767  000340  166766  T35:   MOV     #340,PS                 ;DISABLE ALL INTERRUPTS
2422  011010  012767  000010  004406        MOV     #10.,ICOUNT             ;SET UP FOR 10 ITERATIONS
2423  011016  012767  011150  004374        MOV     #8$,ESCAPE              ;SET UP TO ESCAPE TO NEXT TEST
2424  011024  012777  004000  004324        MOV     #BIT11,@DHSCR           ;MASTER CLEAR INTERFACE
2425                                                                          ;TO SET ALL TBMT BITS
2426  011032  004767  004226                JSR     PC,CLEAR                ;CLEAR ALL BYTE COUNT AND
2427                                                                          ;BUS ADDRESS MEMORY LOCATIONS
2428  011036  004767  004254                JSR     PC,LOAD                 ;SET ALL BYTE COUNT LOCATIONS TO -1
2429  011042  012777  000040  004320        MOV     #40,@DHBAR              ;SET BAR BIT FOR LINE 5
2430  011050  005777  004302          3$:   TST     @DHSCR                  ;WAIT FOR TRANSMITTER DONE
2431  011054  100375                       BPL     3$
2432  011056  012700  000020                MOV     #20,R0                  ;SET UP TO CHECK ALL 16 LINES
2433  011062  005077  004270                CLR     @DHSCR                  ;START AT LINE 0
2434  011066  005001                        CLR     R1                      ;KEEP TRACK OF LINE NUMBER
2435  011070  012705  177777          4$:   MOV     #-1,R5                  ;(R5)=EXPECTED BYTE COUNT,
2436                                                                          ;IF LINE NUMBER NOT = 5
2437  011074  005003                        CLR     R3                      ;(R3)=EXPECTED BUS ADDRESS,
```

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2438                                                            ;IF LINE NUMBER NOT = 5
2439  011076  017704  004264                MOV     @DHBC,R4  ;(R4)=ACTUAL BYTE ACOUNT
2440  011102  017702  004256                MOV     @DHBA,R2  ;(R5)=ACTUAL BUS ADDRESS
2441  011106  027727  004244  000005        CMP     @DHSCR,#5       ;IF LINE BEING COMPARED IS LINE 5
2442  011114  001002                        BNE     5$
2443  011116  005005                        CLR     R5              ;EXPECTED BYTE COUNT=0
2444  011120  005203                        INC     R3              ;EXPECTED BUS ADDRESS = 1
2445  011122  020504                5$:     CMP     R5,R4           ;IS BYTE COUNT CORRECT
2446  011124  001401                        BEQ     6$
2447  011126  104004                        HLT     4               ;BYTE COUNT ERROR
2448  011130  020302                6$:     CMP     R3,R2           ;IS BUS ADDRESS CORRECT
2449  011132  001401                        BEQ     7$
2450  011134  104003                        HLT     3               ;BUS ADDRESS ERROR
2451  011136  005277  004214        7$:     INC     @DHSCR          ;PREPARE TO CHECK NEXT LINE
2452  011142  005201                        INC     R1
2453  011144  005300                        DEC     R0              ;CONTINUE IF ALL NOT DONE
2454  011146  001350                        BNE     4$
2455  011150  104400                8$:     SCOPE                   ;CHECK FOR ITERATIONS, LOOP
2456
2457                                        ;NPR LOGIC TEST
2458                                        ;SET BYTE COUNT ON ALL LINES TO 1
2459                                        ;SET BAR BIT FOR LINE 6
2460                                        ;VERIFY THAT BYTE COUNT FOR LINE 6 GOES TO 0
2461                                        ;VERIFY THAT BUS ADDRESS FOR LINE 6 IS INCREMENTED
2462                                        ;VERIFY THAT BYTE COUNTS AND BUS ADDRESSES FOR ALL OTHER LINES
2463                                        ;ARE UNCHANGED
2464
2465  011152  012767  000340  166616  T36:  MOV     #340,PS         ;DISABLE ALL INTERRUPTS
2466  011160  012767  000010  004236        MOV     #10.,ICOUNT     ;SET UP FOR 10 ITERATIONS
2467  011166  012767  011320  004224        MOV     #8$,ESCAPE      ;SET UP TO ESCAPE TO NEXT TEST
2468  011174  012777  004000  004154        MOV     #BIT11,@DHSCR   ;MASTER CLEAR INTERFACE
2469                                                                ;TO SET ALL TBMT BITS
2470  011202  004767  004056                JSR     PC,CLEAR        ;CLEAR ALL BYTE COUNT AND
2471                                                                ;BUS ADDRESS MEMORY LOCATIONS
2472  011206  004767  004104                JSR     PC,LOAD         ;SET ALL BYTE COUNT LOCATIONS TO -1
2473  011212  012777  000100  004150        MOV     #100,@DHBAR     ;SET BAR BIT FOR LINE 6
2474  011220  005777  004132        3$:     TST     @DHSCR          ;WAIT FOR TRANSMITTER DONE
2475  011224  100375                        BPL     3$
2476  011226  012700  000020                MOV     #20,R0          ;SET UP TO CHECK ALL 16 LINES
2477  011232  005077  004120                CLR     @DHSCR          ;START AT LINE 0
2478  011236  005001                        CLR     R1              ;KEEP TRACK OF LINE NUMBER
2479  011240  012705  177777        4$:     MOV     #-1,R5          ;(R5)=EXPECTED BYTE COUNT,
2480                                                                ;IF LINE NUMBER NOT = 6
2481  011244  005003                        CLR     R3              ;(R3)=EXPECTED BUS ADDRESS,
2482                                                                ;IF LINE NUMBER NOT = 6
2483  011246  017704  004114                MOV     @DHBC,R4        ;(R4)=ACTUAL BYTE ACOUNT
2484  011252  017702  004106                MOV     @DHBA,R2        ;(R5)=ACTUAL BUS ADDRESS
2485  011256  027727  004074  000006        CMP     @DHSCR,#6       ;IF LINE BEING COMPARED IS LINE 6
2486  011264  001002                        BNE     5$
2487  011266  005005                        CLR     R5              ;EXPECTED BYTE COUNT=0
2488  011270  005203                        INC     R3              ;EXPECTED BUS ADDRESS = 1
2489  011272  020504                5$:     CMP     R5,R4           ;IS BYTE COUNT CORRECT
2490  011274  001401                        BEQ     6$
2491  011276  104004                        HLT     4               ;BYTE COUNT ERROR
2492  011300  020302                6$:     CMP     R3,R2           ;IS BUS ADDRESS CORRECT
2493  011302  001401                        BEQ     7$
```

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2494  011304  104003                    HLT     3                       ;BUS ADDRESS ERROR
2495  011306  005277  004044      7$:   INC     @DHSCR                  ;PREPARE TO CHECK NEXT LINE
2496  011312  005201                    INC     R1
2497  011314  005300                    DEC     R0                      ;CONTINUE IF ALL NOT DONE
2498  011316  001350                    BNE     4$
2499  011320  104400              8$:   SCOPE                           ;CHECK FOR ITERATIONS, LOOP
2500
2501                                    ;NPR LOGIC TEST
2502                                    ;SET BYTE COUNT ON ALL LINES TO 1
2503                                    ;SET BAR BIT FOR LINE 7
2504                                    ;VERIFY THAT BYTE COUNT FOR LINE 7 GOES TO 0
2505                                    ;VERIFY THAT BUS ADDRESS FOR LINE 7 IS INCREMENTED
2506                                    ;VERIFY THAT BYTE COUNTS AND BUS ADDRESSES FOR ALL OTHER LINES
2507                                    ;ARE UNCHANGED
2508
2509  011322  012767  000340  166446  T37:   MOV     #340,PS                 ;DISABLE ALL INTERRUPTS
2510  011330  012767  000010  004066        MOV     #10,ICOUNT              ;SET UP FOR 10 ITERATIONS
2511  011336  012767  011470  004054        MOV     #8$,ESCAPE              ;SET UP TO ESCAPE TO NEXT TEST
2512  011344  012777  004000  004004        MOV     #BIT11,@DHSCR           ;MASTER CLEAR INTERFACE
2513                                                                        ;TO SET ALL TBMT BITS
2514  011352  004767  003706                JSR     PC,CLEAR                ;CLEAR ALL BYTE COUNT AND
2515                                                                        ;BUS ADDRESS MEMORY LOCATIONS
2516  011356  004767  003734                JSR     PC,LOAD                 ;SET ALL BYTE COUNT LOCATIONS TO -1
2517  011362  012777  000200  004000        MOV     #200,@DHBAR             ;SET BAR BIT FOR LINE 7
2518  011370  005777  003762          3$:   TST     @DHSCR                  ;WAIT FOR TRANSMITTER DONE
2519  011374  100375                    BPL     3$
2520  011376  012700  000020                MOV     #20,R0                  ;SET UP TO CHECK ALL 16 LINES
2521  011402  005077  003750                CLR     @DHSCR                  ;START AT LINE 0
2522  011406  005001                    CLR     R1                      ;KEEP TRACK OF LINE NUMBER
2523  011410  012705  177777          4$:   MOV     #-1,R5                  ;(R5)=EXPECTED BYTE COUNT,
2524                                                                        ;IF LINE NUMBER NOT = 7
2525  011414  005003                    CLR     R3                      ;(R3)=EXPECTED BUS ADDRESS,
2526                                                                        ;IF LINE NUMBER NOT = 7
2527  011416  017704  003744                MOV     @DHBC,R4                ;(R4)=ACTUAL BYTE ACOUNT
2528  011422  017702  003736                MOV     @DHBA,R2                ;(R5)=ACTUAL BUS ADDRESS
2529  011426  027727  003724  000007        CMP     @DHSCR,#7       ;IF LINE BEING COMPARED IS LINE 7
2530  011434  001002                    BNE     5$
2531  011436  005005                    CLR     R5                      ;EXPECTED BYTE COUNT=0
2532  011440  005203                    INC     R3                      ;EXPECTED BUS ADDRESS = 1
2533  011442  020504          5$:   CMP     R5,R4                   ;IS BYTE COUNT CORRECT
2534  011444  001401                    BEQ     6$
2535  011446  104004                    HLT     4                       ;BYTE COUNT ERROR
2536  011450  020302          6$:   CMP     R3,R2                   ;IS BUS ADDRESS CORRECT
2537  011452  001401                    BEQ     7$
2538  011454  104003                    HLT     3                       ;BUS ADDRESS ERROR
2539  011456  005277  003674          7$:   INC     @DHSCR                  ;PREPARE TO CHECK NEXT LINE
2540  011462  005201                    INC     R1
2541  011464  005300                    DEC     R0                      ;CONTINUE IF ALL NOT DONE
2542  011466  001350                    BNE     4$
2543  011470  104400              8$:   SCOPE                           ;CHECK FOR ITERATIONS, LOOP
2544
2545                                    ;NPR LOGIC TEST
2546                                    ;SET BYTE COUNT ON ALL LINES TO 1
2547                                    ;SET BAR BIT FOR LINE 10
2548                                    ;VERIFY THAT BYTE COUNT FOR LINE 10 GOES TO 0
2549                                    ;VERIFY THAT BUS ADDRESS FOR LINE 10 IS INCREMENTED
```

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2550                                                    ;VERIFY THAT BYTE COUNTS AND BUS ADDRESSES FOR ALL OTHER LINES
2551                                                    ;ARE UNCHANGED
2552
2553  011472  012767  000340  166276  T40:    MOV     #340,PS                 ;DISABLE ALL INTERRUPTS
2554  011500  012767  000010  003716          MOV     #10.,ICOUNT             ;SET UP FOR 10 ITERATIONS
2555  011506  012767  011640  003704          MOV     #8$,ESCAPE              ;SET UP TO ESCAPE TO NEXT TEST
2556  011514  012777  004000  003634          MOV     #BIT11,@DHSCR           ;MASTER CLEAR INTERFACE
2557                                                    ;TO SET ALL TBMT BITS
2558  011522  004767  003536                  JSR     PC,CLEAR                ;CLEAR ALL BYTE COUNT AND
2559                                                    ;BUS ADDRESS MEMORY LOCATIONS
2560  011526  004767  003564                  JSR     PC,LOAD                 ;SET ALL BYTE COUNT LOCATIONS TO -1
2561  011532  012777  000400  003630          MOV     #400,@DHBAR             ;SET BAR BIT FOR LINE 10
2562  011540  005777  003612          3$:     TST     @DHSCR                  ;WAIT FOR TRANSMITTER DONE
2563  011544  100375                          BPL     3$
2564  011546  012700  000020                  MOV     #20,R0                  ;SET UP TO CHECK ALL 16 LINES
2565  011552  005077  003600                  CLR     @DHSCR                  ;START AT LINE 0
2566  011556  005001                          CLR     R1                      ;KEEP TRACK OF LINE NUMBER
2567  011560  012705  177777          4$:     MOV     #-1,R5                  ;(R5)=EXPECTED BYTE COUNT,
2568                                                    ;IF LINE NUMBER NOT = 10
2569  011564  005003                          CLR     R3                      ;(R3)=EXPECTED BUS ADDRESS,
2570                                                    ;IF LINE NUMBER NOT = 10
2571  011566  017704  003574                  MOV     @DHBC,R4                ;(R4)=ACTUAL BYTE ACOUNT
2572  011572  017702  003566                  MOV     @DHBA,R2                ;(R5)=ACTUAL BUS ADDRESS
2573  011576  027727  003554  000010          CMP     @DHSCR,#10      ;IF LINE BEING COMPARED IS LINE 10
2574  011604  00.002                          BNE     5$
2575  011606  005005                          CLR     R5                      ;EXPECTED BYTE COUNT=0
2576  011610  005203                          INC     R3                      ;EXPECTED BUS ADDRESS = :
2577  011612  020504          5$:     CMP     R5,R4                   ;IS BYTE COUNT CORRECT
2578  011614  001401                          BEQ     6$
2579  011616  104004                          HLT     4                       ;BYTE COUNT ERROR
2580  011620  020302          6$:     CMP     R3,R2                   ;IS BUS ADDRESS CORRECT
2581  011622  001401                          BEQ     7$
2582  011624  104003                          HLT     3                       ;BUS ADDRESS ERROR
2583  011626  005277  003524          7$:     INC     @DHSCR                  ;PREPARE TO CHECK NEXT LINE
2584  011632  005201                          INC     R1
2585  011634  005300                          DEC     R0                      ;CONTINUE IF ALL NOT DONE
2586  011636  001350                          BNE     4$
2587  011640  104400          E$:     SCOPE                                   ;CHECK FOR ITERATIONS, LOOP
2588
2589                                                    ;NPR LOGIC TEST
2590                                                    ;SET BYTE COUNT ON ALL LINES TO 1
2591                                                    ;SET BAR BIT FOR LINE 11
2592                                                    ;VERIFY THAT BYTE COUNT FOR LINE 11 GOES TO 0
2593                                                    ;VERIFY THAT BUS ADDRESS FOR LINE 11 IS INCREMENTED
2594                                                    ;VERIFY THAT BYTE COUNTS AND BUS ADDRESSES FOR ALL OTHER LINES
2595                                                    ;ARE UNCHANGED
2596
2597  011642  012767  000340  166126  T41:    MOV     #340,PS                 ;DISABLE ALL INTERRUPTS
2598  011650  012767  000010  003546          MOV     #10,ICOUNT              ;SET UP FOR 10 ITERATIONS
2599  011656  012767  012010  003534          MOV     #8$,ESCAPE              ;SET UP TO ESCAPE TO NEXT TEST
2600  011664  012777  004000  003464          MOV     #BIT11,@DHSCR           ;MASTER CLEAR INTERFACE
2601                                                    ;TO SET ALL TBMT BITS
2602  011672  004767  003366                  JSR     PC,CLEAR                ;CLEAR ALL BYTE COUNT AND
2603                                                    ;BUS ADDRESS MEMORY LOCATIONS
2604  011676  004767  003414                  JSR     PC,LOAD                 ;SET ALL BYTE COUNT LOCATIONS TO -1
2605  011702  012777  001000  003460          MOV     #1000,@DHBAR            ;SET BAR BIT FOR LINE 11
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2606  011710  005777  003442          3$:     TST     @DHSCR                  ;WAIT FOR TRANSMITTER DONE
2607  011714  100375                          BPL     3$
2608  011716  012700  000020                  MOV     #20,R0                  ;SET UP TO CHECK ALL 16 LINES
2609  011722  005077  003430                  CLR     @DHSCR                  ;START AT LINE 0
2610  011726  005001                          CLR     R1                      ;KEEP TRACK OF LINE NUMBER
2611  011730  012705  177777          4$:     MOV     #-1,R5                  ;(R5)=EXPECTED BYTE COUNT,
2612                                                                          ;IF LINE NUMBER NOT = 11
2613  011734  005003                          CLR     R3                      ;(R3)=EXPECTED BUS ADDRESS,
2614                                                                          ;IF LINE NUMBER NOT = 11
2615  011736  017704  003424                  MOV     @DHBC,R4                ;(R4)=ACTUAL BYTE ACOUNT
2616  011742  017702  003416                  MOV     @DHBA,R2                ;(R5)=ACTUAL BUS ADDRESS
2617  011746  027727  003404  000011          CMP     @DHSCR,#11      ;IF LINE BEING COMPARED IS LINE 11
2618  011754  001002                          BNE     5$
2619  011756  005005                          CLR     R5                      ;EXPECTED BYTE COUNT=0
2620  011760  005203                          INC     R3                      ;EXPECTED BUS ADDRESS = 1
2621  011762  020504          5$:     CMP     R5,R4                   ;IS BYTE COUNT CORRECT
2622  011764  001401                          BEQ     6$
2623  011766  104004                          HLT     4                       ;BYTE COUNT ERROR
2624  011770  020302          6$:     CMP     R3,R2                   ;IS BUS ADDRESS CORRECT
2625  011772  001401                          BEQ     7$
2626  011774  104003                          HLT     3                       ;BUS ADDRESS ERROR
2627  011776  005277  003354          7$:     INC     @DHSCR                  ;PREPARE TO CHECK NEXT LINE
2628  012002  005201                          INC     R1
2629  012004  005300                          DEC     R0                      ;CONTINUE IF ALL NOT DONE
2630  012006  001350                          BNE     4$
2631  012010  104400          8$:     SCOPE                           ;CHECK FOR ITERATIONS, LOOP
2632
2633                                          ;NPR LOGIC TEST
2634                                          ;SET BYTE COUNT ON ALL LINES TO 1
2635                                          ;SET BAR BIT FOR LINE 12
2636                                          ;VERIFY THAT BYTE COUNT FOR LINE 12 GOES TO 0
2637                                          ;VERIFY THAT BUS ADDRESS FOR LINE 12 IS INCREMENTED
2638                                          ;VERIFY THAT BYTE COUNTS AND BUS ADDRESSES FOR ALL OTHER LINES
2639                                          ;ARE UNCHANGED
2640
2641  012012  012767  000340  165756  T42:     MOV     #340,PS                 ;DISABLE ALL INTERRUPTS
2642  012020  012767  000010  003376          MOV     #10,ICOUNT              ;SET UP FOR 10 ITERATIONS
2643  012026  012767  012160  003364          MOV     #8$,ESCAPE              ;SET UP TO ESCAPE TO NEXT TEST
2644  012034  012777  004000  003314          MOV     #BIT11,@DHSCR           ;MASTER CLEAR INTERFACE
2645                                                                          ;TO SET ALL TBMT BITS
2646  012042  004767  003216                  JSR     PC,CLEAR                ;CLEAR ALL BYTE COUNT AND
2647                                                                          ;BUS ADDRESS MEMORY LOCATIONS
2648  012046  004767  003244                  JSR     PC,LOAD                 ;SET ALL BYTE COUNT LOCATIONS TO -1
2649  012052  012777  002000  003310          MOV     #2000,@DHBAR            ;SET BAR BIT FOR LINE 12
2650  012060  005777  003272          3$:     TST     @DHSCR                  ;WAIT FOR TRANSMITTER DONE
2651  012064  100375                          BPL     3$
2652  012066  012700  000020                  MOV     #20,R0                  ;SET UP TO CHECK ALL 16 LINES
2653  012072  005077  003260                  CLR     @DHSCR                  ;START AT LINE 0
2654  012076  005001                          CLR     R1                      ;KEEP TRACK OF LINE NUMBER
2655  012100  012705  177777          4$:     MOV     #-1,R5                  ;(R5)=EXPECTED BYTE COUNT,
2656                                                                          ;IF LINE NUMBER NOT = 12
2657  012104  005003                          CLR     R3                      ;(R3)=EXPECTED BUS ADDRESS,
2658                                                                          ;IF LINE NUMBER NOT = 12
2659  012106  017704  003254                  MOV     @DHBC,R4                ;(R4)=ACTUAL BYTE ACOUNT
2660  012112  017702  003246                  MOV     @DHBA,R2                ;(R5)=ACTUAL BUS ADDRESS
2661  012116  027727  003234  000012          CMP     @DHSCR,#12      ;IF LINE BEING COMPARED IS LINE 12
```

