DQ11

BASIC LOGIC TEST PART 1

MD-11-DZDQA-B

EP-DZDQA-B-DL-A

FICHE 1 OF 1

NOV 1976

digital

MADE IN U.S.A.

IDENTIFICATION

PRODUCT CODE: MAINDEC-11-DZDQA-B-D

PRODUCT NAME: BASIC LOGIC TEST PART 1

DATE: 21 JUNE 1976

MAINTAINER: DIAGNOSTIC GROUP

1. ABSTRACT

THE FUNCTION OF THE DQ11 DIAGNOSTICS ARE TO
VERIFY THAT THE OPTION OPERATES ACCORDING
TO SPECIFICATIONS.

THIS BASIC READ/WRITE TEST FIRST CHECKS THAT
THE DQ11 WILL RESPOND TO ADDRESSING, THEN THE
TEST VERIFIES ALL THE READ/WRITE
BITS IN THE:
RECEIVER CSR
TRANSMITTER CSR
ERROR REGISTER
SYNC REGISTER

CURRENTLY THERE ARE SEVEN OFF LINE DIAGNOSTICS THAT ARE
TO BE RUN IN SEQUENCE TO INSURE THAT IF AN
ERROR SHOULD OCCUR IT WILL BE DETECTED
AT AN EARLY STAGE AND INSURING THAT
DIAGNOSIS OF ERROR WILL BE IMMEDIATE TO PROBLEM
NOTE: ADDITIONAL DIAGNOSTICS MAY BE ADDED IN THE FUTURE.

THE SEVEN DIAGNOSTICS ARE:
1. DZDQA [REV] BASIS R/W TEST #1
2. DZDQB [REV] BASIC R/W TEST #2
3. DZDQC [REV] BASIC NPR AND INTERUPT TEST
4. DZDQD [REV] RECEIVER TRANSMITTER EXERCISER TEST
5. DZDQE [REV] MISC. RX AND TX TESTS. PLUS BCC TESTS.
6. DZDQF [REV] CHARACTER DETECT TESTS.
7. DZDQH [REV] CHARACTER LENGTH AND INTERRUPT TESTS.

THERE IS ALSO AN ONLINE TEST TO BE DISCUSED LATER.
1. DZDQC [REV] ONLINE TEST. (ITEP OVERLAY)

AND A PARAMETER INPUT PROGRAM IS AVAILABLE
1. DZDQG [REV] DQ11 TRIAL PROGRAM (PARAMETER INPUT)

2. REQUIREMENTS

2.1 EQUIPMENT

ANY PDP11 FAMILY CPU (WITH MINIMUM 8K MEMORY)-WITH
 OR WITHOUT A HARDWARE SWITCH REGISTER (LOC. 177570)
ASR 33 (OR EQUILIVALENT)
DQ11
SYNC MODEM (ONLY REQUIRED FOR ONLINE TEST)

2.2 STORAGE

PROGRAM WILL LOAD AND RUN
IN 8K OF MEMORY.
LOCATION 1400 THRU 1600 ARE ESPECIALLY TO

BE NOTED AND TO BE UNTOUCHED BY OPERATOR
AFTER DQ11 TRIAL PROGRAM HAS BEEN EXECUTED.
OR AFTER THE "AUTO SIZING" HAS BEEN DONE.

3. LOADING PROCEEDURE

3.1 METHOD

ALL PROGRAMS ARE IN ABSOLUTE FORMAT AND
ARE LOADED USING THE ABSOLUTE LOADER.

ABSOLUTE LOADER STARTING ADDRESS *500

MEMORY *
SIZE

4K 17
8K 37
12K 57
16K
20K 117
24K 137
28K 157

3.1.1 LOAD THE ADDRESS OF ABS. LOADER (LOC.XXX500)

3.1.2 THEN START

4. STARTING PROCEEDURE

A. LOAD LOC. 200
B. SET SWR TO ZERO FOR "AUTO SIZING" OR LEAVE
   LEAVE SWR BIT 7=1 TO USE EXISTING PARAMETERS SET UP
   BY DQ11 TRIAL PROGRAM OR A PREVICUSLY RUN DQ11 DIAGNOSTIC
   THAT USED THE "AUTO SIZING".
    ****REFER TO SECTION 4.1 FOR SOFTWARE SWITCH REGISTER OPERATION
        AND OPTIONS.****
   NOTE:THE SOFTWARE SWITCH REGISTER IS LOCATED AT LOC.176
   SOFTWARE DISPLAY REGISTER IS LOCATED AT LOC.174

C.THEN START
THE PROGRAM WILL TYPE MAINDEC NAME AND PROGRAM NAME
IF THIS WAS THE FIRST START UP OF THE PROGRAM) AND ALSO
THE FOLLOWING:
        "MAP OF DQ11 STATUS"
        1400   160010
        1402   152300
        1404   160020
        1406   150310

THE ABOVE IS ONLY AN EXAMPLE!
THIS WOULD INDICATE THE STATUS TABLE STARTING AT ADD.

1400 IN THE PROGRAM. THE STATUS TABLE MUST BE VERIFIED BY THE
USER IF AUTO SIZING IS DONE. FOR INFORMATION OF STATUS
TABLE SEE SECTION 8.4 FOR HELP.

****IF THE SOFTWARE SWITCH REGISTER IS SELECTED THEN THE FOLLOWING
WILL BE TYPED AFTER THE PROGRAM IDENTIFIES ITSELF:
SWR=XXXXXX NEW= (REFER TO SECTION 4.1 FOR OPERATOR'S OPTION)****
NOTE:IF USING THE SOFTWARE SWITCH REGISTER WHEN A HARDWARE
SWITCH REGISTER IS AVAILABLE THE PROGRAM WILL NOT
TYPE OUT THE TITLE.

THE PROGRAM WILL TYPE "R"
AND PROCEED TO RUN THE DIAGNOSTIC

4.1 CONTROL SWITCH SETTINGS

IF THE DIAGNOSTIC IS RUN ON A CPU WITHOUT A SWITCH
REGISTER THEN A SOFTWARE SWITCH REGISTER IS USED WHICH ALLOWS
THE USER THE SAME SWITCH OPTIONS AS THE HARDWARE SWITCH REGISTER.
IF THE HARDWARE SWITCH REGISTER DOES NOT EXIST OR IF ONE DOES
AND IT CONTAINS ALL ONES (177777) THEN THE SOFTWARE SWITCH
REGISTER (LOC. 176) IS USED.

CONTROL:

THIS PROGRAM ALSO SUPPORTS THE DYNAMIC LOADING OF THE SOFTWARE SWITCH
REGISTER (LOC. 176) FROM THE TTY. THIS CAN BE ACCOMPLISHED BY
DOING THE FOLLOWING:

1) TYPE CONTROL G (↑G); THIS WILL ALLOW THE TTY TO ENTER DATA INTO
   LOC. 176 AT SELECTED POINTS WITHIN THE PROGRAM.

2) THE MACHINE WILL THEN TYPE: SWR=XXXXXXNEW= (XXXXXX IS THE OCTAL CONTENTS
   OF THE SOFTWARE SWITCH REGISTER.)

3) AFTER THE ''NEW='' HAS BEEN TYPED THEN THE OPERATOR CAN DO ONE
   OF THE FOLLOWING AT THE TTY:

   A) TYPE A NUMBER TO BE LOADED INTO LOC. 176 FOLLOWED BY A (CR).
      (ONLY NUMBERS BETWEEN 0-7 WILL BE ACCEPTED AND ONLY 6 NUMBERS
      WILL BE ALLOWED)
      IF A (CR) IS THE FIRST KEY DEPRESSED THE SOFTWARE SWITCH
      REGISTER CONTENTS WILL NOT BE CHANGED.

   B) IF A CONTROL U (↑U) IS DEPRESSED THEN THE PROGRAM WILL SEND YOU
      BACK TO STEP 2.

SW 15 SET: HALT ON ERROR
SW 14 SET: LOOP ON CURRENT TEST
SW 13 SET: INHIBIT ERROR PRINT OUT
SW 12 SET: INHIBIT TYPE OUT/BELL ON ERROR.
SW 11 SET: INHIBIT ITERATIONS
SW 10 SET: ESCAPE TO NEXT TEST

SW 09 SET: LOOP WITH CURRENT DATA
SW 08 SET: CATCH ERROR AND LOOP ON IT
SW 07 SET: USE PREVIOUS STATUS TABLE. CLR-DO AUTO SIZE.
SW 06 SET:
SW 05 SET:
SW 04 SET:
SW 03 SET:
SW 02 SET: LOCK ON SELECTED TEST
SW 01 SET: RESTART PROGRAM AT SELECTED TEST:
SW 00 SET: RESELECT DQ11'S DESIRED ACTIVE.

4.1.2 SWITCH REGISTER RESTRICTIONS

SW 00 RESELECT DQ11'S DESIRED ACTIVE.
PLEASE NOTE THAT A MESSAGE IS TYPED
OUT FOR SWITCH REGISTER BEING EQUAL TO DQ11'S
ACTIVE. THIS MEANS IF THE SYSTEM HAS
FOUR DQ11S; BITS 00,01,02,03 WILL
BE SET IN LOC "DQACTV". USING THIS
SWITCH ALTERS THAT LOCATION;THEREFORE
IF FOUR DQ11S ARE IN THE SYSTEM
DO NOT SET SWITCHS GREATER THAN
SW 03 IN THE UP POSITION. THIS WOULD BE
A FATAL ERROR. DO NOT SELECT MORE ACTIVE
DQ11S THAN HAS BEEN GIVEN INFORMATION
ABOUT IN TRIAL PROGRAM.

METHOD: A: LOAD ADDRESS 200
B: START WITH SW 00=1
C: PROGRAM WILL TYPE MESSAGE
D: CONTINUE THE BINARY NUMBER OF DQ11S DESIRED ACTIVE
EXAMPLE: 1=1 DQ11; 3=2 DQ11; 7=3 DQ11; 17=4 DQ11 37=5 DQ11 ETC.
E: NUMBER (IF VALID) WILL BE IN DATA LIGHTS (EXCLUDING 11/05, 11/04, 11/34)
F: CONTINUE WITH ANY OTHER SWITCH SETTINGS DESIRED.

SW 01 IT IS STRONGLY SUGGESTED THAT
AT LEAST ONE PASS HAS BEEN MADE
BEFORE TRYING TO SELECT A TEST
THAT IS NOT IN THE ORDER OF SEQUENCE
THE REASON BEING IS THAT THE
PROGRAM HAS TO CLEAR AREAS AND SET
UP PARAMETERS. ALSO WHEN A TEST IS
SELECTED ALWAYS START AT THE VERY
BEGINNING OF THAT TEST.

SW 09 LOOP ON CURRENT DATA:
THIS SWITCH WILL ONLY WORK IF
CALL "SCOP1" IS IN THAT TEST.
THE REASON BEING THAT MOST TESTS
DEAL WITH BLOCKS OF DIFFERENT DATA
TO BE SENT OR RECEIVED ALL AT ONCE
THUS IN BLOCK DATA; ONE PATTERN CANN'T BE SINGLED OUT.

4.1.3 SWITCH REGISTER PRIORITYS

ERROR SWITCHES

1. SW 12 DELETE PRINT OUT/BELL ON ERROR.
2. SW 13 DELETE ERROR PRINTOUT.
3. SW 15 HALT ON THE ERROR.
4. SW 09 GOTO BEGINNING OF THE TEST.
5. SW 10 GOTO NEXT TEST ON ERROR.

****HLT (ERROR) ROUTINE SUPPORTS (↑G) OPERATION****

SCOPE SWITCHES

1. SW 09 (IF ENABLED BY "SCOPE")
2. SW 14
3. SW 11

****SCOPE ROUTINE WILL SUPPORT (↑G) OPERATION****

4.2 STARTING ADDRESS

STARTING ADDRESS IS AT 000200
THERE ARE NO OTHER STARTING ADDRESSES
FOR THE DQ11 DIAGNOSTICS PREVIOUSLY MENTIONED

NOTE: IF ADDRESS 000042 IS NON-ZERO
THE PROGRAM ASSUMES IT IS UNDER
ACT11 OR DDP CONTROL AND WILL ACT ACCORDINGLY
AFTER *ALL* AVAILABLE DQ11'S ARE TESTED
THE PROGRAM WILL RETURN TO "DDP2" OR "ACT-11".

5. OPERATING PROCEDURE

WHEN PROGRAM IS INITIALLY STARTED MESSAGES AS DESCRIBED IN SECTION
FOUR WILL BE PRINTED.

AND PROGRAM WILL BEGIN RUNNING THE
DIAGNOSTIC

5.2 PROGRAM AND/OR OPERATOR ACTION

THE TYPICAL APPROACH SHOULD BE

1. HALT ON ERROR (VIA SW 15=1)
WHEN EVER AN ERROR OCCURS
2. CLEAR SW 15
3. SET SW 14: (LOOP ON THIS TEST)
4. SET SW 13: (INHIBIT ERROR PRINT OUT)

THE TEST NUMBER AND PC WILL BE TYPED OUT AND
POSSIBILY AN ERROR MESSAGE (THIS DEPENDS ON THE TEST)
TO GIVE THE OPERATOR AN IDEA AS TO THE SOURCE OF THE
PROBLEM. IF IT IS NECESSARY TO KNOW MORE INFORMATION
CONCERNING THE ERROR REPORT; LOOK IN THE LISTING
FOR THAT TEST NUMBER WHICH WAS TYPED OUT
AND THEN NOTE THE PC OF THE ERROR REPORT
THIS WAY THE EXACT FUNCTIONING OF THE TEST
CAN BE INTERPECITED

6. ERRORS

AS DESCRIBED PREVIOUSLY THERE WILL ALWAY BE
A TEST NUMBER AND PC TYPED CUT AT THE TIME OF AN
ERROR (PROVIDING SW 13=0 AND SW 12=0). IN MOST CASES ADDITIONAL
INFORMATION WILL BE SUPPLIED THE THE ERROR MESSAGE
WHICH IS TC GIVE THE OPERATOR AN INDICATION OF THE
ERROR.