B05


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      012124  001002                           BNE     5$
      012126  005005                           CLR     R5                      ;EXPECTED BYTE COUNT=0
      012130  005203                           INC     R3                      ;EXPECTED BUS ADDRESS = 1
      012132  020504                   5$:     CMP     R5,R4                   ;IS BYTE COUNT CORRECT
      012134  001401                           BEQ     6$
      012136  104004                           HLT     4                       ;BYTE COUNT ERROR
      012140  020302                   6$:     CMP     R3,R2                   ;IS BUS ADDRESS CORRECT
      012142  001401                           BEQ     7$
      012144  104003                           HLT     3                       ;BUS ADDRESS ERROR
      012146  005277  003204           7$:     INC     @DHSCR                  ;PREPARE TO CHECK NEXT LINE
      012152  005201                           INC     R1
      012154  005300                           DEC     R0                      ;CONTINUE IF ALL NOT DONE
      012156  001350                           BNE     4$
      012160  104400                   8$:     SCOPE                           ;CHECK FOR ITERATIONS, LOOP

                                               ;NPR LOGIC TEST
                                               ;SET BYTE COUNT ON ALL LINES TO 1
                                               ;SET BAR BIT FOR LINE 13
                                               ;VERIFY THAT BYTE COUNT FOR LINE 13 GOES TO 0
                                               ;VERIFY THAT BUS ADDRESS FOR LINE 13 IS INCREMENTED
                                               ;VERIFY THAT BYTE COUNTS AND BUS ADDRESSES FOR ALL OTHER LINES
                                               ;ARE UNCHANGED

      012162  012767  000340  165606   T43:    MOV     #340,PS                 ;DISABLE ALL INTERRUPTS
      012170  012767  000010  003226           MOV     #10,ICOUNT              ;SET UP FOR 10 ITERATIONS
      012176  012767  012330  003214           MOV     #8$,ESCAPE              ;SET UP TO ESCAPE TO NEXT TEST
      012204  012777  004000  003144           MOV     #BIT11,@DHSCR           ;MASTER CLEAR INTERFACE
                                                                               ;TO SET ALL TBMT BITS
      012212  004767  003046                   JSR     PC,CLEAR                ;CLEAR ALL BYTE COUNT AND
                                                                               ;BUS ADDRESS MEMORY LOCATIONS
      012216  004767  003074                   JSR     PC,LOAD                 ;SET ALL BYTE COUNT LOCATIONS TO -1
      012222  012777  004000  003140           MOV     #4000,@DHBAR            ;SET BAR BIT FOR LINE 13
      012230  005777  003122           3$:     TST     @DHSCR                  ;WAIT FOR TRANSMITTER DONE
      012234  100375                           BPL     3$
      012236  012700  000020                   MOV     #20,R0                  ;SET UP TO CHECK ALL 16 LINES
      012242  005077  003110                   CLR     @DHSCR                  ;START AT LINE 0
      012246  005001                           CLR     R1                      ;KEEP TRACK OF LINE NUMBER
      012250  012705  177777           4$:     MOV     #-1,R5                  ;(R5)=EXPECTED BYTE COUNT,
                                                                               ;IF LINE NUMBER NOT = 13
      012254  005003                           CLR     R3                      ;(R3)=EXPECTED BUS ADDRESS,
                                                                               ;IF LINE NUMBER NOT = 13
      012256  017704  003104                   MOV     @DHBC,R4                ;(R4)=ACTUAL BYTE ACOUNT
      012262  017702  003076                   MOV     @DHBA,R2                ;(R5)=ACTUAL BUS ADDRESS
      012266  027727  003064  000013           CMP     @DHSCR,#13      ;IF LINE BEING COMPARED IS LINE 13
      012274  001002                           BNE     5$
      012276  005005                           CLR     R5                      ;EXPECTED BYTE COUNT=0
      012300  005203                           INC     R3                      ;EXPECTED BUS ADDRESS = 1
      012302  020504                   5$:     CMP     R5,R4                   ;IS BYTE COUNT CORRECT
      012304  001401                           BEQ     6$
      012306  104004                           HLT     4                       ;BYTE COUNT ERROR
      012310  020302                   6$:     CMP     R3,R2                   ;IS BUS ADDRESS CORRECT
      012312  001401                           BEQ     7$
      012314  104003                           HLT     3                       ;BUS ADDRESS ERROR
      012316  005277  003034           7$:     INC     @DHSCR                  ;PREPARE TO CHECK NEXT LINE
      012322  005201                           INC     R1
      012324  005300                           DEC     R0                      ;CONTINUE IF ALL NOT DONE
```

```
012326  001352                          BNE     4$
012330  104400                  9$:     SCOPE                           ;CHECK FOR ITERATIONS, LOOP

                                        ;NPR LOGIC TEST
                                        ;SET BYTE COUNT ON ALL LINES TO 1
                                        ;SET BAR BIT FOR LINE 14
                                        ;VERIFY THAT BYTE COUNT FOR LINE 14 GOES TO 0
                                        ;VERIFY THAT BUS ADDRESS FOR LINE 14 IS INCREMENTED
                                        ;VERIFY THAT BYTE COUNTS AND BUS ADDRESSES FOR ALL OTHER LINES
                                        ;ARE UNCHANGED

012332  012767  000340  165436  T44:    MOV     #340,PS                 ;DISABLE ALL INTERRUPTS
012340  012767  000010  003056          MOV     #10.,ICOUNT             ;SET UP FOR 10 ITERATIONS
012346  012767  012600  003044          MOV     #8$,ESCAPE              ;SET UP TO ESCAPE TO NEXT TEST
012354  012777  004000  002774          MOV     #BIT11,@DHSCR           ;MASTER CLEAR INTERFACE
                                                                        ;TO SET ALL TBMT BITS
012362  004767  002676                  JSR     PC,CLEAR                ;CLEAR ALL BYTE COUNT AND
                                                                        ;BUS ADDRESS MEMORY LOCATIONS
012366  004767  002724                  JSR     PC,LOAD                 ;SET ALL BYTE COUNT LOCATIONS TO -1
012372  012777  010000  002770          MOV     #10000,@DHBAR           ;SET BAR BIT FOR LINE 14
012400  005777  002752          3$:     TST     @DHSCR                  ;WAIT FOR TRANSMITTER DONE
012404  100375                          BPL     3$
012406  012700  000020                  MOV     #20,R0                  ;SET UP TO CHECK ALL 16 LINES
012412  005077  002740                  CLR     @DHSCR                  ;START AT LINE 0
012416  005001                          CLR     R1                      ;KEEP TRACK OF LINE NUMBER
012420  012705  177777          4$:     MOV     #-1,R5                  ;(R5)=EXPECTED BYTE COUNT,
                                                                        ;IF LINE NUMBER NOT = 14
012424  005003                          CLR     R3                      ;(R3)=EXPECTED BUS ADDRESS,
                                                                        ;IF LINE NUMBER NOT = 14
012426  017704  002734                  MOV     @DHBC,R4                ;(R4)=ACTUAL BYTE ACCOUNT
012432  017702  002726                  MOV     @DHBA,R2                ;(R5)=ACTUAL BUS ADDRESS
012436  027727  002714  000014          CMP     @DHSCR,#14      ;IF LINE BEING COMPARED IS LINE 14
012444  001002                          BNE     5$
012446  005005                          CLR     R5                      ;EXPECTED BYTE COUNT=0
012450  005203                          INC     R3                      ;EXPECTED BUS ADDRESS = 1
012452  020504                  5$:     CMP     R5,R4                   ;IS BYTE COUNT CORRECT
012454  001401                          BEQ     6$
012456  104004                          HLT     4                       ;BYTE COUNT ERROR
012460  020302                  6$:     CMP     R3,R2                   ;IS BUS ADDRESS CORRECT
012462  001401                          BEQ     7$
012464  104003                          HLT     3                       ;BUS ADDRESS ERROR
012466  005277  002664          7$:     INC     @DHSCR                  ;PREPARE TO CHECK NEXT LINE
012472  005201                          INC     R1
012474  005300                          DEC     R0                      ;CONTINUE IF ALL NOT DONE
012476  001350                          BNE     4$
012500  104400                  8$:     SCOPE                           ;CHECK FOR ITERATIONS, LOOP

                                        ;NPR LOGIC TEST
                                        ;SET BYTE COUNT ON ALL LINES TO 1
                                        ;SET BAR BIT FOR LINE 15
                                        ;VERIFY THAT BYTE COUNT FOR LINE 15 GOES TO 0
                                        ;VERIFY THAT BUS ADDRESS FOR LINE 15 IS INCREMENTED
                                        ;VERIFY THAT BYTE COUNTS AND BUS ADDRESSES FOR ALL OTHER LINES
                                        ;ARE UNCHANGED

012502  012767  000340  165266  T45:    MOV     #340,PS                 ;DISABLE ALL INTERRUPTS
```

```
 2774  012510  012767  000010  002706          MOV     #10.,ICOUNT             ;SET UP FOR 10 ITERATIONS
 2775  012516  012767  012650  002674          MOV     #8$,ESCAPE              ;SET UP TO ESCAPE TO NEXT TEST
 2776  012524  012777  004000  002624          MOV     #BIT11,@DHSCR           ;MASTER CLEAR INTERFACE
 2777                                                                          ;TO SET ALL TBMT BITS
 2778  012532  004767  002536                  JSR     PC,CLEAR                ;CLEAR ALL BYTE COUNT AND
 2779                                                                          ;BUS ADDRESS MEMORY LOCATIONS
 2780  012536  004767  002554                  JSR     PC,LOAD                 ;SET ALL BYTE COUNT LOCATIONS TO -1
 2781  012542  012777  020000  002620          MOV     #20000,@DHBAR           ;SET BAR BIT FOR LINE 15
 2782  012550  005777  002602          3$:     TST     @DHSCR                  ;WAIT FOR TRANSMITTER DONE
 2783  012554  100375                          BPL     3$
 2784  012556  012700  000020                  MOV     #20,R0                  ;SET UP TO CHECK ALL 16 LINES
 2785  012562  005077  002570                  CLR     @DHSCR                  ;START AT LINE 0
 2786  012566  005001                          CLR     R1                      ;KEEP TRACK OF LINE NUMBER
 2787  012570  012705  177777          4$:     MOV     #-1,R5                  ;(R5)=EXPECTED BYTE COUNT,
 2788                                                                          ;IF LINE NUMBER NOT = 15
 2789  012574  005003                          CLR     R3                      ;(R3)=EXPECTED BUS ADDRESS,
 2790                                                                          ;IF LINE NUMBER NOT = 15
 2791  012576  017704  002564                  MOV     @DHBC,R4                ;(R4)=ACTUAL BYTE ACOUNT
 2792  012602  017702  002556                  MOV     @DHBA,R2                ;(R5)=ACTUAL BUS ADDRESS
 2793  012606  027727  002544  000015          CMP     @DHSCR,#15      ;IF LINE BEING COMPARED IS LINE 15
 2794  012614  001002                          BNE     5$
 2795  012616  005005                          CLR     R5                      ;EXPECTED BYTE COUNT=0
 2796  012620  005203                          INC     R3                      ;EXPECTED BUS ADDRESS = 1
 2797  012622  020504          5$:     CMP     R5,R4                   ;IS BYTE COUNT CORRECT
 2798  012624  001401                          BEQ     6$
 2799  012626  104004                          HLT     4                       ;BYTE COUNT ERROR
 2800  012630  020302          6$:     CMP     R3,R2                   ;IS BUS ADDRESS CORRECT
 2801  012632  001401                          BEQ     7$
 2802  012634  104003                          HLT     3                       ;BUS ADDRESS ERROR
 2803  012636  005277  002514          7$:     INC     @DHSCR                  ;PREPARE TO CHECK NEXT LINE
 2804  012642  005201                          INC     R1
 2805  012644  005300                          DEC     R0                      ;CONTINUE IF ALL NOT DONE
 2806  012646  001350                          BNE     4$
 2807  012650  104400          8$:     SCOPE                           ;CHECK FOR ITERATIONS, LOOP
 2808
 2809                                  ;NPR LOGIC TEST
 2810                                  ;SET BYTE COUNT ON ALL LINES TO 1
 2811                                  ;SET BAR BIT FOR LINE 16
 2812                                  ;VERIFY THAT BYTE COUNT FOR LINE 16 GOES TO 0
 2813                                  ;VERIFY THAT BUS ADDRESS FOR LINE 16 IS INCREMENTED
 2814                                  ;VERIFY THAT BYTE COUNTS AND BUS ADDRESSES FOR ALL OTHER LINES
 2815                                  ;ARE UNCHANGED
 2816
 2817  012652  012767  000340  165116  T46:     MOV     #340,PS                 ;DISABLE ALL INTERRUPTS
 2818  012660  012767  000010  002536          MOV     #10.,ICOUNT             ;SET UP FOR 10 ITERATIONS
 2819  012666  012767  013020  002524          MOV     #8$,ESCAPE              ;SET UP TO ESCAPE TO NEXT TEST
 2820  012674  012777  004000  002454          MOV     #BIT11,@DHSCR           ;MASTER CLEAR INTERFACE
 2821                                                                          ;TO SET ALL TBMT BITS
 2822  012702  004767  002356                  JSR     PC,CLEAR                ;CLEAR ALL BYTE COUNT AND
 2823                                                                          ;BUS ADDRESS MEMORY LOCATIONS
 2824  012706  004767  002404                  JSR     PC,LOAD                 ;SET ALL BYTE COUNT LOCATIONS TO -1
 2825  012712  012777  040000  002450          MOV     #40000,@DHBAR           ;SET BAR BIT FOR LINE 15
 2826  012720  005777  002432          3$:     TST     @DHSCR                  ;WAIT FOR TRANSMITTER DONE
 2827  012724  100375                          BPL     3$
 2828  012726  012700  000020                  MOV     #20,R0                  ;SET UP TO CHECK ALL 16 LINES
 2829  012732  005077  002420                  CLR     @DHSCR                  ;START AT LINE 0
```

```
2830  012736  005001                        CLR     R1                      ;KEEP TRACK OF LINE NUMBER
2831  012740  012705  177777          4$:   MOV     #-1,R5                  ;(R5)=EXPECTED BYTE COUNT,
2832                                                                        ;IF LINE NUMBER NOT = 16
2833  012744  005003                        CLR     R3                      ;(R3)=EXPECTED BUS ADDRESS,
2834                                                                        ;IF LINE NUMBER NOT = 16
2835  012746  017704  002414                MOV     @DHBC,R4                ;(R4)=ACTUAL BYTE ACCOUNT
2836  012752  017702  002406                MOV     @DHBA,R2                ;(R5)=ACTUAL BUS ADDRESS
2837  012756  027727  002374  000016        CMP     @DHSCR,#16      ;IF LINE BEING COMPARED IS LINE 16
2838  012764  001002                        BNE     5$
2839  012766  005005                        CLR     R5                      ;EXPECTED BYTE COUNT=0
2840  012770  005203                        INC     R3                      ;EXPECTED BUS ADDRESS = 1
2841  012772  020504                  5$:   CMP     R5,R4                   ;IS BYTE COUNT CORREC
2842  012774  001401                        BEQ     6$
2843  012776  104004                        HLT     4                       ;BYTE COUNT ERROR
2844  013000  020302                  6$:   CMP     R3,R2                   ;IS BUS ADDRESS CORRECT
2845  013002  001401                        BEQ     7$
2846  013004  104003                        HLT     3                       ;BUS ADDRESS ERROR
2847  013006  005277  002344          7$:   INC     @DHSCR                  ;PREPARE TO CHECK NEXT LINE
2848  013012  005201                        INC     R1
2849  013014  005300                        DEC     R0                      ;CONTINUE IF ALL NOT DONE
2850  013016  001350                        BNE     4$
2851  013020  104400                  8$:   SCOPE                           ;CHECK FOR ITERATIONS, LOOP
2852
2853                                        ;NPR LOGIC TEST
2854                                        ;SET BYTE COUNT ON ALL LINES TO 1
2855                                        ;SET BAR BIT FOR LINE 17
2856                                        ;VERIFY THAT BYTE COUNT FOR LINE 17 GOES TO 0
2857                                        ;VERIFY THAT BUS ADDRESS FOR LINE 17 IS INCREMENTED
2858                                        ;VERIFY THAT BYTE COUNTS AND BUS ADDRESSES FOR ALL OTHER LINES
2859                                        ;ARE UNCHANGED
2860
2861  013022  012767  000340  164746  T47:  MOV     #340,PS                 ;DISABLE ALL INTERRUPTS
2862  013030  012767  000010  002366        MOV     #10.,ICOUNT             ;SET UP FOR 10 ITERATIONS
2863  013036  012767  013170  002354        MOV     #8$,ESCAPE              ;SET UP TO ESCAPE TO NEXT TEST
2864  013044  012777  004000  002304        MOV     #BIT11,@DHSCR           ;MASTER CLEAR INTERFACE
2865                                                                        ;TO SET ALL TBMT BITS
2866  013052  004767  002206                JSR     PC,CLEAR                ;CLEAR ALL BYTE COUNT AND
2867                                                                        ;BUS ADDRESS MEMORY LOCATIONS
2868  013056  004767  002234                JSR     PC,LOAD                 ;SET ALL BYTE COUNT LOCATIONS TO -1
2869  013062  012777  100000  002300        MOV     #100000,@DH-BAR         ;SET BAR BIT FOR LINE 17
2870  013070  005777  002262          3$:   TST     @DHSCR                  ;WAIT FOR TRANSMITTER DONE
2871  013074  100375                        BPL     3$
2872  013076  012700  000020                MOV     #20,R0                  ;SET UP TO CHECK ALL 16 LINES
2873  013102  005077  002250                CLR     @DHSCR                  ;START AT LINE 0
2874  013106  005001                        CLR     R1                      ;KEEP TRACK OF LINE NUMBER
2875  013110  012705  177777          4$:   MOV     #-1,R5                  ;(R5)=EXPECTED BYTE COUNT,
2876                                                                        ;IF LINE NUMBER NOT = 17
2877  013114  005003                        CLR     R3                      ;(R3)=EXPECTED BUS ADDRESS,
2878                                                                        ;IF LINE NUMBER NOT = 17
2879  013116  017704  002244                MOV     @DHBC,R4                ;(R4)=ACTUAL BYTE ACCOUNT
2880  013122  017702  002236                MOV     @DHBA,R2                ;(R5)=ACTUAL BUS ADDRESS
2881  013126  027727  002224  000017        CMP     @DHSCR,#17      ;IF LINE BEING COMPARED IS LINE 17
2882  013134  001002                        BNE     5$
2883  013136  005005                        CLR     R5                      ;EXPECTED BYTE COUNT=0
2884  013140  005203                        INC     R3                      ;EXPECTED BUS ADDRESS = 1
2885  013142  020504                  5$:   CMP     R5,R4                   ;IS BYTE COUNT CORRECT
```

```
 2996  013144  001401                      BEQ     6$
 2997  013146  104004                      HLT     4
 2998  013150  020302                6$:   CMP     R3,R2                   ;IS BUS ADDRESS CORRECT
 2999  013152  001401                      BEQ     7$
 3000  013154  104003                      HLT     3                       ;BUS ADDRESS ERROR
 3001  013156  005277  002174          7$:   INC     @DHSCR                  ;PREPARE TO CHECK NEXT LINE
 3002  013162  005201                      INC     R1
 3003  013164  005300                      DEC     R0                      ;CONTINUE IF ALL NOT DONE
 3004  013166  001350                      BNE     4$
 3005  013170  104400                8$:   SCOPE                           ;CHECK FOR ITERATIONS, LOOP
```

```
2896
2897                                    ;SILO LOGIC TEST (MAINTENANCE MODE)
2898                                    ;FORCE 1 CHARACTER INTO SILO USING SILO
2899                                    ;MAINTENANCE BIT
2900                                    ;VERIFY THAT CHARACTER AVAILABLE INTERRUPT OCCURS
2901                                    ;VERIFY THAT CHARACTER AVAILABLE BIT IS
2902                                    ;SET IN SYSTEM CONTROL REGISTER
2903                                    ;VERIFY THAT SILO FILL REGISTER INCREMENTS TO 1
2904                                    ;VERIFY THAT NEXT RECEIVED CHARACTER REGISTER
2905                                    ;VALID DATA BIT IS SET
2906                                    ;VERIFY THAT CORRECT DATA PATTERN WAS RECEIVED
2907
2908  013172  012767  000340  164576  T50:  MOV   #340,PS          ;DISABLE ALL INTERRUPTS
2909  013200  012767  000010  002216        MOV   #10,ICOUNT       ;SET UP FOR 10 ITERATIONS
2910  013206  012767  013350  002204        MOV   #5$,ESCAPE       ;SET UP TO ESCAPE TO NEXT TEST
2911  013214  012777  004000  002134        MOV   #BIT11,@DHSCR    ;MASTER CLEAR INTERFACE
2912  013222  012777  013270  002150        MOV   #2$,@DHRVEC      ;SET UP RECEIVER INTERRUPT
2913  013230  012777  000340  002144        MOV   #340,@DHPLVL     ;VECTOR AND STATUS
2914  013236  052777  100000  002130        BIS   #BIT15,@DHSSR    ;SET SILO MAINTENANCE
2915  013244  012777  000100  002104        MOV   #BIT06,@DHSCR    ;SET RECEIVER INTERRUPT ENABLE
2916  013252  005067  164520                CLR   PS               ;ALLOW INTERRUPTS
2917  013256  012700  001000                MOV   #1000,R0         ;SET UP DELAY FOR SILO LOAD
2918  013262  005300                  1$:   DEC   R0               ;DELAY FOR SILO LOAD
2919  013264  001376                        BNE   1$
2920  013266  104001                        HLT   1                ;NO CHARACTER AVAILABLE INTERRUPT OCCURED
2921  013270  042777  100000  002076  2$:   BIC   #BIT15,@DHSSR   ;CLEAR SILO MAINTENANCE BIT
2922  013276  105777  002054                TSTB  @DHSCR           ;IS CHARACTER AVAILABLE BIT SET
2923  013302  100401                        BMI   3$
2924  013304  104005                        HLT   5                ;CHARACTER AVAILABLE NOT, ERROR
2925  013306  017703  002062          3$:   MOV   @DHSSR,R3        ;READ SILO STATUS REGISTER
2926  013312  017704  002042                MOV   @DHNRC,R4        ;(R4)=ACTUAL DATA IN NEXT
2927                                                               ;RECEIVED CHARACTER REGISTER
2928  013316  012705  125252                MOV   #125252,R5       ;(R5)=EXPECTED DATA IN
2929                                                               ;NEXT RECEIVED CHARACTER REGISTER
2930  013322  020504                        CMP   R5,R4            ;IS DATA IN SILO CORRECT
2931  013324  001401                        BEQ   4$
2932  013326  104006                        HLT   6                ;SILO DATA ERROR
2933  013330  010304                  4$:   MOV   R3,R4            ;GET SILO STATUS REGISTER
2934  013332  042704  000300                BIC   #300,R4          ;CLEAR UNWANTED BITS
2935  013336  012705  000400                MOV   #400,R5          ;(R5)=EXPECTED DATA
2936                                                               ;IN SILO STATUS REGISTER
2937  013342  020504                        CMP   R5,R4            ;CHECK RESULTS
2938  013344  001401                        BEQ   5$
2939  013346  104007                        HLT   7                ;SILO STATUS ERROR
2940  013350  012706  017102          5$:   MOV   #STACK,SP        ;RESTORE STACK
2941  013354  104400                        SCOPE                  ;CHECK FOR ITERATIONS, LOOP
2942
2943                                    ;SILO LOGIC TEST (MAINTENANCE MODE)
2944                                    ;LOAD 63(DECIMAL) CHARACTERS INTO SILO
2945                                    ;VERIFY THAT SILO STATUS REGISTER COUNTS UP CORRECTLY
2946
2947  013356  012767  000340  164412  T51:  MOV   #340,PS          ;DISABLE ALL INTERRUPTS
2948  013364  012767  000001  002032        MOV   #1,ICOUNT        ;SET UP FOR 1 ITERATIONS
2949  013372  012767  013510  002020        MOV   #5$,ESCAPE       ;SET UP TO ESCAPE TO NEXT TEST
2950  013400  012767  013412  002014        MOV   #1$,FREEZ1       ;SET UP TO LOOP WITH DATA
2951  013406  012701  000001                MOV   #1,R1            ;SET UP TO LOAD SILO WITH 1 CHARACTER
```