6.2 ERROR RECOVERY

IF FOR SOME REASON THE DQ11 SHOULD
"HANG THE BUS" (GAIN CONTROL OF BUS SO THAT
CONSOLE MANUAL FUNCTIONS ARE INHIBITED) AN INIT
OR POWER DOWN/UP IS NECESSARY FOR OPERATOR
TO REGAIN CONTROL OF CPU.
IF THIS SHOULD HAPPEN; LOOK IN LOCATION
"TSTNO" (ADDRESS 1222)FOR THE NUMBER OF THE TEST THAT
WAS RUNNING AT THE TIME OF THE CATASTROPHIC
ERROR.
IN THIS WAY THE OPERATOR WILL HAVE AN IDEA AS TO
WHAT THE DQ11 WAS DOING AT THE TIME OF THE ERROR.

6.3 ****HALT RECOVERY WHEN USING SOFTWARE SWITCH REGISTER****

IF THE SOFTWARE SWITCH REGISTER IS TO BE CHANGED AFTER A HALT
THE THE OPERATOR IS REQUIRED TO TYPE A <↑G> BEFORE DEPRESSING CONTINUE.
THE FOLLOWING WILL BE TYPED:
SWR=XXXXXX NEW=   (REFER TC SECTION 4.1 FOR OPERATOR OPTION)

7. RESTRICTIONS

7.1 STARTING RESTRICTIONS

SEE SECTION 4. (PLEASE)

7.2 OPERATING RESTRICTIONS

DQ11 TRIAL PROGRAM MUST BE RUN PRIOR TO THE
FIRST AND ONLY THE FIRST RUNNING OF ANY DQ11 DIAGNOSTIC
NOTE: IF NO PROGRAM OTHER THAN A
DQ11 DIAGNOSTIC WAS LOADED AFTER DQ11 TRIAL OR
IF CORE MEMORY HAS NOT BEEN CHANGED;OR IF THERE
IS NO DQ11 CONFIGURATION CHANGES; THE
DQ11 TRIAL PROGRAM NEED NEVER BE RUN AGAIN.
HOWEVER IF ANY OF THE ABOVE HAVE BEEN VIOLATED
THE DQ11 TRIAL PROGRAM MUST BE RUN AGAIN
BEFORE RUNNING THE DIAGNOSTICS
NOTE: AN ALTERNATIVE TO THE ABOVE IS ATTEMPTING
THE "AUTO SIZING" WHEN PROGRAM IS INITIALLY STARTED
WITH SW07=0.

8. MISCELLANECUS

8.1 EXECUTION TIME

8.2 PASS COMPLETE

WHEN THE DIAGNOSTIC HAS COMPLETED
A PASS THE FOLLOWING IS AN EXAMPLE
OF THE PRINT OUT TO BE EXPECTED.

END PASS DZDQA-B CSR: 160000 VEC: 300 PASSES: 000001 ERRORS: 000000

NOTE: THE NUMBERS FOR CSR AND VEC ARE
NOT NECESSARILY THE VALUES FOR THE DEVICE
THEY ARE ONLY FOR THIS EXAMPLE.

8.3 TST1 (MINI MONITOR)

THE VERY FIRST "TEST" (TST1)
IS *NOT* A TEST OF THE DQ11 HARDWARE
IT IS A MINI-MONITOR USED TO CYCLE DQ11 IN THE
SYSTEM THROUGH THE DIAGNOSTIC.

REMEMBER: TST1 IS NOT A TEST OF DQ11 HARDWARE!!!!!!!

8.4 KEY LOCATIONS

RETURN (1210) CONTAINS THE ADDRESS WHERE PROGRAM WILL
RETURN WHEN ITERATION COUNT IS REACHED
OR IF LOOP ON TEST IS ASSERTED.

NEXT (1212) CONTAINS THE ADDRESS OF THE NEXT TEST
TO BE PEFORMED.

TSTNO (1222) CONTAINS THE NUMBER OF THE TEST NOW
BEING PEFORMED.

RUN (1272 THE BIT IN "RUN" ALWAYS POINTS ONE
PAST THE DQ11 CURRENTLY BEING TESTED.
EXAMPLE:
(RUN) 1272/0000000001000000
MEANS THAT DQ11 NO.05 IS THE DQ11 NOW
RUNNING.

DQCR00-DQCR17
DQST00-DQST17
(1400)-(1476)

THESE LOCATIONS CONTAIN THE INFORMATION
NEEDED TO TEST UP TO 16 (DECIMAL) DQ11S
SEQUENTIALY. THEY CONTAIN THE CSR,VECTOR
AND STATUS CONCERNING THE CONFIGURATION
OF EACH DQ11.

DQACTV (1500) EACH BIT SET IN THIS LOCATION INDICATES
THAT THE ASSOCIATED DQ11 WILL BE TESTED
IN TURN.
EXAMPLE:
(DQACTV) 1500/0000000000011111
MEANS THAT DQ11 NO. 00,01,02,03,04
WILL BE TESTED.
EXAMPLE:
(DQACTV) 1500/0000000000010001
MEANS THAT DQ11 NO. 00,04
WILL BE TESTED.

DQCSR (1506) CONTAINS THE RECEIVER CSR OF THE
CURRENT DQ11 UNDER TEST.
DQSTAT (1510) CONTAINS THE STATUS OF THE CURRENT
DQ11 UNDER TEST.

BIT 15	SET:	TWO SYNC CHARS/ONE SYNC CHAR
BIT 14	SET:	TEST JUMPER INSTALLED/NOT INSTALLED
BIT 13	SET:	BB OPTION INSTALLED/NOT INSTALLED
BIT 12	SET:	BA OPTION INSTALLED/NOT INSTALLED
BIT 11	SET:	ACTIVE ON FIRST NON-SYNC/ACTIVE AFTER NO. OF SYNC
BIT 10	SET:	AB OPTION INSTALLED/NOT INSTALLED
BIT 09	SET:	ODD VRC/EVEN VRC
BIT 00-08		VECTOR "A" OF DEVICE

8.5 *** METHOD OF AUTO SIZING ***

8.5.1 FINDING THE CONTROL STATUS REGISTER.

WHEN LOOKING FOR THE CSR IT IS NECESSARY TO TAKE CARE
THAT WHEN A CSR IS FOUND THAT IT IS INDEED A DQ11. THAT
IS THE METHOD OF MY MADNESS FOR THIS ROUTINE.
AN ATTEMPT TO CLEAR THE MISC. REGISTER IS TRIED
IF A TIME-OUT TRAP OCCURES POINTERS ARE UPDATED
AND ATTEMPTED AGAIN. IF NO TIME-OUT; THE RECEIVER "ACTIVE BIT" (BIT 12)
IS SET AND A *COMPARE* FOR BOTH SYNC1 AND SYNC 2 IS DONE
AT THE MISC. REGISTER. IF THEY ARE THERE THIS IS
A DQ11. THE INFORMATION IS STORED AWAY.

8.5.2 ONE SYNC BIT OR TWO?

SINCE TOO MUCH HARDWARE MUST BE TURNED ON TO SENSE THE
PRESENTS OF ONE SYNC OR TWO. THE PROGRAM ASSUMES TWO SYNC
CHARS. NOTE: THIS ASSUMPTION MAY BE ALTERED AFTER AUTO SIZING
BY ALTERING BIT 15 IN APPRIOATE DQSTXX: LOCATION.

8.5.3 "BB" OPTION INSTALLED?

TO SENSE FOR THE "BB" OPTION THE PROGRAM SELECTS THE
CHARACTER DET. REGISTER AND THE LOADS IN ALL 1'S; IF
ANY ONE OR COMBINATION OF BITS ARE SET THE BB OPTION
IS ASSUMED TO EXIST.

8.5.4 "AB" OPTION INSTALLED?

TO SENSE FOR THE "AB" OPTION THE PROGRAM SELECTS THE
POLYNOMIAL REGISTER AND WRITES ALL 1'S INTO IT; IF ANY
ONE OR COMBINATION OF BITS ARE SET THE AB OPTION IS ASSUMED
TO EXIST.

8.5.5 "BA" OPTION INSTALLED?

TO SENSE FOR "BA" OPTION REQUEST TO SEND AND DATA TERMINAL
READY ARE SET; IF EITHER ONE OR BOTH ARE SET THE PROGRAM
ASSUMES THE BA OPTION EXISTES

8.5.6 JUMPER ON END OF CABLE? _

THE PROGRAM CHECKS TO SEE IF EITHER OR BOTH CLEAR TO
SEND AND CARRIER ARE SET: IF SO THE PROGRAM ASSUMES THE
TEST JUMPER IS ON THE END OF THE CABLE.

9.5.7 ACTIVE ON FIRST NON-SYNC?

SINCE TOO MUCH HARDWARE MUST BE TURNED ON TO SENSE FOR
WHEN THE DQ11 GOES ACTIVE THE PROGRAM ASSUMES "ACTIVE
ON FIRST NON-SYNC". NOTE: THIS CAN BE CHANGED BY ALTERING
BIT 11 IN THE APPRIOATE DQSTXX: AFTER AUTO SIZING

9.5.8 SET FOR ODD OR EVEN PARITY?

AS ABOVE TOO MUCH HARDWARE IS NEED TO SENSE WHICH PARITY
WAS SELECTED.SO THE PROGRAM ASSEMES ODD PARITY.
NOTE: THIS CAN BE CHANGED BY ALTERING BIT 9 IN APPRIO-
ATE DQSTXX: LOCATION. AFTER AUTO SIZING

9.5.9 FINDING THE VECTOR.

THE PROGRAM SETS "PRIMARY DONE","SECONDAY DONE", AND "INTERUPT ENABLE"
AND LOOKS FOR AN INTERUPT. IF IT INTERUPTS IT IS PICKED
UP AND STORED AWAY. IF NO INTERUPT OCCURES THE PROGRAM
ASSUMES VECTOR =300. THIS PROBLEM WILL BE FIXED IN ONE
OF THE DIAGNOSTICS AND *AUTO SIZING* SHOULD BE REDONE TO
GET THE CORRECT VECTOR.

9. PROGRAM DESCRIPTION

CONTAINED WITHIN LISTING

10. LISTING

FOLLOWING

```
                                .ENABLE AMA

                                :MAINDEC-11-DZDQA-B/(377)/DQ11 STATIC LOGIC TEST-PART !
                                :COPYRIGHT 1975, DIGITAL EQUIPMENT CORP., MAYNARD, MASS. 01754

                                :REVISED 21-JUNE-76 BY S. CARPENTER
                                ;       A)SUPPORTS SOFTWARE SWITCH REGISTER
                                ;       B)SUPPORTS THE DYNAMIC LOADING OF THE SOFTWARE SWITCH REGISTER
                                ;         BY (↑G).
                                        ;STARTING PROCEDURE
                                        ;LOAD PROGRAM
                                        ;LOAD ADDRESS 000200
                                        ;PRESS START
                                        ;PROGRAM WILL TYPE "MAINDEC-11-DZDQA-B/(377)/DQ11 STATIC LOGIC TEST-PART 1"
                                        ;PROGRAM WILL TYPE "R" TO INDICATE THAT TESTING HAS STARTED
                                        ;AT THE END OF A PASS, PROGRAM WILL TYPE PASS COMPLETE MESSAGE
                                        ;AND THEN RESUME 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              ;=1,DELETE TYPEOUT/BELL ON ERROR.
          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                ;=1,LOOP ON ERROR
          000100                SW06=100
          000040                SW05=40
          000020                SW04=20
          000010                SW03=10
          000004                SW02=4                  ;LOCK ON TEST SELECT
          000002                SW01=2                  ;RESTART PROGRAM AT SELECTED TEST
          000001                SW00=1                  ;RESELECT DQ11 DESIRED ACTIVE
                                                        ;NOTE: THIS MUST NOT EXCEED ORIGINAL COUNT
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```
                                ;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                          DSWR=   177570  ;HARDWARE SWITCH REGISTER LOC.
177570                          DLIGHTS=177570  ;HARDWARE DISPLAY REGISTER LOC.
177776                          PS=177776       ;PROCESSOR STATUS WORD
001200                          STACK=1200      ;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                          BIT9=1000
000400                          BIT8=400
000200                          BIT7=200
000100                          BIT6=100
000040                          BIT5=40
000020                          BIT4=20
000010                          BIT3=10
000004                          BIT2=4
000002                          BIT1=2
000001                          BIT0=1
                                
                                ;DQ11 OPTIONAL DEFINITIONS
                                
002000                          ABBIT=2000
004000                          ACTBIT=4000
010000                          BABIT=10000
020000                          BBBIT=20000
040000                          JUMBIT=40000
```

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                001000                  ODDBIT=1000
                100000                  SYNBIT=100000


                                        ;DQ11 SECONDARY REGISTER DEFINATIONS

                000000                  RXBA.P=0        ;RECEIVER BUS ADDRESS PRIMARY.
                000001                  RXWC.P=1        ;RECEIVER WORD COUNT PRIMARY.
                000002                  TXBA.P=2        ;TRANSMITTER BUS ADDRESS PRIMARY.
                000003                  TXWC.P=3        ;TRANSMITTER BUS ADDRESS PRIMARY.
                000004                  RXBA.S=4        ;RECEIVER BUS ADDRESS SECONDARY.
                000005                  RXWC.S=5        ;RECEIVER WORD COUNT SECONDARY.
                000006                  TXBA.S=6        ;TRANSMITTER BUS ADDRESS SECONDARY.
                000007                  TXWC.S=7        ;TRANSMITTER WORD COUNT SECONDARY.

                000010                  CHARDT=10       ;CHARACTER DETECT REGISTER.
                000011                  SYNC.=11        ;SYNC REGISTER.
                000012                  MISC.=12        ;MISCELLANEOUS REGISTER.
                000013                  TX.MUX=13       ;TRANSMITTER MUX REGISTER.
                000014                  SEQ.=14         ;SEQUENCE REGISTER.
                000015                  RX.BCC=15       ;RECEIVER BCC REGISTER.
                000016                  TX.BCC=16       ;TRANSMITTER BCC REGISTER.
                000017                  POLY.=17        ;POLYNOMIAL REGISTER.
```

```
                                        ;TRAPCATCHER FOR ILLEGAL INTERRUPTS
                000000          .=0
        000000  000002                  .+2             ;UNEXPECTED TRAP TO THIS LOCATION
        000002  000000                  HALT            ;EXAMINE STACK TO FIND CAUSE
        000004  000006                  .+2             ;UNEXPECTED TRAP TO THIS LOCATION
        000006  000000                  HALT            ;EXAMINE STACK TO FIND CAUSE
        000010  000012                  .+2             ;UNEXPECTED TRAP TO THIS LOCATION
        000012  000000                  HALT            ;EXAMINE STACK TO FIND CAUSE
        000014  000016                  .+2             ;UNEXPECTED TRAP TO THIS LOCATION
        000016  000000                  HALT            ;EXAMINE STACK TO FIND CAUSE
        000020  000022                  .+2             ;UNEXPECTED TRAP TO THIS LOCATION
        000022  000000                  HALT            ;EXAMINE STACK TO FIND CAUSE
        000024  000026                  .+2             ;UNEXPECTED TRAP TO THIS LOCATION
        000026  000000                  HALT            ;EXAMINE STACK TO FIND CAUSE
        000030  000032                  .+2             ;UNEXPECTED TRAP TO THIS LOCATION
        000032  000000                  HALT            ;EXAMINE STACK TO FIND CAUSE
        000034  000036                  .+2             ;UNEXPECTED TRAP TO THIS LOCATION
        000036  000000                  HALT            ;EXAMINE STACK TO FIND CAUSE
        000040  000042                  .+2             ;UNEXPECTED TRAP TO THIS LOCATION
        000042  000000                  HALT            ;EXAMINE STACK TO FIND CAUSE
        000044  000046                  .+2             ;UNEXPECTED TRAP TO THIS LOCATION
        000046  000000                  HALT            ;EXAMINE STACK TO FIND CAUSE
        000050  000052                  .+2             ;UNEXPECTED TRAP TO THIS LOCATION
        000052  000000                  HALT            ;EXAMINE STACK TO FIND CAUSE
        000054  000056                  .+2             ;UNEXPECTED TRAP TO THIS LOCATION
        000056  000000                  HALT            ;EXAMINE STACK TO FIND CAUSE
        000060  000062                  .+2             ;UNEXPECTED TRAP TO THIS LOCATION
        000062  000000                  HALT            ;EXAMINE STACK TO FIND CAUSE
        000064  000066                  .+2             ;UNEXPECTED TRAP TO THIS LOCATION
        000066  000000                  HALT            ;EXAMINE STACK TO FIND CAUSE
        000070  000072                  .+2             ;UNEXPECTED TRAP TO THIS LOCATION
        000072  000000                  HALT            ;EXAMINE STACK TO FIND CAUSE
        000074  000076                  .+2             ;UNEXPECTED TRAP TO THIS LOCATION
        000076  000000                  HALT            ;EXAMINE STACK TO FIND CAUSE
        000100  000102                  .+2             ;UNEXPECTED TRAP TO THIS LOCATION
        000102  000000                  HALT            ;EXAMINE STACK TO FIND CAUSE
        000104  000106                  .+2             ;UNEXPECTED TRAP TO THIS LOCATION
        000106  000000                  HALT            ;EXAMINE STACK TO FIND CAUSE
        000110  000112                  .+2             ;UNEXPECTED TRAP TO THIS LOCATION
        000112  000000                  HALT            ;EXAMINE STACK TO FIND CAUSE
        000114  000116                  .+2             ;UNEXPECTED TRAP TO THIS LOCATION
        000116  000000                  HALT            ;EXAMINE STACK TO FIND CAUSE
        000120  000122                  .+2             ;UNEXPECTED TRAP TO THIS LOCATION
        000122  000000                  HALT            ;EXAMINE STACK TO FIND CAUSE
        000124  000126                  .+2             ;UNEXPECTED TRAP TO THIS LOCATION
        000126  000000                  HALT            ;EXAMINE STACK TO FIND CAUSE
        000130  000132                  .+2             ;UNEXPECTED TRAP TO THIS LOCATION
        000132  000000                  HALT            ;EXAMINE STACK TO FIND CAUSE
        000134  000136                  .+2             ;UNEXPECTED TRAP TO THIS LOCATION
        000136  000000                  HALT            ;EXAMINE STACK TO FIND CAUSE
        000140  000142                  .+2             ;UNEXPECTED TRAP TO THIS LOCATION
        000142  000000                  HALT            ;EXAMINE STACK TO FIND CAUSE
        000144  000146                  .+2             ;UNEXPECTED TRAP TO THIS LOCATION
        000146  000000                  HALT            ;EXAMINE STACK TO FIND CAUSE
        000150  000152                  .+2             ;UNEXPECTED TRAP TO THIS LOCATION
        000152  000000                  HALT            ;EXAMINE STACK TO FIND CAUSE
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705  000154  000156                .+2          ;UNEXPECTED TRAP TO THIS LOCATION
706  000156  000000                HALT         ;EXAMINE STACK TO FIND CAUSE
707  000160  000162                .+2          ;UNEXPECTED TRAP TO THIS LOCATION
708  000162  000000                HALT         ;EXAMINE STACK TO FIND CAUSE
709  000164  000166                .+2          ;UNEXPECTED TRAP TO THIS LOCATION
710  000166  000000                HALT         ;EXAMINE STACK TO FIND CAUSE
711  000170  000172                .+2          ;UNEXPECTED TRAP TO THIS LOCATION
712  000172  000000                HALT         ;EXAMINE STACK TO FIND CAUSE
713  000174  000176                .+2          ;UNEXPECTED TRAP TO THIS LOCATION
714  000176  000000                HALT         ;EXAMINE STACK TO FIND CAUSE
715  000200  000202                .+2          ;UNEXPECTED TRAP TO THIS LOCATION
716  000202  000000                HALT         ;EXAMINE STACK TO FIND CAUSE
717  000204  000206                .+2          ;UNEXPECTED TRAP TO THIS LOCATION
718  000206  000000                HALT         ;EXAMINE STACK TO FIND CAUSE
719  000210  000212                .+2          ;UNEXPECTED TRAP TO THIS LOCATION
720  000212  000000                HALT         ;EXAMINE STACK TO FIND CAUSE
721  000214  000216                .+2          ;UNEXPECTED TRAP TO THIS LOCATION
722  000216  000000                HALT         ;EXAMINE STACK TO FIND CAUSE
723  000220  000222                .+2          ;UNEXPECTED TRAP TO THIS LOCATION
724  000222  000000                HALT         ;EXAMINE STACK TO FIND CAUSE
725  000224  000226                .+2          ;UNEXPECTED TRAP TO THIS LOCATION
726  000226  000000                HALT         ;EXAMINE STACK TO FIND CAUSE
727  000230  000232                .+2          ;UNEXPECTED TRAP TO THIS LOCATION
728  000232  000000                HALT         ;EXAMINE STACK TO FIND CAUSE
729  000234  000236                .+2          ;UNEXPECTED TRAP TO THIS LOCATION
730  000236  000000                HALT         ;EXAMINE STACK TO FIND CAUSE
731  000240  000242                .+2          ;UNEXPECTED TRAP TO THIS LOCATION
732  000242  000000                HALT         ;EXAMINE STACK TO FIND CAUSE
733  000244  000246                .+2          ;UNEXPECTED TRAP TO THIS LOCATION
734  000246  000000                HALT         ;EXAMINE STACK TO FIND CAUSE
735  000250  000252                .+2          ;UNEXPECTED TRAP TO THIS LOCATION
736  000252  000000                HALT         ;EXAMINE STACK TO FIND CAUSE
737  000254  000256                .+2          ;UNEXPECTED TRAP TO THIS LOCATION
738  000256  000000                HALT         ;EXAMINE STACK TO FIND CAUSE
739  000260  000262                .+2          ;UNEXPECTED TRAP TO THIS LOCATION
740  000262  000000                HALT         ;EXAMINE STACK TO FIND CAUSE
741  000264  000266                .+2          ;UNEXPECTED TRAP TO THIS LOCATION
742  000266  000000                HALT         ;EXAMINE STACK TO FIND CAUSE
743  000270  000272                .+2          ;UNEXPECTED TRAP TO THIS LOCATION
744  000272  000000                HALT         ;EXAMINE STACK TO FIND CAUSE
745  000274  000276                .+2          ;UNEXPECTED TRAP TO THIS LOCATION
746  000276  000000                HALT         ;EXAMINE STACK TO FIND CAUSE
747  000300  000302                .+2          ;UNEXPECTED TRAP TO THIS LOCATION
748  000302  000000                HALT         ;EXAMINE STACK TO FIND CAUSE
749  000304  000306                .+2          ;UNEXPECTED TRAP TO THIS LOCATION
750  000306  000000                HALT         ;EXAMINE STACK TO FIND CAUSE
751  000310  000312                .+2          ;UNEXPECTED TRAP TO THIS LOCATION
752  000312  000000                HALT         ;EXAMINE STACK TO FIND CAUSE
753  000314  000316                .+2          ;UNEXPECTED TRAP TO THIS LOCATION
754  000316  000000                HALT         ;EXAMINE STACK TO FIND CAUSE
755  000320  000322                .+2          ;UNEXPECTED TRAP TO THIS LOCATION
756  000322  000000                HALT         ;EXAMINE STACK TO FIND CAUSE
757  000324  000326                .+2          ;UNEXPECTED TRAP TO THIS LOCATION
758  000326  000000                HALT         ;EXAMINE STACK TO FIND CAUSE
759  000330  000332                .+2          ;UNEXPECTED TRAP TO THIS LOCATION
760  000332  000000                HALT         ;EXAMINE STACK TO FIND CAUSE
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   761  000334  000336                    .+2          ;UNEXPECTED TRAP TO THIS LOCATION
   762  000336  000000                    HALT         ;EXAMINE STACK TO FIND CAUSE
   763  000340  000342                    .+2          ;UNEXPECTED TRAP TO THIS LOCATION
   764  000342  000000                    HALT         ;EXAMINE STACK TO FIND CAUSE
   765  000344  000346                    .+2          ;UNEXPECTED TRAP TO THIS LOCATION
   766  000346  000000                    HALT         ;EXAMINE STACK TO FIND CAUSE
   767  000350  000352                    .+2          ;UNEXPECTED TRAP TO THIS LOCATION
   768  000352  000000                    HALT         ;EXAMINE STACK TO FIND CAUSE
   769  000354  000356                    .+2          ;UNEXPECTED TRAP TO THIS LOCATION
   770  000356  000000                    HALT         ;EXAMINE STACK TO FIND CAUSE
   771  000360  000362                    .+2          ;UNEXPECTED TRAP TO THIS LOCATION
   772  000362  000000                    HALT         ;EXAMINE STACK TO FIND CAUSE
   773  000364  000366                    .+2          ;UNEXPECTED TRAP TO THIS LOCATION
   774  000366  000000                    HALT         ;EXAMINE STACK TO FIND CAUSE
   775  000370  000372                    .+2          ;UNEXPECTED TRAP TO THIS LOCATION
   776  000372  000000                    HALT         ;EXAMINE STACK TO FIND CAUSE
   777  000374  000376                    .+2          ;UNEXPECTED TRAP TO THIS LOCATION
   778  000376  000000                    HALT         ;EXAMINE STACK TO FIND CAUSE
   779  000400  000402                    .+2          ;UNEXPECTED TRAP TO THIS LOCATION
   780  000402  000000                    HALT         ;EXAMINE STACK TO FIND CAUSE
   781  000404  000406                    .+2          ;UNEXPECTED TRAP TO THIS LOCATION
   782  000406  000000                    HALT         ;EXAMINE STACK TO FIND CAUSE
   783  000410  000412                    .+2          ;UNEXPECTED TRAP TO THIS LOCATION
   784  000412  000000                    HALT         ;EXAMINE STACK TO FIND CAUSE
   785  000414  000416                    .+2          ;UNEXPECTED TRAP TO THIS LOCATION
   786  000416  000000                    HALT         ;EXAMINE STACK TO FIND CAUSE
   787  000420  000422                    .+2          ;UNEXPECTED TRAP TO THIS LOCATION
   788  000422  000000                    HALT         ;EXAMINE STACK TO FIND CAUSE
   789  000424  000426                    .+2          ;UNEXPECTED TRAP TO THIS LOCATION
   790  000426  000000                    HALT         ;EXAMINE STACK TO FIND CAUSE
   791  000430  000432                    .+2          ;UNEXPECTED TRAP TO THIS LOCATION
   792  000432  000000                    HALT         ;EXAMINE STACK TO FIND CAUSE
   793  000434  000436                    .+2          ;UNEXPECTED TRAP TO THIS LOCATION
   794  000436  000000                    HALT         ;EXAMINE STACK TO FIND CAUSE
   795  000440  000442                    .+2          ;UNEXPECTED TRAP TO THIS LOCATION
   796  000442  000000                    HALT         ;EXAMINE STACK TO FIND CAUSE
   797  000444  000446                    .+2          ;UNEXPECTED TRAP TO THIS LOCATION
   798  000446  000000                    HALT         ;EXAMINE STACK TO FIND CAUSE
   799  000450  000452                    .+2          ;UNEXPECTED TRAP TO THIS LOCATION
   800  000452  000000                    HALT         ;EXAMINE STACK TO FIND CAUSE
   801  000454  000456                    .+2          ;UNEXPECTED TRAP TO THIS LOCATION
   802  000456  000000                    HALT         ;EXAMINE STACK TO FIND CAUSE
   803  000460  000462                    .+2          ;UNEXPECTED TRAP TO THIS LOCATION
   804  000462  000000                    HALT         ;EXAMINE STACK TO FIND CAUSE
   805  000464  000466                    .+2          ;UNEXPECTED TRAP TO THIS LOCATION
   806  000466  000000                    HALT         ;EXAMINE STACK TO FIND CAUSE
   807  000470  000472                    .+2          ;UNEXPECTED TRAP TO THIS LOCATION
   808  000472  000000                    HALT         ;EXAMINE STACK TO FIND CAUSE
   809  000474  000476                    .+2          ;UNEXPECTED TRAP TO THIS LOCATION
   810  000476  000000                    HALT         ;EXAMINE STACK TO FIND CAUSE
   811  000500  000502                    .+2          ;UNEXPECTED TRAP TO THIS LOCATION
   812  000502  000000                    HALT         ;EXAMINE STACK TO FIND CAUSE
   813  000504  000506                    .+2          ;UNEXPECTED TRAP TO THIS LOCATION
   814  000506  000000                    HALT         ;EXAMINE STACK TO FIND CAUSE
   815  000510  000512                    .+2          ;UNEXPECTED TRAP TO THIS LOCATION
   816  000512  000000                    HALT         ;EXAMINE STACK TO FIND CAUSE
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817  000514  000516                  .+2             ;UNEXPECTED TRAP TO THIS LOCATION
818  000516  000000                  HALT            ;EXAMINE STACK TO FIND CAUSE
819  000520  000522                  .+2             ;UNEXPECTED TRAP TO THIS LOCATION
820  000522  000000                  HALT            ;EXAMINE STACK TO FIND CAUSE
821  000524  000526                  .+2             ;UNEXPECTED TRAP TO THIS LOCATION
822  000526  000000                  HALT            ;EXAMINE STACK TO FIND CAUSE
823  000530  000532                  .+2             ;UNEXPECTED TRAP TO THIS LOCATION
824  000532  000000                  HALT            ;EXAMINE STACK TO FIND CAUSE
825  000534  000536                  .+2             ;UNEXPECTED TRAP TO THIS LOCATION
826  000536  000000                  HALT            ;EXAMINE STACK TO FIND CAUSE
827  000540  000542                  .+2             ;UNEXPECTED TRAP TO THIS LOCATION
828  000542  000000                  HALT            ;EXAMINE STACK TO FIND CAUSE
829  000544  000546                  .+2             ;UNEXPECTED TRAP TO THIS LOCATION
830  000546  000000                  HALT            ;EXAMINE STACK TO FIND CAUSE
831  000550  000552                  .+2             ;UNEXPECTED TRAP TO THIS LOCATION
832  000552  000000                  HALT            ;EXAMINE STACK TO FIND CAUSE
833  000554  000556                  .+2             ;UNEXPECTED TRAP TO THIS LOCATION
834  000556  000000                  HALT            ;EXAMINE STACK TO FIND CAUSE
835  000560  000562                  .+2             ;UNEXPECTED TRAP TO THIS LOCATION
836  000562  000000                  HALT            ;EXAMINE STACK TO FIND CAUSE
837  000564  000566                  .+2             ;UNEXPECTED TRAP TO THIS LOCATION
838  000566  000000                  HALT            ;EXAMINE STACK TO FIND CAUSE
839  000570  000572                  .+2             ;UNEXPECTED TRAP TO THIS LOCATION
840  000572  000000                  HALT            ;EXAMINE STACK TO FIND CAUSE
841  000574  000576                  .+2             ;UNEXPECTED TRAP TO THIS LOCATION
842  000576  000000                  HALT            ;EXAMINE STACK TO FIND CAUSE
843  000600  000602                  .+2             ;UNEXPECTED TRAP TO THIS LOCATION
844  000602  000000                  HALT            ;EXAMINE STACK TO FIND CAUSE
845  000604  000606                  .+2             ;UNEXPECTED TRAP TO THIS LOCATION
846  000606  000000                  HALT            ;EXAMINE STACK TO FIND CAUSE
847  000610  000612                  .+2             ;UNEXPECTED TRAP TO THIS LOCATION
848  000612  000000                  HALT            ;EXAMINE STACK TO FIND CAUSE
849  000614  000616                  .+2             ;UNEXPECTED TRAP TO THIS LOCATION
850  000616  000000                  HALT            ;EXAMINE STACK TO FIND CAUSE
851  000620  000622                  .+2             ;UNEXPECTED TRAP TO THIS LOCATION
852  000622  000000                  HALT            ;EXAMINE STACK TO FIND CAUSE
853  000624  000626                  .+2             ;UNEXPECTED TRAP TO THIS LOCATION
854  000626  000000                  HALT            ;EXAMINE STACK TO FIND CAUSE
855  000630  000632                  .+2             ;UNEXPECTED TRAP TO THIS LOCATION
856  000632  000000                  HALT            ;EXAMINE STACK TO FIND CAUSE
857  000634  000636                  .+2             ;UNEXPECTED TRAP TO THIS LOCATION
858  000636  000000                  HALT            ;EXAMINE STACK TO FIND CAUSE
859  000640  000642                  .+2             ;UNEXPECTED TRAP TO THIS LOCATION
860  000642  000000                  HALT            ;EXAMINE STACK TO FIND CAUSE
861  000644  000646                  .+2             ;UNEXPECTED TRAP TO THIS LOCATION
862  000646  000000                  HALT            ;EXAMINE STACK TO FIND CAUSE
863  000650  000652                  .+2             ;UNEXPECTED TRAP TO THIS LOCATION
864  000652  000000                  HALT            ;EXAMINE STACK TO FIND CAUSE
865  000654  000656                  .+2             ;UNEXPECTED TRAP TO THIS LOCATION
866  000656  000000                  HALT            ;EXAMINE STACK TO FIND CAUSE
867  000660  000662                  .+2             ;UNEXPECTED TRAP TO THIS LOCATION
868  000662  000000                  HALT            ;EXAMINE STACK TO FIND CAUSE
869  000664  000666                  .+2             ;UNEXPECTED TRAP TO THIS LOCATION
870  000666  000000                  HALT            ;EXAMINE STACK TO FIND CAUSE
871  000670  000672                  .+2             ;UNEXPECTED TRAP TO THIS LOCATION
872  000672  000000                  HALT            ;EXAMINE STACK TO FIND CAUSE
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F02