```
2952  013412  012777  004000  001736  1$:     MOV     #BIT11,@DHSCR           ;MASTER CLEAR INTERFACE
2953  013420  010100                          MOV     R1,R0                   ;SAVE COUNT
2954  013422  005005                          CLR     R5                      ;WILL BE COUNT OF CHARACTERS LOADED
2955  013424  052777  100000  001742  2$:     BIS     #BIT15,@DHSSR           ;LOAD A CHARACTER
2956  013432  012702  001000                  MOV     #1000.R2                ;STALL FOR SILO
2957  013436  005302                  3$:     DEC     R2
2958  013440  001376                          BNE     3$
2959  013442  042777  100000  001724          BIC     #BIT15,@DHSSR           ;CLEAR LOAD BIT
2960  013450  005205                          INC     R5                      ;UPDATE COUNT OF CHARACTERS LOADED
2961  013452  005300                          DEC     R0                      ;IF ALL CHARACTERS NOT LOADED
2962  013454  001363                          BNE     2$                      ;LOAD ANOTHER
2963  013456  017704  001712                  MOV     @DHSSR,R4               ;READ SILO STATUS REGISTER
2964  013462  042704  000300                  BIC     #300,R4                 ;CLEAR UNWANTED BITS
2965  013466  000304                          SWAB    R4                      ;GET DATA INTO LOW BYTE
2966  013470  020504                          CMP     R5,R4                   ;COMPARE
2967  013472  001401                          BEQ     4$
2968  013474  104000                          HLT     7                       ;SILO STATUS ERROR
2969  013476  104410                  4$:     SCOPE1                          ;CHECK FOR LOOP WITH CURRENT
2970                                                                          ;LOAD COUNT (R5)
2971  013500  005201                          INC     R1                      ;ADD 1 TO NUMBER OF CHARACTERS
2972                                                                          ;TO BE LOADED INTO SILO
2973  013502  022701  000100                  CMP     #100,R1                 ;CONTINUE UNTIL SILO IS FULL
2974  013506  001341                          BNE     1$
2975  013510  104400                  5$:     SCOPE
2976
2977                                          ;SILO LOGIC TEST (MAINTENANCE MODE)
2978                                          ;LOAD 54 (DECIMAL CHARACTERS INTO SILO
2979                                          ;READ CHARACTERS OUT OF SILO
2980                                          ;VERIFY THAT SILO STATUS REGISTER COUNTS DOWN CORRECTLY
2981
2982  013512  012767  000340  164256  T52:     MOV     #340,PS                 ;DISABLE ALL INTERRUPTS
2983  013520  012767  000001  001676          MOV     #1,ICOUNT               ;SET UP FOR 1 ITERATIONS
2984  013526  012767  013670  001664          MOV     #7$,ESCAPE              ;SET UP TO ESCAPE TO NEXT TEST
2985  013534  012767  013546  001660          MOV     #1$,FREEZ1              ;SET UP TO LOOP WITH DATA
2986  013542  012701  000001                  MOV     #1,R1                   ;SET UP TO READ 1 CHARACTER
2987  013546  012777  004000  001602  1$:     MOV     #BIT11,@DHSCR           ;MASTER CLEAR INTERFACE
2988  013554  012705  000100                  MOV     #100,R5         ;SILO STATUS COUNT SHOULD BE
2989  013560  160105                          SUB     R1,R5                   ;100(OCTAL)-NUMBER
2990                                                                          ;OF CHARACTERS READ
2991  013562  012700  000100                  MOV     #100,R0                 ;SET UP TO LOAD SILO
2992  013566  012702  001000          2$:     MOV     #1000,R2                ;SET UP DELAY
2993  013572  052777  100000  001574          BIS     #BIT15,@DHSSR           ;LOAD 1 CHARACTER
2994  013600  005302                  3$:     DEC     R2                      ;DELAY
2995  013602  001376                          BNE     3$
2996  013604  042777  100000  001562          BIC     #BIT15,@DHSSR           ;CLEAR SILO LOAD BIT
2997  013612  005300                          DEC     R0                      ;CONTINUE IF SILO NOT FULL
2998  013614  001364                          BNE     2$
2999  013616  010100                          MOV     R1,R0                   ;SET UP TO READ SILO
3000  013620  012702  001000          4$:     MOV     #1000,R2                ;SET UP DELAY FOR SILO
3001  013624  005777  001530                  TST     @DHNRC                  ;READ SILO
3002  013630  005302                  5$:     DEC     R2                      ;DELAY FOR SILO
3003  013632  001376                          BNE     5$
3004  013634  005300                          DEC     R0                      ;UPDATE NUMBER OF CHARACTER S TO BE READ
3005  013636  001370                          BNE     4$                      ;CONTINUE READING
3006  013640  117704  001532                  MOVB    @DHSLR,R4               ;READ SILO STATUS REGISER
3007  013644  042704  000300                  BIC     #300,R4                 ;CLEAR UNWANTED BITS
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```
 3008                                                                   ;(R5)=EXPECTED SILO STATUS
 3009                                                                   ;(IN UPPER BYTE)
 3010                                                                   ;(R4)=ACTUAL SILO STATUS
 3011                                                                   ;(IN UPPER BYTE)
 3012  013650  020504                       CMP     R5,R4                ;COMPARE EXPECTED AND RECEIVED DATA
 3013  013652  001401                       BEQ     6$
 3014  013654  104007                       HLT     7                    ;SILO STATUS ERROR
 3015  013656  104410               6$:     SCOPE1                       ;CHECK FOR LOOP WITH SAME READ COUNT
 3016  013660  005201                       INC     R1                   ;UPDATE COUNT OF CHARACTERS TO BE READ
 3017  013662  020127  000101               CMP     R1,#101          ;CONTINUE IF NOT DONE
 3018  013666  001327                       BNE     1$
 3019  013670  104400               7$:     SCOPE
```

```
3020
3021                                            ;SILO LOGIC TEST (MAINTENANCE MODE)
3022                                            ;SET SILO ALARM LEVEL TO ALL VALUES 0-77
3023                                            ;VERIFY THAT CHARACTER AVAILABLE FLAG
3024                                            ;DOES NOT SET UNTIL SILO FILL LEVEL IS GREATER THAN
3025                                            ;SILO ALARM LEVEL
3026
3027  013672  012767  000340  164076  T53:    MOV     #340,PS         ;DISABLE ALL INTERRUPTS
3028  013700  012767  000040  001516          MOV     #40,ICOUNT      ;SET UP FOR 40 ITERATIONS
3029  013706  012767  014046  001504          MOV     #5$,ESCAPE      ;SET UP TO ESCAPE TO NEXT TEST
3030  013714  012767  013724  001500          MOV     #1$,FREEZ1      ;SET UP TO LOOP WITH DATA
3031  013722  005005                          CLR     R5              ;START AT ALARM LEVEL 0
3032  013724  012777  004000  001424  1$:     MOV     #BIT11,@DHSCR   ;MASTERCLEAR INTERFACE
3033  013732  010577  001436                  MOV     R5,@DHSSR       ;SET ALARM LEVEL
3034  013736  010501                          MOV     R5,R1           ;SET FILL COUNT
3035  013740  005201                          INC     R1              ;ONE MORE THAN ALARM LEVEL
3036  013742  052777  100000  001424  2$:     BIS     #BIT15,@DHSSR   ;LOAD A CHARACTER
3037  013750  012700  001000                  MOV     #1000,R0        ;WAIT FOR SILO TO SETTLE
3038  013754  005300                          DEC     R0
3039  013756  001376                          BNE     .-2
3040  013760  042777  100000  001406          BIC     #BIT15,@DHSSR   ;CLEAR MAINTENANCE BIT
3041  013766  005301                          DEC     R1              ;UPDATE FILL COUNT
3042  013770  105777  001362                  TSTB    @DHSCR          ;IS CHARACTER AVAILABLE FLAG SET
3043  013774  100406                          BMI     3$              ;YES
3044  013776  005701                          TST     R1              ;CHARACTER AVAILALBE FLAG NOT SET
3045  014000  001360                          BNE     2$              ;SHOULD IT BE
3046  014002  117703  001370                  MOVB    @DHSLR,R3       ;READ SILO FILL LEVEL
3047  014006  104010                          HLT     10              ;SILO ALARM ERROR
3048                                                                  ;NO CHARACTER AVAILABLE WHEN EXPECTED
3049  014010  000406                          BR      4$
3050  014012  020127  000001          3$:     CMP     R1,#1
3051  014016  003403                          BLE     4$
3052  014020  117703  001352                  MOVB    @DHSLR,R3       ;READ SILO FILL LEVEL
3053  014024  104010                          HLT     10              ;SILO ALARM ERROR
3054  014026  104410                  4$:     SCOPE1                  ;CHECK FOR FREEZE AT CURRENT ALARM LEVEL
3055  014030  005705                          TST     R5
3056  014032  001001                          BNE     10$
3057  014034  000261                          SEC
3058  014036  006105                  10$:    ROL     R5              ;GO TO NEXT ALARM LEVEL
3059  014040  022705  000100                  CMP     #100,R5         ;CONTINUE IF NOT DONE
3060  014044  001327                          BNE     1$
3061  014046  104400                  5$:     SCOPE                   ;CHECK FOR ITERATIONS, LOOP
```

```
3062
3063
3064                                            ;END OF PASS
3065                                            ;TYPE NAME OF TEST
3066                                            ;UPDATE PASS COUNT
3067                                            ;CHECK FOR EXIT TO ACT-11
3068                                            ;RESTART TEST
3069
3070  014050  104401                  EOP:      TYPE                                ;TYPE NAME OF TEST
3071  014052  016055                            MEPASS
3072  014054  005067  001374                   CLR       LAST                      ;CLEAR LAST ERROR PC
3073  014060  005067  001324                   CLR       ERRFLG                    ;CLEAR ERROR FLAG
3074  014064  005267  001322                   INC       PASCNT                    ;UPDATE PASS COUNT
3075  014070  016767  001316  163472           MOV       PASCNT,LIGHTS             ;DISPLAY PASS COUNT
3076  014076  013701  000042                   MOV       @#42,R1                   ;CHECK FOR ACT-11 OR DDP
3077  014102  001405                           BEQ       RESTRT                    ;IF NOT, CONTINUE TESTING
3078  014104  000005                           RESET
3079  014106  004711                  LOGICAL:           JSR       PC,(R1)
3080  014110  000240                           NOP
3081  014112  000240                           NOP
3082  014114  000240                           NOP
3083  014116  000167  165120           RESTRT: JMP       BEGIN
3084
3085                                            ;CHECK FOR LOOP ON CURRENT TEST
3086                                            ;CHECK FOR ITERATION SUPPRESSION
3087
3088  014122  032767  002000  163440   SCOPER: BIT       #SW10,SWR
3089  014130  001030                           BNE       4$
3090  014132  032767  040000  163430   1$:     BIT       #SW14,SWR
3091  014140  001021                           BNE       3$
3092  014142  032767  004000  163420           BIT       #SW11,SWR
3093  014150  001006                           BNE       2$
3094  014152  005267  001250                   INC       LPCNT
3095  014156  026767  001244  001240           CMP       LPCNT,ICOUNT
3096  014164  001007                           BNE       3$
3097  014166  005067  001234           2$:     CLR       LPCNT
3098  014172  005067  001212                   CLR       ERRFLG
3099  014176  011667  001214                   MOV       (SP),RETURN
3100  014202  000002                           RTI
3101  014204  016716  001206           3$:     MOV       RETURN,(SP)
3102  014210  000002                           RTI
3103  014212  005767  001172           4$:     TST       ERRFLG
3104  014216  001745                           BEQ       1$
3105  014220  000762                           BR        2$
3106
3107                                            ;CHECK FOR FREEZE ON CURRENT DATA
3108
3109  014222  032767  001000  163340   SCOPIR: BIT       #SW09,SWR
3110  014230  001402                           BEQ       1$
3111  014232  016716  001164                   MOV       FREEZ1,(SP)
3112  014236  000002                   1$:     RTI
3113
3114                                            ;ERROR HANDLER
3115
3116  014240  032767  020000  163322   ERRORS: BIT       #SW13,SWR
3117  014246  001051                           BNE       HALTS
```

```
3118  014250  021667  001200                        CMP     (SP),LAST
3119  014254  001404                                BEQ     1$
3120  014256  011667  001172                        MOV     (SP),LAST
3121  014262  005067  001122                        CLR     ERRFLG
3122  014266  104406                        1$:     SAVOSP
3123  014270  011605                                MOV     (SP),R5
3124  014272  162705  000002                        SUB     #2,R5
3125  014276  011504                                MOV     (R5),R4
3126  014300  006304                                ASL     R4
3127  014302  006304                                ASL     R4
3128  014304  042704  177001                        BIC     #177001,R4
3129  014310  062704  016164                        ADD     #ERRTAB,R4
3130  014314  012467  000034                        MOV     (R4)+,ERRMSG
3131  014320  011467  000042                        MOV     (R4),DATABP
3132  014324  005767  001060                        TST     ERRFLG
3133  014330  001403                                BEQ     TYPMSG
3134  014332  005767  000030                        TST     DATABP
3135  014336  001007                                BNE     TYPDAT
3136  014340  104402                        TYPMSG: OCTASC
3137  014342  014434                                ERTABO
3138  014344  012767  000001  001036                MOV     #1,ERRFLG
3139  014352  104401                                TYPE
3140  014354  000000                        ERRMSG: 0
3141  014356  005767  000004                TYPDAT: TST     DATABP
3142  014362  001402                                BEQ     RESREG
3143  014364  104402                                OCTASC
3144  014366  000000                        DATABP: 0
3145  014370  104407                        RESREG: RESO5
3146  014372  005767  163172                HALTS:  TST     SWR
3147  014376  100005                                BPL     EXITER
3148  014400  010046                                PUSHRO
3149  014402  016600  000002                        MOV     2(SP),R0
3150  014406  000000                                HALT
3151  014410  012600                                POPRO
3152  014412  005267  000776                EXITER: INC     ERPCNT
3153  014416  032767  002000  163144                BIT     #SW10,SWR
3154  014424  001402                                BEQ     1$
3155  014426  016716  000766                        MOV     ESCAPE,(SP)
3156  014432  000002                        1$:     RTI
3157  014434  000001                        ERTABO: 1
3158  014436     006     002                        .BYTE   6,2
3159  014440  015446                                SAVPC
3160                                                ;TRAP DISPATCH SERVICE
3161                                                ;ARGUMENT OF TRAP IS EXTRACTED
3162                                                ;AND USED AS OFFSET TO OBTAIN POINTER
3163                                                ;TO SELECTED SUBROUTINE
3164
3165  014442  011646                        TRPSRV: MOV     (SP),-(SP)      ;GET PC OF RETURN
3166  014444  162716  000002                        SUB     #2,(SP)         ;=PC OF TRAP
3167  014450  017616  000000                        MOV     @(SP),(SP)      ;GET TRP
3168  014454  006316                        TRPOK:  ASL     (SP)            ;MULTIPLY TRAP ARG BY 2
3169  014456  042716  177001                        BIC     #177001,(SP)    ;CLEAR UNWANTED BITS
3170  014462  062716  016104                        ADD     #TRPTAB,(SP)    ;POINTER TO SUBROUTINE ADDRESS
3171  014466  017616  000000                        MOV     @(SP),(SP)      ;SUBROUTINE ADDRESS
3172  014472  000136                                JMP     @(SP)+          ;GO TO SUBROUTINE
3173
```