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873  000674  000676                    .+2         ;UNEXPECTED TRAP TO THIS LOCATION
874  000676  000000                    HALT        ;EXAMINE STACK TO FIND CAUSE
875  000700  000702                    .+2         ;UNEXPECTED TRAP TO THIS LOCATION
876  000702  000000                    HALT        ;EXAMINE STACK TO FIND CAUSE
877  000704  000706                    .+2         ;UNEXPECTED TRAP TO THIS LOCATION
878  000706  000000                    HALT        ;EXAMINE STACK TO FIND CAUSE
879  000710  000712                    .+2         ;UNEXPECTED TRAP TO THIS LOCATION
880  000712  000000                    HALT        ;EXAMINE STACK TO FIND CAUSE
881  000714  000716                    .+2         ;UNEXPECTED TRAP TO THIS LOCATION
882  000716  000000                    HALT        ;EXAMINE STACK TO FIND CAUSE
883  000720  000722                    .+2         ;UNEXPECTED TRAP TO THIS LOCATION
884  000722  000000                    HALT        ;EXAMINE STACK TO FIND CAUSE
885  000724  000726                    .+2         ;UNEXPECTED TRAP TO THIS LOCATION
886  000726  000000                    HALT        ;EXAMINE STACK TO FIND CAUSE
887  000730  000732                    .+2         ;UNEXPECTED TRAP TO THIS LOCATION
888  000732  000000                    HALT        ;EXAMINE STACK TO FIND CAUSE
889  000734  000736                    .+2         ;UNEXPECTED TRAP TO THIS LOCATION
890  000736  000000                    HALT        ;EXAMINE STACK TO FIND CAUSE
891  000740  000742                    .+2         ;UNEXPECTED TRAP TO THIS LOCATION
892  000742  000000                    HALT        ;EXAMINE STACK TO FIND CAUSE
893  000744  000746                    .+2         ;UNEXPECTED TRAP TO THIS LOCATION
894  000746  000000                    HALT        ;EXAMINE STACK TO FIND CAUSE
895  000750  000752                    .+2         ;UNEXPECTED TRAP TO THIS LOCATION
896  000752  000000                    HALT        ;EXAMINE STACK TO FIND CAUSE
897  000754  000756                    .+2         ;UNEXPECTED TRAP TO THIS LOCATION
898  000756  000000                    HALT        ;EXAMINE STACK TO FIND CAUSE
899  000760  000762                    .+2         ;UNEXPECTED TRAP TO THIS LOCATION
900  000762  000000                    HALT        ;EXAMINE STACK TO FIND CAUSE
901  000764  000766                    .+2         ;UNEXPECTED TRAP TO THIS LOCATION
902  000766  000000                    HALT        ;EXAMINE STACK TO FIND CAUSE
903  000770  000772                    .+2         ;UNEXPECTED TRAP TO THIS LOCATION
904  000772  000000                    HALT        ;EXAMINE STACK TO FIND CAUSE
905  000774  000776                    .+2         ;UNEXPECTED TRAP TO THIS LOCATION
906  000776  000000                    HALT        ;EXAMINE STACK TO FIND CAUSE
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                                                ;STANDARD INTERRUPT VECTORS

                000024                  .=24
000024  016164                          .PFAIL                  ;POWER FAIL HANDLER
000026  000340                          340                     ;SERVICE AT LEVEL 7
000030  015634                          .HLT                    ;ERROR HANDLER
000032  000340                          340                     ;SERVICE AT LEVEL 7
000034  015602                          .TRPSRV                 ;GENERAL HANDLER DISPATCH SERVICE
000036  000340                          340                     ;SERVICE AT LEVEL 7
                000046                  .=46
000046  014362                          LOGICAL                 ;ACT HOOKS
                000052                  .=52
000052  000000                          .WORD 0
                                        ;THIS ROUTINE TRIES TO FORCE THE RECEIVER TO INTERUPT
                                        ;TO ITS VECTOR WHERE IT WILL PICK UP THE STATUS LOCATION
                                        ;FOR ITS NEW PC; AND PICK UP AN IOT INSTRUCTION FOR ITS
                                        ;NEW PS. WHEN THE NEW PC IS FETCHED AN IOT INSTRUCTION IS
                                        ;EXECUTED, TRAPPING TO LOCATION 20 WHERE A ROUTINE IS EXECUTED
                                        ;TO TAKE THE PC FROM THE STACK AND US IT AS THE VECTOR ADDRESS
                000056                  .=56

000056                                  VECMAP:
000056  010120          000004  1$:     MOV     R1,(R0)+        ;START FILLING THE VECTOR AREA
000060  012721                          MOV     #4,(R1)+        ;WITH .+2; IOT (4)
000064  022021                          CMP     (R0)+,(R1)+     ;UPDATE THE POINTERS
000066  020127  001000                  CMP     R1,#1000        ;IS ALL FLOATING VECTOR AREA DONE
000072  101771                          BLOS    1$              ;BR IF NOT ALL DONE
000074  012737  000146  000020          MOV     #4$,@#20        ;SET FOR IOT TRAP BY DQ11
000102  013737  001500  001244          MOV     DQACTV,TEMP1    ;GET THE ACTIVE DQ11 S
000110  006037  001244          2$:     ROR     TEMP1           ;ARE YOU ACTIVE.. DQ11
000114  103023                          BCC     5$              ;IF CARRY CLEAR.. NO MORE DQ11S
000116  005037  177776                  CLR     PS              ;CLEAR PS
000122  005722                          TST     (R2)+           ;PUT POINTER TO STATUS TABLE
000124  012772  000340  177776          MOV     #340,@-2(R2)    ;TRY AND SET PRI/SEC DONE AND IE
000132  105200                          INCB    R0              ;DELAY.....
000134  001376                          BNE     .-2             ;.....DELAY
000136  112712  000300                  MOVB    #300,(R2)       ;NO INTERUPT ASSUME 300 FIX IN TEST 3
000142  005722                  3$:     TST     (R2)+           ;UPDATE POINTERS
000144  000761                          BR      2$              ;GO DO IT AGAIN
000146  051612                  4$:     BIS     (SP),(R2)       ;ENTERD  BY IOT TRAP BY DQ11
000150  042712  000007                  BIC     #7,(R2)         ;CLEAR UNWANTED BITS
000154  022626                          CMP     (SP)+,(SP)+     ;POP IOT JUNK OFF STACK
000156  012716  000142                  MOV     #3$,(SP)        ;SET RETURN PC ON STACK
000162  000002                          RTI                     ;GO HOME.
000164  000207                  5$:     RTS     PC              ;ALL SIZING IS DONE

                                        ;****SOFTWARE SWITCH REGISTER****
                000174                  .=174
000174  000000                          DISPREG:        0       ;SOFTWARE DISPLAY REGISTER
000176  000000                          SWREG:          0       ;SOFTWARE SWITCH REGISTER

                                        ;PROGRAM START

                000200                  .=200
000200  000137  001512                          JMP     .START          ;GO TO START OF PROGRAM
```

H02


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                000220                          .=220
000220  012702  001400          CSRMAP: MOV     #1400,R2        ;CLEAR ALL STATUS TABLE
000224  005022                          CLR     (R2)+           ;DO CLEAR
000226  022702  001512                  CMP     #1512,R2        ;ALL TABLE DONE
000232  001374                          BNE     .-6             ;BR IF MORE TO GO
000234  005037  001504                  CLR     DQNUM           ;SET NUMBER OF DQ11S TO 0
000240  012702  001400                  MOV     #1400,R2        ;SET TABLE POINTER
000244  012701  160000                  MOV     #160000,R1      ;GET FIRST FLOATING ADDRESS
000250  012737  000614  000004          MOV     #5$,@#4         ;SET FOR TIME OUT TRAP--NO DEVICE--
000256  112761  000012  000005  1$:     MOVB    #12,5(R1)       ;TRY AND SEL MISC REGISTER
000264  005061  000006                  CLR     6(R1)           ;TRY AND CLEAR MISC REG
000270  012711  010000                  MOV     #10000,(R1)     ;TRY AND SET RX ACTIVE
000274  022761  030000  000006          CMP     #30000,6(R1)    ;LOOK FOR SYNC 1 AND SYNC 2
000302  001071                          BNE     2$              ;THIS IS NOT A DQ11 IF I BRANCH
000304  010122                          MOV     R1,(R2)+        ;NOW THIS IS A DQ11 --STORE CSR
000306  052712  100000                  BIS     #SYNBIT,(R2)    ;SET FOR TWO SYNC CHARS
000312  005011                          CLR     (R1)            ;CLEAR DQ ACTIVE BIT
000314  112761  000010  000005          MOVB    #10,5(R1)       ;SEL CHAR DET REGISTER
000322  012761  177777  000006          MOV     #-1,6(R1)       ;WRITE INTO CHAR DET REG
000330  005761  000006                  TST     6(R1)           ;WAS THE REGISTER WRITTEN?
000334  001402                          BEQ     .+6             ;APPERENTLY NO BB OPTION.
000336  052712  020000                  BIS     #BBBIT,(R2)     ;SET FOR BB OPTION
000342  112761  000017  000005          MOVB    #17,5(R1)       ;SEL POLYNO. REGISTER
000350  012761  177777  000006          MOV     #-1,6(R1)       ;WRITE POLYNO.REGISTER
000356  005761  000006                  TST     6(R1)           ;WAS REG WRITTEN??
000362  001402                          BEQ     .+6             ;BR IF NO AB OPTION
000364  052712  002000                  BIS     #ABBIT,(R2)     ;SET FOR AB OPTION
000370  012761  001400  000002          MOV     #1400,2(R1)     ;TRY TO SET .DTR. .RS.
000376  032761  001400  000002          BIT     #1400,2(R1)     ;DID ANY OF THEM SET
000404  001402                          BEQ     .+6             ;BR IF NO BA OPTION
000406  052712  010000                  BIS     #BABIT,(R2)     ;SET FOR BA OPTION
000412  032761  030000  000002          BIT     #30000,2(R1)    ;DID .CS. .CO. SET
000420  001402                          BEQ     .+6             ;BR IF NO JUMPER
000422  052712  040000                  BIS     #JUMBIT,(R2)    ;SET FOR JUMPER
000426  052712  004000                  BIS     #ACTBIT,(R2)    ;SET FOR ACTIVE ON FIRST NON-SYNC
000432  052712  001000                  BIS     #ODDBIT,(R2)    ;SET FOR ODD VRC.......
000436  005722                          TST     (R2)+           ;POP POINTER
000440  005011                          CLR     (R1)            ;CLEAR RCSR
000442  005061  000002                  CLR     2(R1)           ;CLEAR TCSR
000446  005061  000002                  CLR     2(R1)           ;CLEAR AGAIN
000452  005061  000004                  CLR     4(R1)           ;CLEAR ERROR REG
000456  005061  000006                  CLR     6(R1)           ;CLEAR SEC REG
000462  005237  001504                  INC     DQNUM           ;UPDATE NUMBER OF DQ11S
000466  062701  000010          2$:     ADD     #10,R1          ;UPDATE CSR POINTER BY 10 (8)
000472  022701  164000                  CMP     #164000,R1      ;HAVE ALL FLOATING ADDRESSES BEEN CHECKED??
000476  001267                          BNE     1$              ;BR IF NOT ALL DONE
000500  005037  001500                  CLR     DQACTV          ;ZERO ACTIVE DQ11S
000504  005737  001504                  TST     DQNUM           ;WERE ANY DQ11S FOUND
000510  001434                          BEQ     4$              ;HEY BUDDY. NO DQ11S FOUND IN SYSTEM
000512  013701  001504                  MOV     DQNUM,R1        ;SAVE NUMBER OF DQ11S
000516  010137  001276                  MOV     R1,SAVNUM       ;SAVE NUMBER FOR ACT11
000522  000241          3$:     CLC                             ;CLEAR CARRY
000524  006137  001500                  ROL     DQACTV          ;<<<<< ACTIVE ADDRESS
000530  005237  001500                  INC     DQACTV          ;SET BIT 0
000534  005301                          DEC     R1              ;DEC NUMBER OF DQ11S
000536  001371                          BNE     3$              ;BR IF MORE TO GO
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1019  000540  012737  000006  000004          MOV     #6,@#4          ;RESET TIME OUT VECTOR
1020  000546  013737  001500  001502          MOV     DQACTV,SAVACT   ;SAVE ACTIVE
1021  000554  012737  000340  000022          MOV     #340,@#22       ;SET IOT TRAP PRIO: TO 7
1022  000562  012702  001400                  MOV     #1400,R2        ;SET TABLE POINTER
1023  000566  012700  000300                  MOV     #300,R0         ;SET VECTOR START
1024  000572  012701  000302                  MOV     #302,R1         ;SET VECTOR+2 START
1025  000576  000137  000056                  JMP     VECMAP          ;GO FIND THE VECTORS
1026  000602  104402                  4$:     TYPE                    ;TYPE MESSAGE
1027  000604  016525                          MERR2                   ;I DIDN'T FIND ANY DQ11S. DON'T USE AUTO SIZE.
1028  000606  005000                          CLR     R0              ;
1029  000610  000000                          HALT                    ;HOW CAN I TEST NO DQ11S
1030  000612  000776                          BR      .-2             ;DON'T LET OPR HIT CONT. SW
1031  000614  012716  000466          5$:     MOV     #2$,(SP)        ;ENTERED BY TIME OUT TRAP
1032  000620  000002                          RTI                     ;GO HOME.
1033
1034
1035          001000                  .=1000
1036  001000  005377  040515  047111  MTITLE: .ASCIZ  <377><12>/MAINDEC-11-DZDQA-B/<377>/DQ11 STATIC LOGIC TEST-PART 1/<377>
1037  001006  042504  026503  030461
1038  001014  042055  042132  040521
1039  001022  041055  042377  030521
1040  001030  020061  052123  052101
1041  001036  041511  046040  043517
1042  001044  041511  052040  051505
1043  001052  026524  040520  052122
1044  001060  030440  000377
1045
1046          001200                  .=1200
1047                                          ;INDIRECT POINTERS
1048
1049  001200  177570                  SWR:    177570                  ;SWITCH REGISTER POINTER
1050  001202  177570                  LIGHTS: 177570                  ;DISPLAY REGISTER POINTER
1051  001204  177560                  TKCSR:  177560                  ;TELETYPE KEYBOARD CONTROL REGISTER
1052  001206  177562                  TKDBR:  177562                  ;TELETYPE KEYBOARD DATA BUFFER
1053  001210  177564                  TPCSR:  177564                  ;TELEPRINTER CONTROL REGISTER
1054  001212  177566                  TPDBR:  177566                  ;TELEPRINTER DATA BUFFER
1055
1056                                          ;PROGRAM CONTROL PARAMETERS
1057
1058  001214  000000                  RETURN: 0                       ;SCOPE ADDRESS FOR LOOP ON TEST
1059  001216  000000                  NEXT:   0                       ;ADDRESS OF NEXT TEST TO BE EXECUTED
1060  001220  000000                  LOCK:   0                       ;ADDRESS FOR LOCK ON CURRENT DATA
1061  001222  000003                  ICOUNT: 3                       ;NUMBER OF ITERATIONS THAT CURRENT TEST WILL BE EXECUTED
1062  001224  000000                  LPCNT:  0                       ;NUMBER OF ITEREATIONS COMPLETED
1063  001226  000000                  TSTNO:  0                       ;NUMBER OF TEST IN PROGRESS
1064  001230  000000                  PASCNT: 0                       ;NUMBER OF PASSES COMPLETED
1065  001232  000000                  ERRCNT: 0                       ;TOTAL NUMBER OF ERRORS
1066  001234  000000                  LSTERR: 0                       ;PC OF LAST ERROR CALL
1067
1068                                          ;PROGRAM VARIABLES
1069
1070  001236  000000                  CHAR1:  0
1071  001240  000000                  CHAR2:  0
1072  001242  000000                  CHAR3:  0
1073  001244  000000                  TEMP1:  0                       ;TEMPORARY STORAGE
1074  001246  000000                  TEMP2:  0                       ;TEMPORARY STORAGE
```

```
1075  001250  000000  TEMP3:  0                ;TEMPORARY STORAGE
1076  001252  000000  TEMP4:  0                ;TEMPORARY STORAGE
1077  001254  000000  TEMP5:  0                ;TEMPORARY STORAGE
1078  001256  000000  SAVR0:  0                ;R0 STORAGE
1079  001260  000000  SAVR1:  0                ;R1 STORAGE
1080  001262  000000  SAVR2:  0                ;R2 STORAGE
1081  001264  000000  SAVR3:  0                ;R3 STORAGE
1082  001266  000000  SAVR4:  0                ;R4 STORAGE
1083  001270  000000  SAVR5:  0                ;R5 STORAGE
1084  001272  000000  SAVSP:  0                ;STACK POINTER STORAGE
1085  001274  000000  SAVPC:  0                ;PROGRAM COUNTER STORAGE
1086  001276  000000  SAVNUM: 0
1087  001300  000001  CREAM:  .BLKW   1
1088  001302  000000  RUNFLG: 0
1089  001304  000000  RUN:    0
1090  001306  000000  RUNCNT: 0
```

```
1091
1092                                        ;PROGRAM CONTROL FLAGS
1093
1094  001310    000             INIFLG: .BYTE   0               ;PROGRAM INITIALIZATION FLAG
1095  001311    000             STFLG:  .BYTE   0               ;TEST START FLAG
1096  001312    000             ERPFLG: .BYTE   0               ;ERROR OCCURED FLAG
1097  001313    000             LOKFLG: .BYTE   0               ;LOCK ON CURRENT TEST FLAG
1098          000000              $Y=0
1099
1100                                        ;DEFINITIONS FOR TRAP SUBROUTINE CALLS
1101                                        ;POINTERS TO SUBROUTINES CAN BE FOUND
1102                                        ;IN THE TABLE IMMEDIATLY FOLLOWING THE DEFINITIONS
1103
1104                                    ;*****************************************************************
1105                                    ;*****************************************************************
1106  001314                            .TRPTAB:
1107          104400                    SCOPE=TRAP+0            ;CALL TO SCOPE LOOP AND ITERATION HANDLER
1108  001314  014436                            .SCOPE
1109          104401                    SCOP1=TRAP+1            ;CALL TO LOOP ON CURRENT DATA HANDLER
1110  001316  014550                            .SCOP1
1111          104402                    TYPE=TRAP+2             ;CALL TO TELETYPE OUTPUT ROUTINE
1112  001320  014570                            .TYPE
1113          104403                    INSTR=TRAP+3            ;CALL TO ASCII STRING INPUT ROUTINE
1114  001322  014676                            .INSTR
1115          104404                    INSTER=TRAP+4           ;CALL TO INPUT ERROR HANDLER
1116  001324  015014                            .INSTER
1117          104405                    PARAM=TRAP+5            ;CALL TO NUMERICAL DATA INPUT ROUTINE
1118  001326  015046                            .PARAM
1119          104406                    SAVOS=TRAP+6            ;CALL TO REGISTER SAVE ROUTINE
1120  001330  015262                            .SAVOS
1121          104407                    RESOS=TRAP+7            ;CALL TO REGISTER RESTORE ROUTINE
1122  001332  015322                            .RESOS
1123          104410                    CONVRT=TRAP+10          ;CALL TO DATA OUTPUT ROUTINE
1124  001334  015354                            .CONVRT
1125          104411                    CNVRT=TRAP+11           ;CALL TO DATA OUTPUT ROUNTINE WITHOUT CR/LF.
1126  001336  015360                            .CNVRT
1127          104412                    MSTCLR=TRAP+12          ;CALL TO ISSUE MASTER CLEAR
1128  001340  017222                            .MSTCLR
1129          104413                    MEMCLR=TRAP+13          ;CALL TO CLEAR ALL SCRATCH PAD MEMORIES
1130  001342  017220                            .MEMCLR
1131          104414                    CKSWR=TRAP+14           ;CALL TO ALLOW SWREG TO BE LOADED FROM TTY
1132  001344  016262                            .CKSWR
1133          104415                    CNTLU=TRAP+15           ;CALL TO ALLOW LOADING OF SWREG FROM TTY
1134  001346  016336                            .CNTLU
1135
1136                                    ;*****************************************;*************************
1137                                    ;*****************************************)*************************
1138
1139                                        ;DQ11 VECTOR AND REGISTER INDIRECT POINTERS
1140
1141  001350  000000    DQRVEC: 0               ;POINTER TO DQ11 RECEIVER INTERRUPT VECTOR
1142  001352  000000    DQRLVL: 0               ;POINTER TO DQ11 RECEIVER INTERRUPT SERVICE PS
1143  001354  000000    DQTVEC: 0               ;POINTER TO DQ11 TRANSMITTER INTERRUPT VECTOR
1144  001356  000000    DQTLVL: 0               ;POINTER TO DQ11 TRANSMITTER INTERRUPT SERVICE PS
1145  001360  000000    DQRCSR: 0               ;POINTER TO DQ11 RECEIVER CONTROL REGISTER
1146  001362  000000    DQRCSH: 0               ;POINTER TO HIGH BYTE OF DQ11 RECEIVER CONTROL REGISTER
```

```
1147  001364  000000                DQTCSR: 0               ;POINTER TO DQ11 TRANSMITTER CONTROL REGISTER
1148  001366  000000                DQERR:  0               ;POINTER TO DQ11 ERROR REGISTER