```
3174                                                    ;TELETYPE OUTPUT ROUTINE
3175
3176  014474  017605  000000          TYPER:  MOV     @(SP),R5
3177  014500  062716  000002                  ADD     #2,(SP)
3178  014504  105777  000642          1$:     TSTB    @TPCSR
3179  014510  100375                          BPL     1$
3180  014512  105715                          TSTB    (R5)
3181  014514  001001                          BNE     2$
3182  014516  000002                          RTI
3183  014520  112577  000630          2$:     MOVB    (R5)+,@TPDBR
3184  014524  000767                          BR      1$
3185
3186                                                    ;ASCII STRING INPUT ROUTINE
3187
3188  014526  017667  000000  000006  INSTRG: MOV     @(SP),MSG
3189  014534  062716  000002                  ADD     #2,(SP)
3190  014540  104401                  INSTR1: TYPE
3191  014542  000000                  MSG:    0
3192  014544  012704  016126                  MOV     #INBUF,R4
3193  014550  012703  000007                  MOV     #7,R3
3194  014554  105777  000566          1$:     TSTB    @TKCSR
3195  014560  100375                          BPL     1$
3196  014562  117714  000562                  MOVB    @TKDBR,(R4)
3197  014566  142714  000200                  BICB    #200,(R4)
3198  014572  122427  000015                  CMPB    (R4)+,#15
3199  014576  001413                          BEQ     INSTR2
3200  014600  117777  000544  000546          MOVB    @TKDBR,@TPDBR
3201  014606  105777  000540          2$:     TSTB    @TPCSR
3202  014612  100375                          BPL     2$
3203  014614  005303                          DEC     R3
3204  014616  001356                          BNE     1$
3205  014620  104401                  INSTRE: TYPE
3206  014622  015761                          MQM
3207  014624  000745                          BR      INSTR1
3208  014626  000002                  INSTR2: RTI
3209
3210                                                    ;CONVERT ASCII STRING TO OCTAL
3211
3212  014630  011605                  PARAMS: MOV     (SP),R5
3213  014632  012567  000146                  MOV     (R5)+,LOLIM
3214  014636  012567  000144                  MOV     (R5)+,HILIM
3215  014642  012567  000142                  MOV     (R5)+,DEVADR
3216  014646  112567  000140                  MOVB    (R5)+,LOBITS
3217  014652  112567  000135                  MOVB    (R5)+,ADRCNT
3218  014656  010516                          MOV     R5,(SP)
3219  014660  005005                  PARAM1: CLR     R5
3220  014662  012704  016126                  MOV     #INBUF,R4
3221  014666  122714  000015                  CMPB    #15,(R4)
3222  014672  001420                          BEQ     PARERR
3223  014674  121427  000060          1$:     CMPB    (R4),#60
3224  014700  002415                          BLT     PARERR
3225  014702  121427  000067                  CMPB    (R4),#67
3226  014706  003012                          BGT     PARERR
3227  014710  142714  000060                  BICB    #60,(R4)
3228  014714  152405                          BISB    (R4)+,R5
3229  014716  122714  000015                  CMPB    #15,(R4)
```

```
3230  014722  001406                        BEQ     LIMITS
3231  014724  006305                        ASL     R5
3232  014726  006305                        ASL     R5
3233  014730  006305                        ASL     R5
3234  014732  000760                        BR      1$
3235  014734  104404              PARERR:   INSTER
3236  014736  000750                        BR      PARAM1
3237
3238                                        ;TEST TO SEE IF NUMBER IS WITHIN LIMITS
3239
3240  014740  020567  000042      LIMITS:   CMP     R5,HILIM
3241  014744  101373                        BHI     PARERR
3242  014746  020567  000032                CMP     R5,LOLIM
3243  014752  103770                        BLO     PARERR
3244  014754  136705  000032                BITB    LOBITS,R5
3245  014760  001365                        BNE     PARERR
3246
3247                                        ;STORE NUMBER AT SPECIFIED ADDRESS
3248
3249  014762  016704  000022                MOV     DEVADR,R4
3250  014766  010524              1$:       MOV     R5,(R4)+
3251  014770  062705  000002                ADD     #2,R5
3252  014774  105367  000013                DECB    ADRCNT
3253  015000  001372                        BNE     1$
3254  015002  000002                        RTI
3255  015004  000000              LOLIM:    0
3256  015006  000000              HILIM:    0
3257  015010  000000              DEVADR:   0
3258  015012  000000              LOBITS:   0
3259          015013              ADRCNT=LOBITS+1
3260
3261                                        ;CONVERT OCTAL NUMBER TO ASCII AND OUTPUT TO TELEPRINTER
3262
3263  015014  104401              OCTASN:   TYPE
3264  015016  015765                        MCRLF
3265  015020  017601  000000                MOV     @(SP),R1
3266  015024  062716  000002                ADD     #2,(SP)
3267  015030  012167  000130                MOV     (R1)+,WRDCNT
3268  015034  112167  000126      1$:       MOVB    (R1)+,CHRCNT
3269  015040  112167  000123                MOVB    (R1)+,SPACNT
3270  015044  013167  000120                MOV     @(R1)+,BINWRD
3271  015050  016704  000114      2$:       MOV     BINWRD,R4
3272  015054  116705  000106                MOVB    CHRCNT,R5
3273  015060  012700  01614C                MOV     #TEMP,R0
3274  015064  010403              3$:       MOV     R4,R3
3275  015066  042703  177770                BIC     #177770,R3
3276  015072  062703  000260                ADD     #260,R3
3277  015076  110320                        MOVB    R3,(R0)+
3278  015100  006204                        ASR     R4
3279  015102  006204                        ASR     R4
3280  015104  006204                        ASR     R4
3281  015106  005305                        DEC     R5
3282  015110  001365                        BNE     3$
3283  015112  012703  016152                MOV     #MDATA,R3
3284  015116  114023              4$:       MOVB    -(R0),(R3)+
3285  015120  105367  000042                DECB    CHRCNT
```

```
	015124	001374				BNE	4$
	015126	105767	000035			TSTB	SPACNT
	015132	001405				BEQ	5$
	015134	112723	000240		5$:	MOVB	#240,(R3)+
	015140	105367	000023			DECB	SPACNT
	015144	001373				BNE	5$
	015146	105013			6$:	CLRB	(R3)
	015150	104401				TYPE
	015152	016152				MDATA
	015154	005367	000004			DEC	WRDCNT
	015160	001325				BNE	1$
	015162	000002				RTI
	015164	000000			WRDCNT:	0
	015166	000000			CHRCNT:	0
		015167			SPACNT=CHRCNT+1
	015170	000000			BINWRD:	0

						;SAVE PC OF TEST THAT FAILED AND R0-R5

	015172	016667	000004	000246	SV05P:	MOV	4(SP),SAVPC

						;SAVE R0-R5

	015200	010567	000236		SV05:	MOV	R5,SAVR5
	015204	010467	000230			MOV	R4,SAVR4
	015210	010367	000222			MOV	R3,SAVR3
	015214	010267	000214			MOV	R2,SAVR2
	015220	010167	000206			MOV	R1,SAVR1
	015224	010067	000200			MOV	R0,SAVR0
	015230	000002				RTI
						;RESTORE R0-R5

	015232	016700	000172		RS05:	MOV	SAVR0,R0
	015236	016701	000170			MOV	SAVR1,R1
	015242	016702	000166			MOV	SAVR2,R2
	015246	016703	000164			MOV	SAVR3,R3
	015252	016704	000162			MOV	SAVR4,R4
	015256	016705	000160			MOV	SAVR5,R5
	015262	000002				RTI

						;CLEAR BYTE COUNT AND BUS ADDRESS MEMORIES

	015264	012700	000020		CLEAR:	MOV	#20,R0		;SET UPT TO CLEAR 16 (DECIMAL) LOCATIONS
	015270	005077	000062			CLR	@DHSCR		;START AT LOCATION 0
	015274	005077	000066		1$:	CLR	@DHBC		;CLEAR BYTE COUNT
	015300	005077	000060			CLR	@DHBA		;CLEAR BUS ADDRESS
	015304	005277	000046			INC	@DHSCR		;ADVANCE LINE NUMBER
	015310	005300				DEC	R0		;CONTINUE IF NOT DONE
	015312	001370				BNE	1$
	015314	000207				RTS	PC		;RETURN

						;LOAD ALL BYTE COUNT MEMORY LOCATIONS WITH -1

	015316	012700	000020		LOAD:	MOV	#20,R0		;SET UP TO LOAD 16 (DECIMAL) LOCATIONS
	015322	005077	000030			CLR	@DHSCR		;START WITH LINE 0
	015326	012777	177777	000032	2$:	MOV	#-1,@DHBC	;SET BYTE COUNT TO -1
```

```
015334  005277  000016          INC     @DHSCR                  ;ADVANCE LINE NUMBER
015340  005300                  DEC     R0                      ;CONTINUE IF NOT DONE
015342  001371                  BNE     2$
015344  000207                  RTS     PC                      ;RETURN TO CALLING ROUTINE
                                ;INDIRECT POINTERS

015346  177560          TKCSR:  177560
015350  177562          TKDBR:  177562
015352  177564          TPCSR:  177564
015354  177566          TPDBR:  177566
015356  000000          DHSCR:  0
015360  000000          DHNRC:  0
015362  000000          DHLPR:  0
015364  000000          DHBA:   0
015366  000000          DHBC:   0
015370  000000          DHBAR:  0
015372  000000          DHBCR:  0
015374  000000          DHSSR:  0
015376  000000          DHSLR:  0
015400  000000          DHRVEC: 0
015402  000000          DHRLVL: 0
015404  000000          DHTVEC: 0
015406  000000          DHTLVL: 0
                                ;PROGRAM VARIABLES

015410  000000          ERRFLG: 0               ;ERROR FLAG
015412  000000          PASCNT: 0               ;PASS COUNT
015414  000000          ERRCNT: 0               ;ERROR COUNT
015416  000000          RETURN: 0               ;SCOPE RETURN ADDRESS FOR TEST LOOPING
015420  000000          ESCAPE: 0               ;ADDRESS FOR ERROR ESCAPE
015422  000000          FREEZI: 0               ;DATA LOOPING RETURN ADDRESS
015424  000000          ICOUNT: 0               ;ITERATION COUNT FOR TEST IN PROGRESS
015426  000000          LPCNT:  0               ;NUMBER OF ITERATIONS THIS TEST
015430  000000          SAVR0:  0               ;R0 SAVE AREA
015432  000000          SAVR1:  0               ;R1 SAVE AREA
015434  000000          SAVR2:  0               ;R2 SAVE AREA
015436  000000          SAVR3:  0               ;R3 SAVE ARE
015440  000000          SAVR4:  0               ;R4 SAVE AREA
015442  000000          SAVR5:  0               ;R5 SAVE AREA
015444  000000          SAVSP:  0               ;STACK POINTER SAVE AREA
015446  000000          SAVPC:  0               ;CALLING ROUTINE SAVE AREA
015450  000000          INIFLG: 0               ;PROGRAM INITIALIZATION FLAG
015452  000000          STFLG:  0               ;PROGRAM START FLAG
015454  000000          LAST:   0               ;LAST ERROR PC
015456  000000          HCORE:  0
                                ;ENTER HERE ON POWER FAILURE


015460  010046          PFAIL:  MOV     R0,-(SP)                ;SAVE R0-R5 ON PROCESSOR STACK
015462  010146                  MOV     R1,-(SP)
015464  010246                  MOV     R2,-(SP)
015466  010346                  MOV     R3,-(SP)
015470  010446                  MOV     R4,-(SP)
015472  010546                  MOV     R5,-(SP)
015474  016746  162324          MOV     24,-(SP)
015500  010667  177740          MOV     SP,SAVSP                ;SAVE STACK POINTER
```

```
  3398  015504  012767  015516  1623.2          MOV     #RESTART,24             ;SET UP FOR POWER UP TRAP
  3399  015512  000000                          HALT                            ;HALT ON POWER DOWN NORMAL
  3400  015514  000777                          BR      .
  3401
  3402                                          ;PROCESSOR WILL TRAP HERE WHEN POWER IS RESTORED
  3403
  3404  015516  016706  177722          RESTAR: MOV     SAVSP,SP                ;RESTORE STACK POINTER
  3405  015522  012605                          MOV     (SP)+,R5                ;RESTORE R0-R5
  3406  015524  012604                          MOV     (SP)+,R4
  3407  015526  012603                          MOV     (SP)+,R3
  3408  015530  012602                          MOV     (SP)+,R2
  3409  015532  012601                          MOV     (SP)+,R1
  3410  015534  012600                          MOV     (SP)+,R0
  3411  015536  012767  015460  162250          MOV     #PFAIL,24               ;SET UP FOR POWER FAILURE
  3412  015544  012767  000340  162224          MOV     #340,PS
  3413  015552  012706  017102                  MOV     #STACK,SP
  3414  015556  005067  000356                  CLR     TEMP
  3415  015562  005267  000352                  INC     TEMP
  3416  015566  001375                          BNE     .-4
  3417  015570  104402                          OCTASC
  3418  015572  015614                          PFTAB
  3419  015574  104401                          TYPE
  3420  015576  015770                          MPFAIL
  3421  015600  005067  177604                  CLR     ERRFLG
  3422  015604  005067  177644                  CLR     LAST
  3423  015610  000177  177602                  JMP     @RETURN
  3424  015614  000001                  PFTAB:  1
  3425  015616  000006  000002                  6,2
  3426  015622  000207                          RETURN
  3427  015624  005015  042012  030510  MTITLE: .ASCIZ  <15><12><12>/CH11 TRANSMITTER AND RECEIVER LOGIC TEST /<15><12>
  3428  015632  020061  051124  047101
  3429  015640  046523  052111  042524
  3430  015646  020122  047101  020104
  3431  015654  042522  042503  053111
  3432  015662  051105  046040  043517
  3433  015670  041511  052040  051505
  3434  015676  020124  005015     000
  3435  015703     C15  053012  041505  MVECTO: .ASCIZ  <15><12>/VECTOR ADDRESS-/
  3436  015710  047524  020122  042101
  3437  015716  051104  051505  026523
  3438  015724     000
  3439  015725     015  041412  047117  MREGAD: .ASCIZ  <15><12>/CONTROL REGISTER ADDRESS-
  3440  015732  051124  046117  051040
  3441  015740  043505  051511  042524
  3442  015746  020122  042101  051104
  3443  015754  051505  026523     000
  3444  015761     040  037440     000  MQM:    .ASCIZ  /  ?/
  3445  015765     015  000012          MCRLF:  .ASCIZ  <15><12>
  3446  015770  020040  047520  042527  MPFAIL: .ASCIZ  /  POWER FAILURE, PROGRAM RESTART AT TEST IN PROGRESS
  3447  015776  020122  040506  046111
  3448  016004  051125  026105  050040
  3449  016012  047522  051107  046501
  3450  016020  051040  051505  040524
  3451  016026  052122  040440  020124
  3452  016034  042524  052123  044440
  3453  016042  020116  051120  043517
```