1149  001370  000000                DQREG:  0               ;POINTER TO HIGH BYTE OF ERROR REGISTER
1150  001372  000000                DQSEC:  0               ;POINTER TO DQ11 SECONDARY REGISTER
1151  001374  000000                DQSECH: 0               ;POINTER TO HIGH BYTE OF DQ11 SECONDARY REGISTER
1152
1153
1154
1155                                        ;DQ11 STATUS TABLE AND ADDRESS ASSIGNMENTS
1156
1157          001400                .=1400
1158  001400  000001                DQCR00: .BLKW   1       ;CONTROL STATUS REGISTER FOR DEVICE NO: 00
1159  001402  000001                DQST00: .BLKW   1       ;VECTOR AND CONFIGURATION STATUS FOR DEVICE NO: 00
1160  001404  000001                DQCR01: .BLKW   1       ;CONTROL STATUS REGISTER FOR DEVICE NO: 01
1161  001406  000001                DQST01: .BLKW   1       ;VECTOR AND CONFIGURATION STATUS FOR DEVICE NO: 01
1162  001410  000001                DQCR02: .BLKW   1       ;CONTROL STATUS REGISTER FOR DEVICE NO: 02
1163  001412  000001                DQST02: .BLKW   1       ;VECTOR AND CONFIGURATION STATUS FOR DEVICE NO: 02
1164  001414  000001                DQCR03: .BLKW   1       ;CONTROL STATUS REGISTER FOR DEVICE NO: 03
1165  001416  000001                DQST03: .BLKW   1       ;VECTOR AND CONFIGURATION STATUS FOR DEVICE NO: 03
1166  001420  000001                DQCR04: .BLKW   1       ;CONTROL STATUS REGISTER FOR DEVICE NO: 04
1167  001422  000001                DQST04: .BLKW   1       ;VECTOR AND CONFIGURATION STATUS FOR DEVICE NO: 04
1168  001424  000001                DQCR05: .BLKW   1       ;CONTROL STATUS REGISTER FOR DEVICE NO: 05
1169  001426  000001                DQST05: .BLKW   1       ;VECTOR AND CONFIGURATION STATUS FOR DEVICE NO: 05
1170  001430  000001                DQCR06: .BLKW   1       ;CONTROL STATUS REGISTER FOR DEVICE NO: 06
1171  001432  000001                DQST06: .BLKW   1       ;VECTOR AND CONFIGURATION STATUS FOR DEVICE NO: 06
1172  001434  000001                DQCR07: .BLKW   1       ;CONTROL STATUS REGISTER FOR DEVICE NO: 07
1173  001436  000001                DQST07: .BLKW   1       ;VECTOR AND CONFIGURATION STATUS FOR DEVICE NO: 07
1174  001440  000001                DQCR10: .BLKW   1       ;CONTROL STATUS REGISTER FOR DEVICE NO: 10
1175  001442  000001                DQST10: .BLKW   1       ;VECTOR AND CONFIGURATION STATUS FOR DEVICE NO: 10
1176  001444  000001                DQCR11: .BLKW   1       ;CONTROL STATUS REGISTER FOR DEVICE NO: 11
1177  001446  000001                DQST11: .BLKW   1       ;VECTOR AND CONFIGURATION STATUS FOR DEVICE NO: 11
1178  001450  000001                DQCR12: .BLKW   1       ;CONTROL STATUS REGISTER FOR DEVICE NO: 12
1179  001452  000001                DQST12: .BLKW   1       ;VECTOR AND CONFIGURATION STATUS FOR DEVICE NO: 12
1180  001454  000001                DQCR13: .BLKW   1       ;CONTROL STATUS REGISTER FOR DEVICE NO: 13
1181  001456  000001                DQST13: .BLKW   1       ;VECTOR AND CONFIGURATION STATUS FOR DEVICE NO: 13
1182  001460  000001                DQCR14: .BLKW   1       ;CONTROL STATUS REGISTER FOR DEVICE NO: 14
1183  001462  000001                DQST14: .BLKW   1       ;VECTOR AND CONFIGURATION STATUS FOR DEVICE NO: 14
1184  001464  000001                DQCR15: .BLKW   1       ;CONTROL STATUS REGISTER FOR DEVICE NO: 15
1185  001466  000001                DQST15: .BLKW   1       ;VECTOR AND CONFIGURATION STATUS FOR DEVICE NO: 15
1186  001470  000001                DQCR16: .BLKW   1       ;CONTROL STATUS REGISTER FOR DEVICE NO: 16
1187  001472  000001                DQST16: .BLKW   1       ;VECTOR AND CONFIGURATION STATUS FOR DEVICE NO: 16
1188  001474  000001                DQCR17: .BLKW   1       ;CONTROL STATUS REGISTER FOR DEVICE NO: 17
1189  001476  000001                DQST17: .BLKW   1       ;VECTOR AND CONFIGURATION STATUS FOR DEVICE NO: 17
1190  001500  000001                DQACTV: .BLKW   1       ;HOLD ACTIVE BITS FOR TESTING
1191  001502  000001                SAVACT: .BLKW   1       ;SAVE NUMBER OF ACTIVE DQ11S
1192  001504  000001                DQNUM:  .BLKW   1       ;OCTAL NUMBER OF TOTAL NUMBER OD DQ11S
1193  001506  000001                DQCSR:  .BLKW   1       ;CSR OF DQ11 UNDER TEST
1194  001510  000001                DQSTAT: .BLKW   1       ;VECTOR AND CONFIGURATION STATUS OF DQ11 UNDER TEST
1195
1196                                        ;PROGRAM INITIALIZATION
1197                                        ;LOCK OUT INTERRUPTS
1198                                        ;SET UP PROCESSOR STACK
1199                                        ;SET UP POWER FAIL VECTOR
1200                                        ;CLEAR PROGRAM CONTROL FLAGS AND COUNTS
1201                                        ;TYPE TITLE MESSAGE
1202
```

```
1203  001512  012737  000340  177776  .START: MOV     #340,PS                 ;LOCK OUT INTERRUPTS
1204  001520  012706  001200                  MOV     #STACK,SP               ;SET UP STACK
1205  001524  012737  016164  000024          MOV     #.PFAIL,@#24            ;SET UP POWER FAIL VECTOR
1206  001532  013737  001504  001276          MOV     DQNUM,SAVNUM
1207  001540  105037  001311                  CLRB    STFLG                   ;CLEAR START FLAG
1208  001544  005037  001230                  CLR     PASCNT                  ;CLEAR PASS COUNT
1209  001550  105037  001312                  CLRB    ERRFLG                  ;CLEAR ERROR FLAG
1210  001554  005037  001302                  CLR     RUNFLG
1211  001560  012737  001400  001300          MOV     #1400,CREAM
1212  001566  005037  001232                  CLR     ERRCNT                  ;CLEAR ERROR COUNT
1213  001572  005037  001234                  CLR     LSTERR                  ;CLEAR LAST ERROR POINTER
1214  001576  012737  000001  001226          MOV     #1,TSTNO                ;SET UP FOR TEST 1
1215  001604  012737  001512  001214          MOV     #.START,RETURN          ;SET UP FOR POWER FAIL BEFORE
1216                                                                          ;TESTING STARTS
1217  001612  105737  001310                  TSTB    INIFLG                  ;HAS INITIALIZATION BEEN PERFORMED
1218  001616  001075                          BNE     12$
1219  001620  104402  001000                  TYPE    ,MTITLE                 ;TYPE TITLE MESSAGE
1220  001624  105137  001310                  COMB    INIFLG                  ;IF NOT SET FLAG AND DO
1221
1222  001630  012737  177570  001200          MOV     #DSWR,SWR               ;MOV HARDWARE SWR TO SWR
1223  001636  012737  177570  001202          MOV     #DLIGHTS,LIGHTS         ;MOV DISPLAY LIGHTS TO LIGHTS
1224  001644  013746  000006                  MOV     @#6,-(SP)               ;SAVE VECTORS
1225  001650  013746  000004                  MOV     @#4,-(SP)
1226  001654  012737  001674  000004          MOV     #64$,@#4                        ;SET UP FOR TIMEOUT
1227  001662  022777  177777  177310          CMP     #-1,@SWR                ;REFERENCE HARDWARE SWITCH REGISTER
1228  001670  001402                          BEQ     65$
1229  001672  000407                          BR      66$
1230  001674  022626                  64$:    CMP     (SP)+,(SP)+             ;ADJUST STACK
1231  001676  012737  000176  001200  65$:    MOV     #SWREG,SWR              ;POINT TO SOFTWARE SWITCH REG
1232  001704  012737  000174  001202          MOV     #DISPREG,LIGHTS         ;POINT TO SOFT DISPLAY REG
1233  001712  012637  000004          66$:    MOV     (SP)+,@#4               ;RESTORE VECTORS
1234  001716  012637  000006                  MOV     (SP)+,@#6
1235  001722  005737  000042                  TST     @#42                    ;UNDER MONITOR
1236  001726  001005                          BNE     67$
1237  001730  022737  000176  001200          CMP     #SWREG,SWR              ;IS SWREG USED
1238  001736  001001                          BNE     67$
1239  001740  104415                          CNTLU
1240  001742  105777  177232          67$:    TSTB    @SWR
1241  001746  100402                          BMI     .+6
1242  001750  004737  000220                  JSR     PC,CSRMAP
1243  001754  104402  017012                  TYPE    ,XHEAD
1244  001760  012737  001400  001244          MOV     #1400,TEMP1
1245  001766  017737  177252  001246          MOV     @TEMP1,TEMP2
1246  001774  001406                          BEQ     .+16
1247  001776  104410                          CONVRT
1248  002000  017040                          XSTATQ
1249  002002  062737  000002  001244          ADD     #2,TEMP1
1250  002010  000766                          BR      .-22
1251  002012  032777  000001  177160  12$:    BIT     #SW00,@SWR
1252  002020  001424                          BEQ     1$
1253  002022  104402                          TYPE
1254  002024  016733                          MNEW
1255  002026  005000                          CLR     R0
1256  002030  000000                          HALT
1257  002032  104414                          CKSWR
1258  002034  027737  177140  001502          CMP     @SWR,SAVACT
```

```
1259  002042  101404                          BLOS    11$
1260  002044  104402                          TYPE
1261  002046  016574                          MERR3
1262  002050  000000                          HALT
1263  002052  000776                          BR      .-2
1264  002054  017737  177120  001500  11$:    MOV     @SWR,DQACTV
1265  002062  013700  001500                  MOV     DQACTV,R0
1266  002066  000000                          HALT
1267  002070  104414                          CKSWR
1268  002072  012700  000300          1$:     MOV     #300,R0
1269  002076  012701  000302                  MOV     #302,R1
1270  002102  010120                  2$:     MOV     R1,(R0)+
1271  002104  005021                          CLR     (R1)+
1272  002106  022021                          CMP     (R0)+,(R1)+
1273  002110  022700  001000                  CMP     #1000,R0
1274  002114  001372                          BNE     2$
1275
1276                                          ;TEST START AND RESTART
1277
1278  002116  012737  000340  177776  .BEGIN: MOV     #340,PS                 ;LOCK OUT INTERRUPTS
1279  002124  012706  001200                  MOV     #STACK,SP               ;SET UP STACK
1280  002130  005737  000042                  TST     @#42                    ;IS PROGRAM UNDER MONITOR CONTROL
1281  002134  001040                          BNE     3$
1282  002136  104414                          CKSWP                           ;CHECK FOR <↑G>
1283  002140  032777  000004  177032          BIT     #BIT2,@SWR              ;CHECK FOR LOCK ON TEST
1284  002146  001411                          BEQ     1$
1285  002150  104402  016632                  TYPE    ,MLOCK
1286  002154  012737  000240  014446          MOV     #NOP,TTST
1287  002162  012737  000240  014450          MOV     #NOP,TTST+2             ;SET UP TO LOCK
1288  002170  000406                          BR      2$
1289  002172  013737  014544  014446  1$:     MOV     BRW,TTST
1290  002200  013737  014546  014450          MOV     BRX,TTST+2              ;LOCK NOT SELECTED, SET UP FOR NORMAL SCOPE LOOP
1291  002206  032777  000002  176764  2$:     BIT     #SW01,@SWR              ;IF SW01=1, GET STARTING PC
1292  002214  001410                          BEQ     3$
1293  002216  104403                          INSTR
1294  002220  016620                          MTSTPC
1295  002222  104405                          PARAM
1296  002224  002254                          TST1
1297  002226  014160                          TLAST
1298  002230  000207                          RETURN
1299  002232     001                  .BYTE   1
1300  002233     001                  .BYTE   1
1301  002234  000403                          BR      4$
1302  002236  012737  002254  001214  3$:     MOV     #TST1,RETURN            ;START AT TEST 1
1303  002244  104402  016522          4$:     TYPE    ,MR                     ;TYPE R
1304  002250  000177  176740                  JMP     @RETURN                 ;START TESTING
1305                                  ;  TEST 1
1306                                  ;*************************************************************************
1307  002254  012737  000001  001226  TST1:   MOV     #1,TSTNO
1308  002262  012737  002644  001214          MOV     #TST2,RETURN
1309  002270  012737  002644  001216          MOV     #TST2,NEXT
1310  002276  105737  001302                  TSTB    RUNFLG          ;IS THIS MY FIRST TIME HERE?
1311  002302  001010                          BNE     1$              ;BR IF FLAG IS SET
1312  002304  012737  000001  001304          MOV     #BIT0,RUN       ;SET RUN POINTER.
1313  002312  012737  000020  001306          MOV     #16.,RUNCNT     ;SET FOR MAX OF 16 DG11'S PER SYSTEM
1314  002320  105137  001302                  COMB    RUNFLG          ;SET RUN FLAG
```

```
                                                1$:     BIT     RUN,DQACTV      ;FIND AN ACTIVE DQ11 TO TEST.
                                                        BNE     3$              ;BR IF I FOUND ONE TO TEST.
                                                        TST     DQACTV          ;FIND OUT IF THERE ARE NO DQ11 ACTIVE.
                                                        BEQ     2$              ;BR TO FATAL ERROR. WHY AM I HERE IF NO ACTIVE DQ11'S???
                                                        CCC                     ;CLEAR ALL THE CONDITION CODES OF CPU
                                                        ROL     RUN             ;UPDATE RUN POINTER
                                                        ADD     #4,CREAM        ;UPDATE ADDRESS POINTER.
                                                        DEC     RUNCNT          ;DEC NUMBER OF TIMES I LOOKED AT ACTIVE.
                                                        BNE     1$              ;BR AND KEEP LOOKING.
                                                        MOV     #16.,RUNCNT     ;START RESTORING MY POINTERS.