```
3454  016050  042522  051523     000
3455  016055     015  042012  042132  MEPASS: .ASCIZ  <15><12>/DZDMC/
3456  016062  041510     000
3457  016065     015  051012     000  MR:     .ASCIZ  <15><12>/R/
3458  016071     015  052012  051525  MTSTPC: .ASCIZ  <15><12>/TEST PC-/
3459  016076  020124  041520  000055
3460
3461                                           ;TABLE OF POINTERS FOR TRAP DECODING
3462
3463  016104  014122                  TRPTAB: SCOPER
3464  016106  014474                          TYPER
3465  016110  015014                          OCTASN
3466  016112  014526                          INSTRG
3467  016114  014620                          INSTRE
3468  016116  014630                          PARAMS
3469  016120  015172                          SVOSP
3470  016122  015232                          RSOS
3471  016124  014222                          SCOP1R
3472
3473                                           ;BUFFERS FOR INPUT-OUTPUT
3474
3475  016126  000000                  INBUF:  0
3476          016140                  .=.+10
3477  016140  000000                  TEMP:   0
3478          016152                  .=.+10
3479  016152  000000                  MDATA:  0
3480          016164                  .=.+10
3481
3482                                           ;TABLE OF POINTERS TO ERROR MESSAGES AND DATA
3483
3484  016164                          ERRTAB:
3485  016164  016230                          EM0
3486  016166  016656                          DT1
3487  016170  016310                          EM1
3488  016172  000000                          0
3489  016174  016325                          EM2
3490  016176  000000                          0
3491  016200  016356                          EM3
3492  016202  016656                          DT1
3493  016204  016415                          EM4
3494  016206  016656                          DT1
3495  016210  016453                          EM5
3496  016212  000000                          0
3497  016214  016507                          EM6
3498  016216  016656                          DT1
3499  016220  016544                          EM7
3500  016222  016656                          DT1
3501  016224  016603                          EM10
3502  016226  016670                          DT2
3503  016230  047125  054105  042520  EM0:    .ASCII  /UNEXPECTED INTERRUPT/
3504  016236  052103  042105  044440
3505  016244  052116  051105  052522
3506  016252  052120
3507  016254  005015  047503  052116          .ASCIZ  <15><12>/CONTROL REGISTER CONTENTS
3508  016262  047522  020114  042522
3509  016270  044507  052123  051105
```

```
3510  016276  041440  047117  042524
3511  016304  052116  000123
3512  016310  047516  044440  052116  EM1:    .ASCIZ  /NO INTERRUPT/
3513  016316  051105  052522  052120
3514  016324     000
3515  016325     124  040522  051516  EM2:    .ASCIZ  /TRANSMITTER DONE NOT SET/
3516  016332  044515  052124  051105
3517  016340  042040  047117  020105
3518  016346  047516  020124  042523
3519  016354  000124
3520  016356  052502  020123  042101  EM3:    .ASCII  /BUS ADDRESS ERROR/
3521  016364  051104  051505  020123
3522  016372  051105  047522     122
3523  016377     015  042412  050130          .ASCIZ  <15><12>/EXP     REC/
3524  016404  020040  020040  051040
3525  016412  041505     000
3526  016415     102  052131  020105  EM4:    .ASCII  /BYTE COUNT ERROR/
3527  016422  047503  047125  020124
3528  016430  051105  047522     122
3529  016435     015  042412  050130          .ASCIZ  <15><12>/EXP     REC/
3530  016442  020040  020040  051040
3531  016450  041505     000
3532  016453     103  040510  040522  EM5:    .ASCIZ  /CHARACTER AVAILABLE NOT SET/
3533  016460  052103  051105  040440
3534  016466  040526  046111  041101
3535  016474  042514  047040  052117
3536  016502  051440  052105     000
3537  016507     123  046111  020117  EM6:    .ASCII  /SILO DATA ERROR/
3538  016514  040504  040524  042440
3539  016522  051122  051117
3540  016526  005015  054105  020120          .ASCIZ  <15><12>/EXP     REC/
3541  016534  020040  020040  042522
3542  016542  000103
3543  016544  044523  047514  051440  EM7:    .ASCII  /SILO STATUS ERROR/
3544  016552  040524  052524  020123
3545  016560  051105  047522     122
3546  016565     015  042412  050130          .ASCIZ  <15><12>/EXP     REC/
3547  016572  020040  020040  051040
3548  016600  041505     000
3549  016603     123  046111  020117  EM10:   .ASCII  /SILO ALARM ERROR/
3550  016610  046101  051101  020115
3551  016616  051105  047522     122
3552  016623     015  040412  040514          .ASCIZ  <15><12>/ALARM LEVEL  FILL LEVEL/
3553  016630  046522  046040  053105
3554  016636  046105  020040  044506
3555  016644  046114  046040  053105
3556  016652  046105     000
3557          016656                  .EVEN
3558
3559                                  ;DATA TABLES FOR ERROR OUTPUT
3560
3561  016656  000002                  DT1:    2
3562  016660     006     002          .BYTE   6,2
3563  016662  015442                  SAVR5
3564  016664     006     000          .BYTE   6,0
3565  016666  015440                  SAVR4
```

```
 3566  016670  000002                    DT2:    2
 3567  016672      002      014           .BYTE   2,14
 3568  016674  015442                             $AVR5
 3569  016676      002      000           .BYTE   2,0
 3570  016700  015436                             $AVR3
 3571  016702  000000                    ENDCOD: 0
 3572          000001                    .END
```

```
ADRCNT= 015013          3217*  3252*  3259#
BEGIN   001242           528    957    963*  3083
BYNWRD  015170          3270*  3271   3301#
BITX  = 000001          1232#  1292#  1352#  1412#  1472#  1532#  1592#  1652#  1712#  1772#  1832#  1892#  1952#
                        2012#  2072#  2132#  2192#  2236#  2280#  2324#  2368#  2412#  2456#  2500#  2544#  2588#
                        2632#  2676#  2720#  2764#  2808#  2852#  2896#
BIT00 = 000001           604#
BIT01 = 000002           603#
BIT02 = 000004           602#
BIT03 = 000010           601#
BIT04 = 000020           600#
BIT05 = 000040           599#
BIT06 = 000100           598#   997   1099   2915
BIT07 = 000200           597#  1101
BIT08 = 000400           596#
BIT09 = 001000           595#  1098   1135   1172   1209
BIT10 = 002000           594#  1175
BIT11 = 004000           593#   990   1024   1058   1093   1130   1167   1204   1243   1303   1363   1423   1483
                        1543   1603   1663   1723   1783   1843   1903   1963   2023   2093   2143   2204   2248
                        2292   2336   2380   2424   2468   2512   2556   2600   2644   2688   2732   2776   2820
                        2864   2911   2952   2987   3032
BIT12 = 010000           592#  1031   1138
BIT13 = 020000           591#  1065   1173   1210   1253   1313   1373   1433   1493   1553   1613   1673   1733
                        1793   1853   1913   1973   2033   2093   2153
BIT14 = 040000           590#  1136
BIT15 = 100000           589#  1212   2914   2921   2955   2959   2993   2996   3036   3040
CHRCNT  015166          3268*  3272   3285*  3299#  3300
CLEAR   015264          1244   1304   1364   1424   1484   1544   1604   1664   1724   1784   1844   1904   1964
                        2024   2084   2144   2206   2250   2294   2338   2382   2426   2470   2514   2558   2602
                        2646   2690   2734   2778   2822   2866   3328#
DATABP  014366          3131*  3134   3141   3144#
DEVADR  015010          3215*  3249   3257#
DHBA    015364          1269   1271   1329   1331   1389   1391   1449   1451   1509   1511   1569   1571   1629
                        1631   1689   1691   1749   1751   1809   1811   1869   1871   1929   1931   1989   1991
                        2049   2051   2109   2111   2169   2171   2220   2264   2308   2352   2396   2440   2484
                        2528   2572   2616   2660   2704   2748   2792   2836   2880   3331*  3355#
DHBAR   015370          1251*  1262   1266   1311*  1322   1326   1371*  1382   1396   1431*  1442   1446   1491*
                        1502   1506   1551*  1562   1566   1611*  1622   1626   1671*  1682   1686   1731*  1742
                        1746   1791*  1802   1806   1851*  1862   1866   1911*  1922   1926   1971*  1982   1986
                        2031*  2042   2046   2091*  2102   2106   2151*  2162   2166   2209*  2253*  2297*  2341*
                        2385*  2429*  2473*  2517*  2561*  2605*  2649*  2693*  2737*  2781*  2825*  2869*  3357#
DHBC    015366          1249*  1279   1281   1309*  1339   1341   1369*  1399   1401   1429*  1459   1461   1489*
                        1519   1521   1549*  1579   1581   1609*  1639   1641   1669*  1699   1701   1729*  1759
                        1761   1789*  1819   1821   1849*  1879   1881   1909*  1939   1941   1969*  1999   2001
                        2029*  2059   2061   2089*  2119   2121   2149*  2179   2181   2219   2263   2307   2351
                        2395   2439   2483   2527   2571   2615   2659   2703   2747   2791   2835   2879   3330*
                        3341*  3356#
DHBCR   015372          3358#
DHLPR   015362          3354#
DHNRC   015360          2926   3001   3353#
DHRLVL  015402           993*  1011   1012*  1027*  1045   1046*  1061*  1079   1080*  1095*  1116   1117*  1132*
                        1153   1154*  1169*  1190   1191*  1206*  1227   1228*  1286   1287*  1346   1347*  1406
                        1407*  1466   1467*  1526   1527*  1586   1587*  1646   1647*  1706   1707*  1766   1767*
                        1826   1827*  1886   1887*  1946   1947*  2006   2007*  2066   2067*  2126   2127*  2186
                        2187*  2913*  3362#
DHRVEC  015400           943    991*  1011*  1025*  1045*  1059*  1079*  1094*  1116*  1131*  1153*  1168*  1190*
```

```
                1205*  1227*  1286*  1346*  1406*  1466*  1526*  1585*  1646*  1706*  1766*  1826*  1885*
                1946*  2006*  2066*  2126*  2186*  2912*  3361#
DHSCR   015356   951    990*   997*  1003   1007   1024*  1031*  1037   1041   1058*  1065*  1071   1075
                1093*  1098*  1099*  1101*  1112   1130*  1135*  1136*  1138*  1149   1157*  1172*  1173*
                1175*  1196   1204*  1209*  1210*  1212*  1223   1243*  1248*  1253*  1258   1303*  1308*
                1313*  1318   1363*  1368*  1373*  1378   1423*  1428*  1433*  1438   1483*  1488*  1493*
                1498   1543*  1548*  1553*  1558   1603*  1608*  1613*  1618   1663*  1668*  1673*  1678
                1723*  1728*  1733*  1738   1783*  1788*  1793*  1798   1843*  1848*  1853*  1858   1903*
                1908*  1913*  1918   1963*  1968*  1973*  1978   2023*  2028*  2033*  2038   2083*  2088*
                2093*  2098   2143*  2148*  2153*  2158   2204*  2210   2213*  2221   2231*  2248*  2254
                2257*  2265   2275*  2292*  2298   2301*  2309   2319*  2336*  2342   2345*  2353   2363*
                2380*  2386   2389*  2397   2407*  2424*  2430   2433*  2441   2451*  2468*  2474   2477*
                2485   2495*  2512*  2518   2521*  2529   2539*  2556*  2562   2565*  2573   2583*  2600*
                2606   2609*  2617   2627*  2644*  2650   2653*  2661   2671*  2688*  2694   2697*  2705
                2715*  2732*  2738   2741*  2749   2759*  2776*  2782   2785*  2793   2803*  2820*  2225
                2829*  2837   2847*  2864*  2870   2873*  2881   2891*  2911*  2915*  2922   2952*  2987*
                3032*  3042   3329*  3332*  3340*  3342*  3352#
DHSLR   015376   954*   955*  3006   3046   3052   3360#
DHSSR   015374   954   2914*  2921*  2925   2955*  2959*  2963   2993*  2996*  3033*  3036*  3040*  3359#
DHTLVL  015406   996*  1013   1014*  1030*  1047   1048*  1064*  1081   1082*  1097*  1118   1119*  1134*
                1155   1156*  1171*  1192   1193*  1208*  1229   1230*  1247*  1288   1299*  1307*  1348
                1349*  1367*  1408   1409*  1427*  1468   1469*  1487*  1528   1529*  1547*  1588   1589*
                1607*  1648   1649*  1667*  1708   1709*  1727*  1768   1769*  1787*  1828   1829*  1847*
                1888   1889*  1907*  1948   1949*  1967*  2008   2009*  2027*  2068   2069*  2087*  2128
                2129*  2147*  2189   2189*  3364#
DHTVEC  015404   994*  1013*  1028*  1047*  1062*  1081*  1096*  1118*  1133*  1155*  1170*  1192*  1207*
                1229*  1246*  1288*  1306*  1348*  1366*  1408*  1426*  1468*  1486*  1528*  1546*  1588*
                1606*  1648*  1666*  1708*  1726*  1768*  1796*  1828*  1946*  1889*  1906*  1948*  1966*
                2008*  2026*  2068*  2086*  2128*  2146*  2188*  3363#
DT1     016656  3486   3492   3494   3498   3500   3561#
DT2     016670  3502   3566#
EM0     016230  3485   3503#
EM1     016310  3487   3512#
EM10    016603  3501   3549#
EM2     016325  3489   3515#
EM3     016356  3491   3520#
EM4     016415  3493   3526#
EM5     016453  3495   3532#
EM6     016507  3497   3537#
EM7     016544  3499   3543#
ENDCOD  016702   576   3571#
EOP     014050  3070#
ERRCNT  015414   910*  3152*  3369#
ERRFLG  015410   911*   912*  3073*  3098*  3103   3121*  3132   3138*  3367#  3421#
ERRMSG  014354  3130*  3140#
ERRORS  014240   869   3116#
ERRTAB  016164  3129   3484#
ERTABO  014434  3137   3157#
ESCAPE  015420   989*  1023*  1057*  1092*  1129*  1166*  1203*  1242*  1302*  1362*  1422*  1482*  1542*
                1602*  1662*  1722*  1782*  1842*  1902*  1962*  2022*  2082*  2142*  2203*  2247*  2291*
                2335*  2379*  2423*  2467*  2511*  2555*  2599*  2643*  2687*  2731*  2775*  2819*  2863*
                2910*  2949*  2984*  3029*  3155   3371#
EXITER  014412  3147   3152#
FREEZ1  015422  2950*  2985*  3030*  3111   3372#
HALTS   014372  3117   3146#
HCORE   015456   921*   922*  3386#
```

```
HILIM   015006          3214*   3240    3256#
ICOUNT  015424           988*   1022*   1056*   1091*   1128*   1165*   1202*   1241*   1301*   1361*   1421*   1481*   1541*
                        1601*   1661*   1721*   1781*   1841*   1901*   1961*   2021*   2081*   2141*   2202*   2246*   2290*
                        2334*   2378*   2422*   2466*   2510*   2554*   2598*   2642*   2686*   2730*   2774*   2818*   2862*
                        2909*   2948*   2993*   3028*   3095    3373#
INBUF   016126          3192    3220    3475#
INIFLG  015450           914     925     956     958*   3383#
INSTER= 104404           886#   3235
INSTR = 104403           885#    938     946     967
INSTRE  014620          3205#   3467
INSTRG  014526          3188#   3466
INSTR1  014540          3190#   3207
INSTR2  014626          3199    3208#
LAST    015454          3072*   3118    3120*   3385#   3422*
LIGHTS= 177570           574#   3075*
LIMITS  014740          3230    3240#
LINE  = 000000          1232#   1292#   1352#   1412#   1472#   1532#   1592#   1652#   1712#   1772#   1832#   1892#   1952#
                        2012#   2072#   2132#   2192#   2236#   2280#   2324#   2368#   2412#   2456#   2500#   2544#   2588#
                        2632#   2676#   2720#   2764#   2808#   2852#   2896#
LOAD    015316          2208    2252    2296    2340    2384    2428    2472    2516    2560    2604    2648    2692    2736
                        2780    2824    2868    3339#
LOBITS  015012          3216*   3244    3258*   3259
LOGICA  014106           892    3079#
LOLIM   015004          3213*   3242    3255#
LPCNT   015426          3094*   3095    3097*   3374#
MCRLF   015765          3264    3445#
MDATA   016152          3283    3294    3479#
MEPASS  016055          3071    3455#
MFFAIL  015770          3420    3446#
MGM     015761          3206    3444#
MR      016065           980    3457#
MREGAD  015725           947    3439#
MSG     014542          3188*   3191#
MTITLE  015624           913    3427#
MTSTPC  016071           968    3458#
MVECTO  015703           939    3435#
N     = 000001             1#
OCTASC= 104402           884#   3136    3143    3417
OCTASN  015014          3263#   3465
PARAM = 104405           887#    940     948     969
PARAMS  014630          3212#   3468
PARAMI  014660          3219#   3236
PARERR  014734          3222    3224    3226    3235#   3241    3243    3245
PASCNT  015412           909*   3074*   3075    3368#
PC    =%000007           569#   1244*   1304*   1364*   1424*   1484*   1544*   1604*   1664*   1724*   1784*   1844*   1904*
                        1964*   2024*   2084*   2144*   2206*   2208*   2250*   2252*   2294*   2296*   2338*   2340*   2382*
                        2384*   2426*   2428*   2470*   2472*   2514*   2516*   2558*   2560*   2602*   2604*   2646*   2648*
                        2690*   2692*   2734*   2736*   2778*   2780*   2822*   2824*   2866*   2868*   3079*   3335*   3345*
PFAIL   015460           867     907    3390#   3411
PFTAB   015614          3418    3424#
POPRO = 012600           583#   3151
POP1SP= 005726           581#
POP2SP= 022626           585#
PS    = 177776           575#    905*    963*    987*    999*   1001*   1021*   1033*   1035*   1055*   1067*   1069*   1090*
                       1103*   1105*   1127*   1140*   1142*   1164*   1177*   1179*   1201*   1214*   1216*   1240*   1254*
                       1300*   1314*   1360*   1374*   1420*   1434*   1480*   1494*   1540*   1554*   1600*   1614*   1660*
```

```
SAVPC   015446          3159    3305*   3382#
SAVR0   015430          3314*   3318    3375#
SAVR1   015432          3313*   3319    3376#
SAVR2   015434          3312*   3320    3377#
SAVR3   015436          3311*   3321    3378#   3570
SAVR4   015440          3310*   3322    3379#   3565
SAVR5   015442          3309*   3323    3380#   3563    3568
SAVSP   015444          3381#   3397*   3404
SAVOSP= 104406           888#   3122
SCOPE = 104400           882#   1015    1049    1083    1120    1157    1194    1231    1291    1351    1411    1471    1531
                        1591    1651    1711    1771    1831    1891    1951    2011    2071    2131    2191    2235    2279
                        2323    2367    2411    2455    2499    2543    2587    2631    2675    2719    2763    2807    2851
                        2895    2941    2975    3019    3061
SCOPER  014122          3088#   3463
SCOPE1= 104410           990#   2969    3015    3054
SCOP1R  014222          3109#   3471
SIZE    001056           917#
SP    =%000006           568#    906*    964*   1005*   1009*   1039*   1043*   1073*   1077*   1110*   1114*   1147*   1151*
                        1184*   1188*   1221*   1225*   1290*   1350*   1410*   1470*   1530*   1590*   1650*   1710*   1770*
                        1830*   1890*   1950*   2010*   2070*   2130*   2190*   2940*   3099    3101*   3111*   3118    3120
                        3123    3149    3155*   3165*   3166*   3167*   3168*   3169*   3170*   3171*   3172    3176    3177*
                        3188    3189*   3212    3218*   3265    3266*   3305    3390*   3391*   3392*   3393*   3394*   3395*
                        3396*   3397    3404*   3405    3406    3407    3408    3409    3410    3413*
SPACNT= 015167          3269*   3287    3290*   3300#
STACK = 017102           576#    906     964    1290    1350    1410    1470    1530    1590    1650    1710    1770    1830
                        1890    1950    2010    2070    2130    2190    2940    3413
START   001000           874     905#
STFLG   015452           908*    977     979*   3384#
SVOS    015200          3309#
SVOSP   015172          3305#   3469
SWR   = 177570           573#    927     965    3088    3090    3092    3109    3116    3146    3153
SW00  = 000001           556#    927
SW01  = 000002           555#    965
SW02  = 000004           554#
SW03  = 000010           553#
SW04  = 000020           552#
SW05  = 000040           551#
SW06  = 000100           550#
SW08  = 000400           549#
SW09  = 001000           548#   3109
SW10  = 002000           547#   3088    3153
SW11  = 004000           546#   3092
SW12  = 010000           545#
SW13  = 020000           544#   3116
SW14  = 040000           543#   3090
SW15  = 100000           542#
TEMP    016140          3273    3414*   3415*   3477#
TKCSR   015346          3194    3348#
TKDBR   015350          3196    3200    3349#
TPCSR   015352          3178    3201    3350#
TPDBR   015354          3183*   3200*   3351#
TRPOK   014454          3168#
TRPSRV  014442           871    3165#
TRPTAB  016104          3170    3463#
TYPDAT  014356          3135    3141#
TYPE  = 104401           883#    913     980    3070    3139    3190    3205    3263    3293    3419
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TYPER   014474            3176*   3464
TYPMSG  014340            3133    3136*
T1      001334             976     987*
T10     003032            1240*
T11     003270            1300*
T12     003526            1360*
T13     003764            1420*
T14     004222            1480*
T15     004460            1540*
T16     004716            1600*
T17     005154            1660*
T2      001516            1021*
T20     005412            1720*
T21     005650            1780*
T22     006106            1840*
T23     006344            1900*
T24     006602            1960*
T25     007040            2020*
T26     007276            2080*
T27     007534            2140*
T3      001700            1055*
T30     007772            2201*
T31     010142            2245*
T32     010312            2289*
T33     010462            2333*
T34     010632            2377*
T35     011002            2421*
T36     011152            2465*
T37     011322            2509*
T4      002062            1090*
T40     011472            2553*
T41     011642            2597*
T42     012012            2641*
T43     012162            2685*
T44     012332            2729*
T45     012502            2773*
T46     012652            2817*
T47     013022            2861*
T5      002254            1127*
T50     013172            2908*
T51     013356            2947*
T52     013512            2982*
T53     013672            3027*
T6      002446            1164*
T7      002640            1201*
VEC1    001120             915     927*
VEC2    001130             926     929*
WRDCNT  015164            3267*   3295*   3298*
X       = 000000             1*
XBIT    = 000001          1232*   2192*   2896*
XLINE   = 000000          1232*   2192*   2896*
XN      = 000054             1*    987     990*   1021    1024*   1055    1058*   1090    1093*   1127    1130*   1164    1167*
                          1201    1204*   1240    1243*   1300    1303*   1360    1363*   1420    1423*   1480    1483*   1540
                          1543*   1600    1603*   1660    1663*   1720    1723*   1780    1783*   1840    1843*   1900    1903*
                          1960    1963*   2020    2023*   2080    2083*   2140    2143*   2201    2204*   2245    2248*   2299
                          2292*   2333    2336*   2377    2380*   2421    2424*   2465    2468*   2509    2512*   2553    2556*
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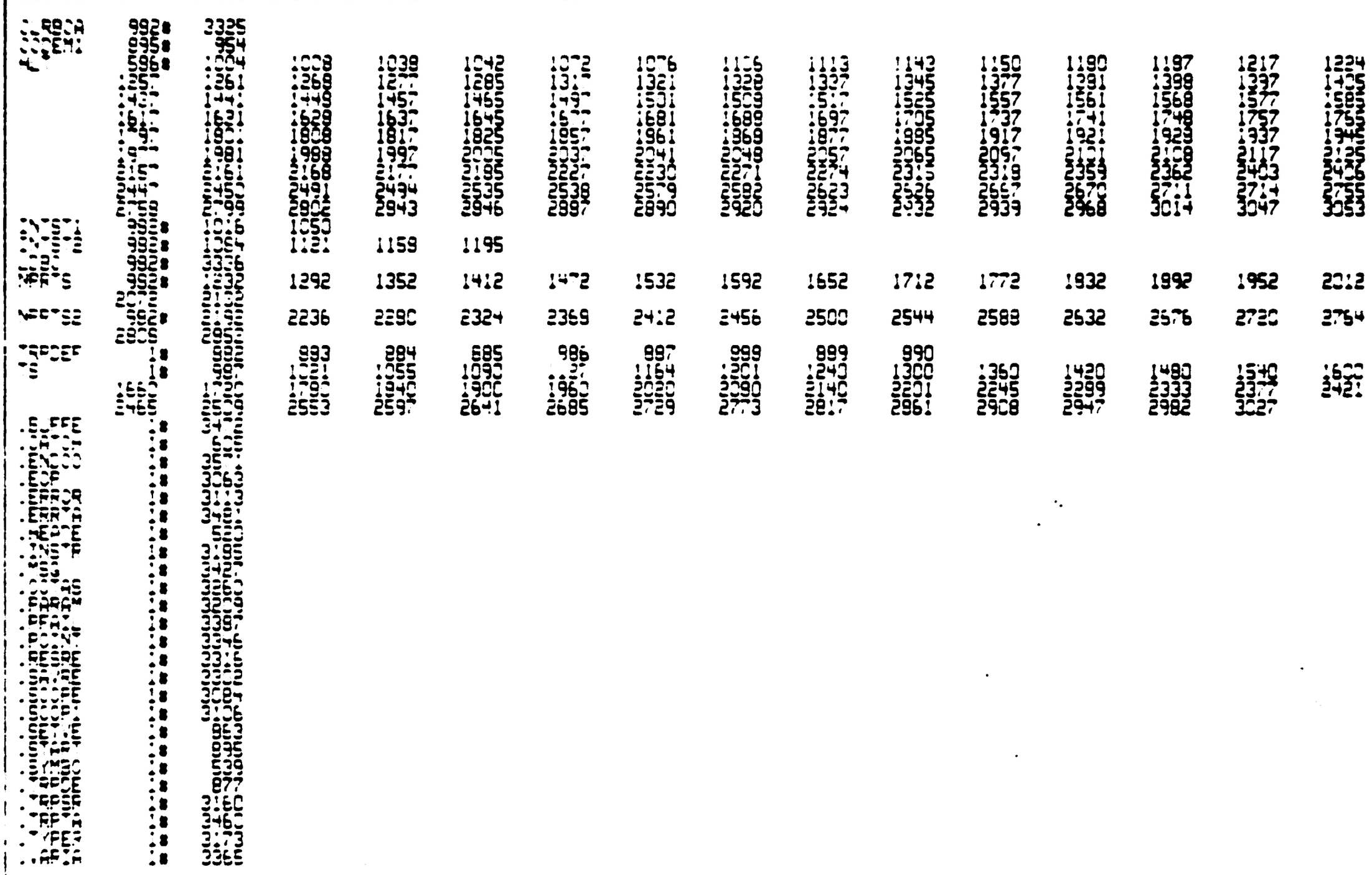
Y = 000011
. = 016704

2597	2600*	2641	2644*	2685	2688*	2729	2732*	2773	2776*	2817	2820*	2861	
2864*	2908	2911*	2947	2951*	2982	2986*	3027	3031*					
1*	882	883*	884*	985*	886*	887*	888*	889*	890*	891*			
606*	607	609	611	613	615	617	619	621	623	625	627	629	
631	633	635	637	639	641	643	645	647	649	651	653	655	
657	659	661	663	665	667	669	671	673	675	677	679	681	
683	685	687	689	691	693	695	697	699	701	703	705	707	
709	711	713	715	717	719	721	723	725	727	729	731	733	
735	737	739	741	743	745	747	749	751	753	755	757	759	
761	763	765	767	769	771	773	775	777	779	781	783	785	
787	789	791	793	795	797	799	801	803	805	807	809	811	
813	815	817	819	821	823	825	827	829	831	833	835	837	
839	841	843	845	847	849	851	853	855	857	859	961	965*	
873*	891*	893*	895*	3039	3400	3416	3476*	3478*	3480*	3557*			



C07

DIDHC MACY11 27(732) 16-MAR-76 09:17 PAGE 84
DZDHCB.PFC CROSS REFERENCE TABLE -- PERMANENT SYMBOLS .