                                                        MOV     #1400,CREAM     ;RESTORE  ADDRESS POINTER
                                                        MOV     #1,RUN          ;RESTORE RUN POINTER.
                                                        BR      1$              ;KEEP ON TESTING.
                                                2$:     TYPE                    ;ALLERT OPERATOR OF FATAL ERROR
                                                        MERR2                   ;NO DQ11 ACTIVE. WHY AM I HERE???
                                                        HALT                    ;YOU MUST RELOAD DQ11 DIAGNOSTIC!!
                                                        BR      .-2             ;STICK HERE ON CONT.
                                                3$:     CCC                     ;CLEAR CPU COND. CODES
                                                        ROL     RUN             ;UPDATE RUN. ACTIVE DQ11 FOUND.
                                                        MOV     @CREAM,DQCSR    ;PLACE ADDRESSS OF DQ11 AT DQCSR
                                                        ADD     #2,CREAM        ;UPDATE ADDPESS POINTER
                                                        MOV     @CREAM,DQSTAT   ;PLACE STATUS OF DQ11 AT DQSTAT
                                                        ADD     #2,CREAM        ;UPDATE ADDRESS POINTER
                                                        MOV     DQCSR,DQRCSR
                                                        MOV     DQSTAT,DQRVEC
                                                        BIC     #177007,DQRVEC
                                                        MOV     DQRVEC,DQRLVL   ;GENERATE ADDRESS OF RECEIVER INTERRUPT SERVICE PS
                                                        ADD     #2,DQRLVL
                                                        MOV     DQRLVL,DQTVEC   ;GENERATE ADDRESS OF TRANSMITTER INTERRUPT VECTOR
                                                        ADD     #2,DQTVEC
                                                        MOV     DQTVEC,DQTLVL   ;GENERATE ADDRESS  OF TRANSMITTER INTERRUPT SERVICE PS
                                                        ADD     #2,DQTLVL
                                                        MOV     DQRCSR,DQRCSH
                                                        INC     DQRCSH          ;GENERATE ADDRESS OF HIGH BYTE
                                                        MOV     DQRCSR,DQTCSR   ;GENERATE ADDRESS OF TRANSMITTER CONTROL REGISTER
                                                        ADD     #2,DQTCSR
                                                        MOV     DQTCSR,DQERR    ;GENERATE ADDRESS OF ERROR REGISTER
                                                        ADD     #2,DQERR
                                                        MOV     DQERR,DQREG     ;GENERATE ADDRESS OF HIGH BYTE OF ERROR REGISTER
                                                        INC     DQREG
                                                        MOV     DQREG,DQSEC     ;GENERATE ADDRESS OF SECONDARY REGISTER
                                                        INC     DQSEC
                                                        MOV     DQSEC,DQSECH    ;GENERATE ADDRESS OF HIGH BYTE
                                                        INC     DQSECH

                                                        ;ADDRESS SELECTOR TEST
                                                        ;ADDRESS RECEIVER CONTROL REGISTER
                                                        ;VERIFY THAT RECEIVER CONTROL REGISTER RESPONDS TO ADDRESSING

                                                ;  TEST 2
                                                ;*****************************************************************
                                                TST2:   MOV     #2,TSTNO
                                                        MOV     #TST3,NEXT
                                                        MOV     #1$,@#4                 ;SET UP TO RETURN FROM
                                                        MOV     #340,@#6                ;BUS ERROR TRAP
                                                        MOV     DQRCSR,R5               ;GET ADDRESS OF RECEIVER CONTROL REGISTER
```

```
                                                TST     @DQRCSR                 ;ADDRESS RECEIVER CONTROL REGISTER
                                                BR      2$                      ;NO TRAP, REGISTER RESPONDED
                                        1$:     HLT     0                       ;RECEIVER CONTROL REGISTER DID NOT
                                                                                ;RESPOND TO ADDRESSING
                                        2$:     MOV     #STACK,SP               ;RESTORE STACK
                                                MOV     #6,@#4                  ;RESTORE TRAPCATCHER
                                                CLR     @#6
                                        3$:     SCOPE                           ;CHECK FOR ITERATIONS, LOOP

                                                ;ADDRESS SELECTOR TEST
                                                ;ADDRESS TRANSMITTER CONTROL REGISTER
                                                ;VERIFY THAT TRANSMITTER CONTROL REGISTER RESPONDS TO ADDRESSING

                                        ;  TEST 3
                                        ;*************************************************************************
001226  012737  000003  001226  TST3:   MOV     #3,TSTNO
001216  012737  003014  001216          MOV     #TST4,NEXT
000004  012737  002772  000004          MOV     #1$,@#4                 ;SET UP TO RETURN FROM
000006  012737  000340  000006          MOV     #340,@#6                ;BUS ERROR TRAP
001364  013705  001364                  MOV     DQTCSR,R5               ;GET ADDRESS OF TRANSMITTER CONTROL REGISTER
176374  005777  176374                  TST     @DQTCSR                 ;ADDRESS TRANSMITTER CONTROL REGISTER
                000401                  BR      2$                      ;NO TRAP, REGISTER RESPONDED
                104000          1$:     HLT     0                       ;TRANSMITTER CONTROL REGISTER DID NOT
                                                                        ;RESPOND TO ADDRESSING
                012706  001200  2$:     MOV     #STACK,SP               ;RESTORE STACK
000004  012737  000006  000004          MOV     #6,@#4                  ;RESTORE TRAPCATCHER
                005037  000006          CLR     @#6
                104400          3$:     SCOPE                           ;CHECK FOR ITERATIONS, LOOP

                                                ;ADDRESS SELECTOR TEST
                                                ;ADDRESS ERROR REGISTER
                                                ;VERIFY THAT ERROR REGISTER RESPONDS TO ADDRESSING

                                        ;  TEST 4
                                        ;*************************************************************************
001226  012737  000004  001226  TST4:   MOV     #4,TSTNO
001216  012737  003100  001216          MOV     #TST5,NEXT
000004  012737  003056  000004          MOV     #1$,@#4                 ;SET UP TO RETURN FROM
000006  012737  000340  000006          MOV     #340,@#6                ;BUS ERROR TRAP
001366  013705  001366                  MOV     DQERR,R5                ;GET ADDRESS OF ERROR REGISTER
176312  005777  176312                  TST     @DQERR                  ;ADDRESS ERROR REGISTER
                000401                  BR      2$                      ;NO TRAP, REGISTER RESPONDED
                104000          1$:     HLT     0                       ;ERROR REGISTER DID NOT
                                                                        ;RESPOND TO ADDRESSING
                012706  001200  2$:     MOV     #STACK,SP               ;RESTORE STACK
000004  012737  000006  000004          MOV     #6,@#4                  ;RESTORE TRAPCATCHER
                005037  000006          CLR     @#6
                104400          3$:     SCOPE                           ;CHECK FOR ITERATIONS, LOOP

                                                ;ADDRESS SELECTOR TEST
                                                ;ADDRESS SECONDARY REGISTER
                                                ;VERIFY THAT SECONDARY REGISTER RESPONDS TO ADDRESSING

                                        ;  TEST 5
                                        ;*************************************************************************
001226  012737  000005  001226  TST5:   MOV     #5,TSTNO
```

```
1427  003106  012737  003164  001216          MOV     #TST6,NEXT
1428  003114  012737  003142  000004          MOV     #1$,@#4                 ;SET UP TO RETURN FROM
1429  003122  012737  000340  000006          MOV     #340,@#6                ;BUS ERROR TRAP
1430  003130  013705  001372                  MOV     DQSEC,R5                ;GET ADDRESS OF SECONDARY REGISTER
1431  003134  005777  176232                  TST     @DQSEC                  ;ADDRESS SECONDARY REGISTER
1432  003140  000401                          BR      2$                      ;NO TRAP, REGISTER RESPONDED
1433  003142  104000                  1$:     HLT     0                       ;SECONDARY REGISTER DID NOT
1434                                                                          ;RESPOND TO ADDRESSING
1435  003144  012706  001200          2$:     MOV     #STACK,SP               ;RESTORE STACK
1436  003150  012737  000006  000004          MOV     #6,@#4                  ;RESTORE TRAPCATCHER
1437  003156  005037  000006                  CLR     @#6
1438  003162  104400                  3$:     SCOPE                           ;CHECK FOR ITERATIONS, LOOP
1439
1440                                          ;PRIMARY REGISTER ADDRESSING TEST
1441                                          ;LOAD EACH PRIMARY REGISTER WITH A DIFFERENT
1442                                          ;NUMBER AND VERIFY THAT THE CORRECT REGISTER
1443                                          ;WAS ADDRESSED
1444
1445                                  ;  TEST 6
1446                                  ;*************************************************************************
1447  003164  012737  000006  001226  TST6:   MOV     #6,TSTNO
1448  003172  012737  003364  001216          MOV     #TST7,NEXT
1449  003200  012777  000040  176152          MOV     #40,@DQRCSR             ;LOAD RECEIVER CONTROL REGISTER
1450                                                                          ;WITH BIT5
1451  003206  012777  000100  176150          MOV     #100,@DQTCSR            ;LOAD TRANSMITTER CONTROL
1452                                                                          ;REGISTER WITH BIT6
1453  003214  012777  000200  176144          MOV     #200,@DQERR             ;LOAD ERROR REGISTER
1454                                                                          ;WITH BIT7
1455  003222  012777  000400  176142          MOV     #400,@DQSEC             ;LOAD SECONDARY REGISTER
1456                                                                          ;WITH BIT8
1457  003230  012705  000040                  MOV     #40,R5                  ;FIRST EXPECTED DATA
1458  003234  017704  176120                  MOV     @DQRCSR,R4              ;READ RECEIVER CONTROL REGISTER
1459  003240  013703  001360                  MOV     DQRCSR,R3               ;SET UP ADDRESS OF RECEIVER CONTROL REGISTER
1460  003244  020504                          CMP     R5,R4                   ;WAS RECEIVER COTROL REGISTER ADDRESSED
1461  003246  001401                          BEQ     1$                      ;BR IF GOOD
1462  003250  104001                          HLT     1                       ;REGISTER ADDRESSING ERROR
1463  003252  006305                  1$:     ASL     R5                      ;NEXT EXPECTED DATA
1464  003254  017704  176104                  MOV     @DQTCSR,R4              ;READ TRANSMITTER CONTROL REGISTER
1465  003260  042704  077400                  BIC     #77400,R4               ;CLEAR UNWANTED BITS
1466  003264  062703  000002                  ADD     #2,R3                   ;UPDATE ADDRESS OF EXPECTED REGISTER
1467  003270  020504                          CMP     R5,R4                   ;WAS TRANSMITTER CONTROL REGISTER ADDRESSED
1468  003272  001401                          BEQ     2$                      ;BR IF GOOD
1469  003274  104001                          HLT     1                       ;REGISTER ADDRESSING ERROR
1470  003276  006305                  2$:     ASL     R5                      ;NEXT EXPECTED DATA
1471  003300  017704  176062                  MOV     @DQERR,R4               ;READ ERROR REGISTER
1472  003304  042704  170000                  BIC     #170000,R4              ;CLEAR UNWANTED BITS
1473  003310  062703  000002                  ADD     #2,R3                   ;UPDATE EXPECTED REGISTER ADDRESS
1474  003314  020504                          CMP     R5,R4                   ;WAS ERROR REGISTER ADDRESSED
1475  003316  001401                          BEQ     3$                      ;BR IF GOOD
1476  003320  104001                          HLT     1                       ;REGISTER ADDRESSING ERROR
1477  003322  006305                  3$:     ASL     R5                      ;NEXT EXPECTED DATA
1478  003324  017704  176042                  MOV     @DQSEC,R4               ;READ SECONDARY REGISTER
1479  003330  062703  000002                  ADD     #2,R3                   ;UPDATE EXPECTED REGISTER ADDRESS
1480  003334  020504                          CMP     R5,R4                   ;WAS SECONDARY REGISTER ADDRESSED
1481  003336  001401                          BEQ     4$                      ;BR IF GOOD
1482  003340  104001                          HLT     1                       ;REGISTER ADDRESSING ERROR
```