ADD	934	935	3129	3170	3177	3189	3251	3266	3276						
ASL	3126	3127	3168	3231	3232	3233									
ASR	3278	3279	3280												
BEQ	926	929	966	1263	1270	1280	1323	1330	1340	1383	1390	1400	1443	1450	1460
	1503	1510	1520	1563	1570	1590	1623	1630	1640	1683	1690	1700	1743	1750	1760
	1803	1810	1920	1963	1970	1890	1923	1930	1940	1983	1990	2000	2043	2050	2060
	2103	2110	2120	2163	2170	2180	2226	2229	2270	2273	2314	2317	2358	2361	2402
	2405	2446	2449	2490	2493	2534	2537	2578	2581	2622	2625	2666	2669	2710	2713
	2754	2757	2798	2901	2942	2945	2986	2989	2931	2938	2967	3013	3077	3104	3110
	3119	3133	3142	3154	3199	3222	3230	3289							
BGT	3226														
BHI	3241														
BHIS	2921	2934	2959	2964	2996	3007	3040	3128	3169	3275					
BICB	3197	3227													
BIS	1099	1101	1136	1139	1173	1175	1210	1212	1253	1313	1373	1433	1493	1553	1613
	1673	1733	1793	1853	1913	1973	2033	2093	2153	2914	2955	2993	3036		
BISB	3228														
BIT	927	965	3088	3090	3092	3109	3116	3153							
BITB	3144														
BLE	3051														
BLO	3243														
BLOS	3224														
BMI	1260	1320	1380	1440	1500	1560	1620	1680	1740	1800	1860	1920	1980	2040	2100
	2160	2920	3043												
BNE	915	937	957	979	1256	1316	1376	1436	1496	1556	1616	1676	1736	1796	1956
	1916	1976	2036	2096	2156	2222	2234	2266	2278	2310	2322	2354	2366	2398	2410
	2442	2454	2496	2498	2530	2542	2574	2596	2618	2630	2662	2674	2706	2718	2750
	2762	2794	2806	2839	2850	2882	2894	2919	2958	2962	2974	2995	2999	3003	3005
	3018	3039	3045	3056	3060	3089	3091	3093	3096	3117	3135	3181	3204	3245	3253
	3282	3286	3291	3296	3334	3344	3416								
BPL	2211	2255	2299	2343	2387	2431	2475	2519	2563	2607	2651	2695	2739	2783	2927
	2871	3147	3179	3195	3202										
BR	920	975	1002	1036	1070	1109	1146	1183	1220	3049	3105	3184	3207	3234	3236
	3400														
CLR	908	909	910	911	912	917	933	999	1012	1014	1033	1046	1048	1067	1080
	1082	1103	1117	1119	1140	1154	1156	1177	1191	1193	1214	1228	1230	1254	1264
	1283	1287	1289	1314	1324	1343	1347	1349	1374	1384	1403	1407	1409	1434	1444
	1463	1467	1469	1494	1504	1523	1527	1529	1554	1564	1593	1587	1589	1614	1624
	1643	1647	1649	1674	1684	1703	1707	1709	1734	1744	1753	1767	1769	1794	1804
	1823	1827	1829	1854	1864	1883	1887	1889	1914	1924	1943	1947	1949	1974	1994
	2003	2007	2009	2034	2044	2063	2067	2069	2094	2104	2123	2127	2129	2154	2164
	2183	2197	2189	2213	2214	2217	2223	2257	2258	2261	2257	2301	2302	2305	2311
	2345	2346	2349	2255	2389	2390	2393	2399	2433	2434	2437	2443	2477	2479	2481
	2487	2521	2522	2525	2531	2565	2566	2569	2575	2609	2610	2613	2619	2653	2654
	2657	2663	2697	2698	2701	2707	2741	2742	2745	2751	2785	2796	2799	2795	2829
	2830	2833	2839	2873	2874	2877	2883	2916	2954	3031	3072	3073	3097	3099	3121
	3219	3329	3330	3331	3340	3414	3421	3422							
CLRB	3292														
CMP	935	1269	1329	1389	1449	1509	1569	1629	1689	1749	1909	1969	1929	1999	2049
	2109	2169	2221	2225	2228	2265	2269	2272	2309	2313	2316	2353	2357	2360	2397
	2401	2404	2441	2445	2448	2485	2489	2492	2529	2533	2536	2573	2577	2580	2617
	2621	2624	2661	2665	2668	2705	2709	2712	2749	2753	2756	2793	2797	2900	2937
	2841	2844	2881	2885	2889	2930	2937	2966	2973	3012	3017	3050	3059	3095	3113
	3240	3242													
CMPB	3198	3221	3223	3225	3229										
COM	958	979													

DZDHC MACY11 27(732) 16-MAR-76 09:17 PAGE 95
DZDHCB.P11 CROSS REFERENCE TABLE -- PERMANENT SYMBOLS

DEC	1255	1315	1375	1435	1495	1555	1615	1675	1735	1795	1855	1915	1975	2035	2095
	2155	2233	[illegible]	2321	2365	2409	2453	2497	2541	2595	2623	2673	2717	2761	2805
	2849	2993	2918	2957	2961	2994	2997	3002	3004	3038	3041	3203	3281	3295	3333
	3343														
DECB	3252	3295	3290												
EMT	598														
HALT	609	610	612	614	616	619	620	622	624	626	628	630	632	634	636
	638	640	642	644	646	649	650	652	654	656	659	660	662	664	666
	668	670	672	674	676	679	680	682	684	686	698	690	692	694	696
	698	700	702	704	706	708	710	712	714	716	719	720	722	724	726
	728	730	732	734	736	738	740	742	744	745	748	750	752	754	756
	758	760	762	764	766	769	770	772	774	776	778	790	782	784	786
	788	790	792	794	796	798	800	802	804	806	809	810	812	814	816
	818	820	822	824	826	828	830	832	834	836	838	840	842	844	846
	848	850	952	954	856	859	860	962	3150	3399					
INC	955	2224	2231	2232	2268	2275	2276	2312	2319	2320	2356	2363	2364	2400	2407
	2408	2444	2451	2452	2489	2495	2496	2532	2539	2540	2576	2583	2584	2620	2627
	2628	2664	2671	2672	2708	2715	2716	2752	2759	2760	2796	2803	2804	2840	2947
	2849	2894	2991	2892	2960	2971	3016	3035	3074	3094	3152	3332	3342	3415	
JMP	874	981	3093	3172	3423										
JSR	1244	1304	1364	1424	1484	1544	1604	1664	1724	1794	1844	1904	1964	2024	2094
	2144	2206	2209	2250	2252	2294	2296	2338	2340	2382	2384	2426	2428	2470	2472
	2514	2516	2558	2560	2602	2604	2646	2648	2690	2692	2734	2736	2778	2780	2922
	2824	2866	2868	3079											
MOV	905	906	907	918	921	923	929	930	931	932	954	963	964	976	997
	998	993	990	991	993	994	996	997	1001	1003	1005	1007	1009	1011	1013
	1021	1022	1023	1024	1025	1027	1028	1030	1031	1035	1037	1039	1041	1043	1045
	1047	1055	1056	1057	1058	1059	1061	1062	1064	1065	1069	1071	1073	1075	1077
	1079	1081	1090	1091	1092	1093	1094	1095	1096	1097	1098	1105	1110	1112	1114
	1116	1118	1127	1128	1129	1130	1131	1132	1133	1134	1135	1142	1147	1149	1151
	[illegible]	1155	1164	1165	1166	1167	1168	1169	1170	1171	1172	1179	1194	1196	1198
	1190	1192	1201	1202	1203	1204	1205	1206	1207	1209	1209	1216	1221	1223	1225
	1227	1229	1240	1241	1242	1243	1245	1247	1248	1249	1250	1251	1266	1271	1274
	1251	1286	1288	1290	1300	1301	1302	1303	1306	1307	1308	1309	1310	1311	1326
	1331	1334	1341	1346	1348	1350	1360	1361	1362	1363	1366	1367	1368	1369	1370
	1371	1386	1391	1394	1401	1406	1408	1410	1420	1421	1422	1423	1426	1427	1429
	1429	1430	1431	1446	1451	1454	1461	1466	1469	1470	1490	1491	1492	1493	1495
	1487	1488	1489	1490	1491	1506	1511	1514	1521	1526	1529	1530	1540	1541	1542
	1543	1546	1547	1548	1549	1550	1551	1566	1571	1574	1591	1596	1589	1590	1600
	1601	1602	1603	1606	1607	1608	1609	1610	1611	1626	1631	1634	1641	1646	1648
	1650	1660	1661	1662	1663	1666	1667	1668	1669	1670	1671	1686	1691	1694	1701
	1706	1708	1710	1720	1721	1722	1723	1726	1727	1728	1729	1730	1731	1746	1751
	1754	1761	1766	1768	1770	1780	1781	1782	1783	1786	1797	1789	1799	1790	1791
	1806	1811	1814	1821	1826	1828	1830	1840	1841	1842	1943	1946	1947	1849	1949
	1850	1851	1866	1871	1874	1881	1896	1888	1890	1900	1901	1902	1903	1906	1907
	1909	1909	1910	1911	1926	1931	1934	1941	1946	1948	1950	1960	1961	1962	1963
	1966	1967	1968	1969	197	1971	1986	1991	1994	2001	2006	2008	2010	2020	2021
	2022	2023	2026	2027	2028	2029	2030	2031	2046	2051	2054	2061	2066	2069	2070
	2080	2081	2082	2083	2085	2087	2088	2089	2090	2091	2106	2111	2114	2121	2126
	2128	2130	2140	2141	2142	2143	2146	2147	2148	2149	2150	2151	2166	2171	2174
	2181	2186	2188	2190	2201	2202	2203	2204	2209	2212	2215	2219	2220	2245	2246
	2247	2248	2253	2256	2259	2263	2264	2289	2290	2291	2292	2297	2300	2303	2307
	2308	2333	2334	2335	2336	2341	2344	2347	2351	2352	2377	2373	2379	2390	2395
	2388	2391	2395	2396	2421	2422	2423	2424	2429	2432	2435	2439	2440	2465	2466
	2467	2468	2473	2476	2479	2483	2484	2509	2510	2511	2512	2517	2520	2523	2527
	2529	2553	2554	2555	2556	2561	2564	2567	2571	2572	2597	2598	2599	2600	2605

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                2748  2773  2774  2775  2776  2781  2784  2787  2791  2792  2817  2819  2819  2825  2825
                2828  2831  2835  2835  2861  2862  2863  2864  2869  2872  2875  2879  2880  2909  2909
                2910  2911  2913  2913  2915  2917  2925  2926  2928  2933  2935  2940  2947  2948  2948
                2950  2951  2952  2953  2956  2963  2982  2993  2984  2985  2986  2987  2988  2991  2992
                2999  3000  3027  3028  3029  3030  3032  3033  3034  3037  3075  3076  3099  3101  3111
                3120  3123  3125  3130  3131  3138  3149  3155  3165  3167  3171  3176  3188  3192  3193
                3212  3213  3214  3215  3218  3220  3249  3250  3265  3267  3270  3271  3273  3274  3283
                3305  3309  3310  3311  3312  3313  3314  3318  3319  3320  3321  3322  3323  3328  3338
                3341  3390  3391  3392  3393  3394  3395  3396  3397  3398  3404  3405  3406  3407  3409
                3409  3410  3411  3412  3413
        3006    3006  3046  3052  3183  3196  3200  3216  3217  3268  3269  3272  3277  3284  3289
        1000    1000  1034  1068  1104  1141  1178  1215  3080  3081  3092
                3078
                 972  3426
                3058
        1006    1006  1010  1040  1044  1074  1078  1111  1115  1148  1152  1195  1189  1222  1226  3100
                3102  3112  3156  3182  3208  3254  3297  3315  3324
                3335  3345
                3057
                 922  2989  3124  3166
                2865
         882     882   883   884   885   886   887   888   889   890
         914     914   919   925   956   977  1258  1262  1279  1318  1322  1339  1378  1382  1399  1439
        1442    1442  1459  1498  1502  1519  1558  1562  1579  1618  1622  1639  1678  1682  1699  1739
        1742    1742  1759  1798  1802  1819  1858  1862  1879  1918  1922  1939  1978  1982  1999  2038
        2042    2042  2059  2098  2102  2119  2158  2162  2179  2210  2254  2299  2342  2386  2430  2474
        2518    2518  2562  2606  2650  2694  2738  2782  2826  2870  3001  3044  3055  3103  3132  3134
                3141  3146
TSTB            2922  3042  3178  3180  3194  3201  3287
.ASCII          3503  3520  3526  3537  3543  3549
.ASCIZ          3427  3435  3439  3444  3445  3446  3455  3457  3458  3507  3512  3515  3523  3529  3532
                3540  3546  3552
.BYTE            944   945   952   953   973   974  3158  3562  3564  3567  3569
.ENABL           539
.END            3572
.ENDC            917   924   927   954   956   990  1024  1058  1093  1130  1167  1204  1243  1303  1363
                1423  1483  1543  1603  1663  1723  1783  1843  1903  1963  2023  2083  2143  2204  2248
                2292  2336  2380  2424  2468  2512  2556  2600  2644  2688  2732  2776  2920  2864  2911
                2951  2986  3031
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                2336  2380  2424  2468  2512  2556  2600  2644  2688  2732  2776  2920  2864  2911  2950
                2985  3030
.IFF             917   924
.IIF             903   904
.IRP            3352  3386
.IRST              1   520   539   883   884   885   886   887   888   889   890   891   982   990  1024
                1058  1093  1130  1167  1204  1232  1243  1292  1303  1352  1363  1412  1423  1472  1483
                1532  1543  1592  1603  1652  1663  1712  1723  1772  1783  1832  1843  1892  1903  1952
                1963  2012  2023  2072  2083  2132  2143  2192  2204  2236  2248  2280  2292  2324  2336
                2368  2380  2412  2424  2456  2468  2500  2512  2544  2556  2588  2600  2632  2644  2676
                2688  2720  2732  2764  2776  2808  2820  2852  2864  2896  2911  2951  2996  3031
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F07

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DZDHC   MACY11 27.732   16-MAR-75  09:17  PAGE 87
DZDHCB.PFC      CROSS REFERENCE TABLE -- PERMANENT SYMBOLS

.MACRO      1      895      982
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          1532     1543     1592     1603     1652     1663     1712     1723     1772     1793     1832     1843     1892     1903     1952
          1963     2012     2023     2072     2093     2132     2143     2192     2204     2236     2248     2263     2292     2324     2336
          2368     2380     2412     2424     2456     2468     2500     2512     2544     2556     2588     2600     2632     2644     2676
          2689     2720     2732     2764     2776     2808     2820     2852     2864     2896     2911     2951     2986     3031
.PAGE      558      605      863      895
.REM         1
.REPT      607     1232     2192
.TITLE     539


 ERRORS DETECTED:  0
 DEFAULT GLOBALS GENERATED:  0

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 RUN-TIME:  14.26.4 SECONDS
 RUN-TIME RATIO: 107/45=2.3
 CORE USED:  12K  (23 PAGES)
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Spooler runtime 14 Seconds, 414 KCS, 360 disk reads, 3 disk writes, 83 pages