E03


```
  1483  003342  005077  176012          4$:     CLR     @DQRCSR                 ;CLEAR SEL 0
  1484  003346  005077  176012                  CLR     @DQTCSR                 ;CLEAR SEL 2
  1485  003352  005077  176010                  CLR     @DQSERR                 ;CLEAR SEL 4
  1486  003356  005077  176010                  CLR     @DQSEC                  ;CLEAR SEL 6
  1487  003362  104400                  5$:     SCOPE                           ;CHECK FOR ITERATIONS, LOOP
```

```
1488
1489                                        ;RECEIVER CONTROL REGISTER READ/WRITE TEST
1490                                        ;SET BIT1, VERIFY BIT1 WAS SET
1491                                        ;CLEAR BIT1, VERIFY BIT1 WAS CLEARED
1492
1493                                    ;  TEST 7
1494                                    ;*****************************************************************
1495  003364  012737  000007  001226  TST7:   MOV     #7,TSTNO
1496  003372  012737  003440  001216          MOV     #TST10,NEXT
1497  003400  013703  001360                 MOV     DQRCSR,R3               ;LOAD R3 WITH ADDRESS
1498                                                                          ;OF RECEIVER CONTROL REGISTER
1499  003404  012705  000002                 MOV     #BIT1,R5                ;RECEIVER CONTROL REGISTER WILL
1500                                                                          ;BE SET TO BIT1
1501  003410  010513                         MOV     R5,(R3)                 ;LOAD RECEIVER CONTROL
1502  003412  011304                         MOV     (R3),R4                 ;(R4)=ACTUAL DATA
1503                                                                          ;IN RECEIVER CONTROL REGISTER
1504  003414  020504                         CMP     R5,R4                   ;ARE EXPECTED AND RECEIVED VALUES THE SAME ?
1505  003416  001401                         BEQ     1$
1506  003420  104002                         HLT     2                       ;RECEIVER CONTROL REGISTER DATA ERROR
1507  003422  040513                 1$:     BIC     R5,(R3)                 ;CLEAR BITS SET
1508                                                                          ;IN RECEIVER CONTROL REGISTER
1509  003424  011304                         MOV     (R3),R4                 ;READ RECEIVER CONTROL REGISTER
1510  003426  005005                         CLR     R5                      ;(R5)=EXPECTED CONTENTS
1511                                                                          ;OF RECEIVER CONTROL REGISTER, 0
1512  003430  020504                         CMP     R5,R4                   ;WAS RECEIVER CONTROL CLEARED
1513  003432  001401                         BEQ     2$
1514  003434  104002                         HLT     2                       ;RECEIVER CONTROL REGISTER DATA ERROR
1515  003436  104400                 2$:     SCOPE                           ;CHECK FOR ITERATIONS, LOOP
1516
1517                                        ;RECEIVER CONTROL REGISTER READ/WRITE TEST
1518                                        ;SET BIT3, VERIFY BIT3 WAS SET
1519                                        ;CLEAR BIT3, VERIFY BIT3 WAS CLEARED
1520
1521                                    ;  TEST 10
1522                                    ;*****************************************************************
1523  003440  012737  000010  001226  TST10:  MOV     #10,TSTNO
1524  003446  012737  003514  001216          MOV     #TST11,NEXT
1525  003454  013703  001360                 MOV     DQRCSR,R3               ;LOAD R3 WITH ADDRESS
1526                                                                          ;OF RECEIVER CONTROL REGISTER
1527  003460  012705  000010                 MOV     #BIT3,R5                ;RECEIVER CONTROL REGISTER WILL
1528                                                                          ;BE SET TO BIT3
1529  003464  010513                         MOV     R5,(R3)                 ;LOAD RECEIVER CONTROL
1530  003466  011304                         MOV     (R3),R4                 ;(R4)=ACTUAL DATA
1531                                                                          ;IN RECEIVER CONTROL REGISTER
1532  003470  020504                         CMP     R5,R4                   ;ARE EXPECTED AND RECEIVED VALUES THE SAME ?
1533  003472  001401                         BEQ     1$
1534  003474  104002                         HLT     2                       ;RECEIVER CONTROL REGISTER DATA ERROR
1535  003476  040513                 1$:     BIC     R5,(R3)                 ;CLEAR BITS SET
1536                                                                          ;IN RECEIVER CONTROL REGISTER
1537  003500  011304                         MOV     (R3),R4                 ;READ RECEIVER CONTROL REGISTER
1538  003502  005005                         CLR     R5                      ;(R5)=EXPECTED CONTENTS
1539                                                                          ;OF RECEIVER CONTROL REGISTER, 0
1540  003504  020504                         CMP     R5,R4                   ;WAS RECEIVER CONTROL CLEARED
1541  003506  001401                         BEQ     2$
1542  003510  104002                         HLT     2                       ;RECEIVER CONTROL REGISTER DATA ERROR
1543  003512  104400                 2$:     SCOPE                           ;CHECK FOR ITERATIONS, LOOP
```

```
1544
1545                                            ;RECEIVER CONTROL REGISTER READ/WRITE TEST
1546                                            ;SET BIT4, VERIFY BIT4 WAS SET
1547                                            ;CLEAR BIT4, VERIFY BIT4 WAS CLEARED
1548
1549                                    ;  TEST 11
1550                                    ;*************************************************************************
1551  003514  012737  000011  001226  TST11:  MOV     #11,TSTNO
1552  003522  012737  003570  001216          MOV     #TST12,NEXT
1553  003530  013703  001360                 MOV     DQRCSR,R3               ;LOAD R3 WITH ADDRESS
1554                                                                          ;OF RECEIVER CONTROL REGISTER
1555  003534  012705  000020                 MOV     #BIT4,R5                ;RECEIVER CONTROL REGISTER WILL
1556                                                                          ;BE SET TO BIT4
1557  003540  010513                         MOV     R5,(R3)                 ;LOAD RECEIVER CONTROL
1558  003542  011304                         MOV     (R3),R4                 ;(R4)=ACTUAL DATA
1559                                                                          ;IN RECEIVER CONTROL REGISTER
1560  003544  020504                         CMP     R5,R4                   ;ARE EXPECTED AND RECEIVED VALUES THE SAME ?
1561  003546  001401                         BEQ     1$
1562  003550  104002                         HLT     2                       ;RECEIVER CONTROL REGISTER DATA ERROR
1563  003552  040513                 1$:     BIC     R5,(R3)                 ;CLEAR BITS SET
1564                                                                          ;IN RECEIVER CONTROL REGISTER
1565  003554  011304                         MOV     (R3),R4                 ;READ RECEIVER CONTROL REGISTER
1566  003556  005005                         CLR     R5                      ;(R5)=EXPECTED CONTENTS
1567                                                                          ;OF RECEIVER CONTROL REGISTER, 0
1568  003560  020504                         CMP     R5,R4                   ;WAS RECEIVER CONTROL CLEARED
1569  003562  001401                         BEQ     2$
1570  003564  104002                         HLT     2                       ;RECEIVER CONTROL REGISTER DATA ERROR
1571  003566  104400                 2$:     SCOPE                           ;CHECK FOR ITERATIONS, LOOP
1572
1573                                            ;RECEIVER CONTROL REGISTER READ/WRITE TEST
1574                                            ;SET BIT5, VERIFY BIT5 WAS SET
1575                                            ;CLEAR BIT5, VERIFY BIT5 WAS CLEARED
1576
1577                                    ;  TEST 12
1578                                    ;*************************************************************************
1579  003570  012737  000012  001226  TST12:  MOV     #12,TSTNO
1580  003576  012737  003644  001216          MOV     #TST13,NEXT
1581  003604  013703  001360                 MOV     DQRCSR,R3               ;LOAD R3 WITH ADDRESS
1582                                                                          ;OF RECEIVER CONTROL REGISTER
1583  003610  012705  000040                 MOV     #BIT5,R5                ;RECEIVER CONTROL REGISTER WILL
1584                                                                          ;BE SET TO BIT5
1585  003614  010513                         MOV     R5,(R3)                 ;LOAD RECEIVER CONTROL
1586  003616  011304                         MOV     (R3),R4                 ;(R4)=ACTUAL DATA
1587                                                                          ;IN RECEIVER CONTROL REGISTER
1588  003620  020504                         CMP     R5,R4                   ;ARE EXPECTED AND RECEIVED VALUES THE SAME ?
1589  003622  001401                         BEQ     1$
1590  003624  104002                         HLT     2                       ;RECEIVER CONTROL REGISTER DATA ERROR
1591  003626  040513                 1$:     BIC     R5,(R3)                 ;CLEAR BITS SET
1592                                                                          ;IN RECEIVER CONTROL REGISTER
1593  003630  011304                         MOV     (R3),R4                 ;READ RECEIVER CONTROL REGISTER
1594  003632  005005                         CLR     R5                      ;(R5)=EXPECTED CONTENTS
1595                                                                          ;OF RECEIVER CONTROL REGISTER, 0
1596  003634  020504                         CMP     R5,R4                   ;WAS RECEIVER CONTROL CLEARED
1597  003636  001401                         BEQ     2$
1598  003640  104002                         HLT     2                       ;RECEIVER CONTROL REGISTER DATA ERROR
1599  003642  104400                 2$:     SCOPE                           ;CHECK FOR ITERATIONS, LOOP
```

```
1600
1601                                            ;RECEIVER CONTROL REGISTER READ/WRITE TEST
1602                                            ;SET BIT6, VERIFY BIT6 WAS SET
1603                                            ;CLEAR BIT6, VERIFY BIT6 WAS CLEARED
1604
1605                                    ;  TEST 13
1606                                    ;*************************************************************************
1607  003644  012737  000013  001226  TST13:  MOV     #13,TSTNO
1608  003652  012737  003720  001216          MOV     #TST14,NEXT
1609  003660  013703  001360                 MOV     DQRCSR,R3               ;LOAD R3 WITH ADDRESS
1610                                                                          ;OF RECEIVER CONTROL REGISTER
1611  003664  012705  000100                 MOV     #BIT6,R5                ;RECEIVER CONTROL REGISTER WILL
1612                                                                          ;BE SET TO BIT6
1613  003670  010513                         MOV     R5,(R3)                 ;LOAD RECEIVER CONTROL
1614  003672  011304                         MOV     (R3),R4                 ;(R4)=ACTUAL DATA
1615                                                                          ;IN RECEIVER CONTROL REGISTER
1616  003674  020504                         CMP     R5,R4                   ;ARE EXPECTED AND RECEIVED VALUES THE SAME ?
1617  003676  001401                         BEQ     1$
1618  003700  104002                         HLT     2                       ;RECEIVER CONTROL REGISTER DATA ERROR
1619  003702  040513                 1$:     BIC     R5,(R3)                 ;CLEAR BITS SET
1620                                                                          ;IN RECEIVER CONTROL REGISTER
1621  003704  011304                         MOV     (R3),R4                 ;READ RECEIVER CONTROL REGISTER
1622  003706  005005                         CLR     R5                      ;(R5)=EXPECTED CONTENTS
1623                                                                          ;OF RECEIVER CONTROL REGISTER, 0
1624  003710  020504                         CMP     R5,R4                   ;WAS RECEIVER CONTROL CLEARED
1625  003712  001401                         BEQ     2$
1626  003714  104002                         HLT     2                       ;RECEIVER CONTROL REGISTER DATA ERROR
1627  003716  104400                 2$:     SCOPE                           ;CHECK FOR ITERATIONS, LOOP
1628
1629                                            ;RECEIVER CONTROL REGISTER READ/WRITE TEST
1630                                            ;SET BIT7, VERIFY BIT7 WAS SET
1631                                            ;CLEAR BIT7, VERIFY BIT7 WAS CLEARED
1632
1633                                    ;  TEST 14
1634                                    ;*************************************************************************
1635  003720  012737  000014  001226  TST14:  MOV     #14,TSTNO
1636  003726  012737  003774  001216          MOV     #CKBBO,NEXT
1637  003734  013703  001360                 MOV     DQRCSR,R3               ;LOAD R3 WITH ADDRESS
1638                                                                          ;OF RECEIVER CONTROL REGISTER
1639  003740  012705  000200                 MOV     #BIT7,R5                ;RECEIVER CONTROL REGISTER WILL
1640                                                                          ;BE SET TO BIT7
1641  003744  010513                         MOV     R5,(R3)                 ;LOAD RECEIVER CONTROL
1642  003746  011304                         MOV     (R3),R4                 ;(R4)=ACTUAL DATA
1643                                                                          ;IN RECEIVER CONTROL REGISTER
1644  003750  020504                         CMP     R5,R4                   ;ARE EXPECTED AND RECEIVED VALUES THE SAME ?
1645  003752  001401                         BEQ     1$
1646  003754  104002                         HLT     2                       ;RECEIVER CONTROL REGISTER DATA ERROR
1647  003756  040513                 1$:     BIC     R5,(R3)                 ;CLEAR BITS SET
1648                                                                          ;IN RECEIVER CONTROL REGISTER
1649  003760  011304                         MOV     (R3),R4                 ;READ RECEIVER CONTROL REGISTER
1650  003762  005005                         CLR     R5                      ;(R5)=EXPECTED CONTENTS
1651                                                                          ;OF RECEIVER CONTROL REGISTER, 0
1652  003764  020504                         CMP     R5,R4                   ;WAS RECEIVER CONTROL CLEARED
1653  003766  001401                         BEQ     2$
1654  003770  104002                         HLT     2                       ;RECEIVER CONTROL REGISTER DATA ERROR
1655  003772  104400                 2$:     SCOPE                           ;CHECK FOR ITERATIONS, LOOP
```

```
1656  003774  032737  020000  001510  CKBB0:  BIT     #BBBIT,DQSTAT
1657  004002  001530                  BEQ     CONT.0
1658
1659                                  ;RECEIVER CONTROL REGISTER READ/WRITE TEST
1660                                  ;SET BIT8, VERIFY BIT8 WAS SET
1661                                  ;CLEAR BIT8, VERIFY BIT8 WAS CLEARED
1662
1663                          ;  TEST 15
1664                          ;*************************************************************************
1665  004004  012737  000015  001226  TST15:  MOV     #15,TSTNO
1666  004012  012737  004060  001216          MOV     #TST16,NEXT
1667  004020  013703  001360                  MOV     DQRCSR,R3               ;LOAD R3 WITH ADDRESS
1668                                                                          ;OF RECEIVER CONTROL REGISTER
1669  004024  012705  000400                  MOV     #BIT8,R5                ;RECEIVER CONTROL REGISTER WILL
1670                                                                          ;BE SET TO BIT8
1671  004030  010513                          MOV     R5,(R3)                 ;LOAD RECEIVER CONTROL
1672  004032  011304                          MOV     (R3),R4                 ;(R4)=ACTUAL DATA
1673                                                                          ;IN RECEIVER CONTROL REGISTER
1674  004034  020504                          CMP     R5,R4                   ;ARE EXPECTED AND RECEIVED VALUES THE SAME ?
1675  004036  001401                          BEQ     1$
1676  004040  104002                          HLT     2                       ;RECEIVER CONTROL REGISTER DATA ERROR
1677  004042  040513                  1$:     BIC     R5,(R3)                 ;CLEAR BITS SET
1678                                                                          ;IN RECEIVER CONTROL REGISTER
1679  004044  011304                          MOV     (R3),R4                 ;READ RECEIVER CONTROL REGISTER
1680  004046  005005                          CLR     R5                      ;(R5)=EXPECTED CONTENTS
1681                                                                          ;OF RECEIVER CONTROL REGISTER, 0
1682  004050  020504                          CMP     R5,R4                   ;WAS RECEIVER CONTROL CLEARED
1683  004052  001401                          BEQ     2$
1684  004054  104002                          HLT     2                       ;RECEIVER CONTROL REGISTER DATA ERROR
1685  004056  104400                  2$:     SCOPE                           ;CHECK FOR ITERATIONS, LOOP
1686
1687                                  ;RECEIVER CONTROL REGISTER READ/WRITE TEST
1688                                  ;SET BIT9, VERIFY BIT9 WAS SET
1689                                  ;CLEAR BIT9, VERIFY BIT9 WAS CLEARED
1690
1691                          ;  TEST 16
1692                          ;*************************************************************************
1693  004060  012737  000016  001226  TST16:  MOV     #16,TSTNO
1694  004066  012737  004134  001216          MOV     #TST17,NEXT
1695  004074  013703  001360                  MOV     DQRCSR,R3               ;LOAD R3 WITH ADDRESS
1696                                                                          ;OF RECEIVER CONTROL REGISTER
1697  004100  012705  001000                  MOV     #BIT9,R5                ;RECEIVER CONTROL REGISTER WILL
1698                                                                          ;BE SET TO BIT9
1699  004104  010513                          MOV     R5,(R3)                 ;LOAD RECEIVER CONTROL
1700  004106  011304                          MOV     (R3),R4                 ;(R4)=ACTUAL DATA
1701                                                                          ;IN RECEIVER CONTROL REGISTER
1702  004110  020504                          CMP     R5,R4                   ;ARE EXPECTED AND RECEIVED VALUES THE SAME ?
1703  004112  001401                          BEQ     1$
1704  004114  104002                          HLT     2                       ;RECEIVER CONTROL REGISTER DATA ERROR
1705  004116  040513                  1$:     BIC     R5,(R3)                 ;CLEAR BITS SET
1706                                                                          ;IN RECEIVER CONTROL REGISTER
1707  004120  011304                          MOV     (R3),R4                 ;READ RECEIVER CONTROL REGISTER
1708  004122  005005                          CLR     R5                      ;(R5)=EXPECTED CONTENTS
1709                                                                          ;OF RECEIVER CONTROL REGISTER, 0
1710  004124  020504                          CMP     R5,R4                   ;WAS RECEIVER CONTROL CLEARED
1711  004126  001401                          BEQ     2$
```

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1712  004130  104002                          HLT     2                       ;RECEIVER CONTROL REGISTER DATA ERROR
1713  004132  104400                  2$:     SCOPE                           ;CHECK FOR ITERATIONS, LOOP
1714
1715                                          ;RECEIVER CONTROL REGISTER READ/WRITE TEST
1716                                          ;SET BIT10, VERIFY BIT10 WAS SET
1717                                          ;CLEAR BIT10, VERIFY BIT10 WAS CLEARED
1718
1719                                  ;  TEST 17
1720                                  ;*************************************************************************
1721  004134  012737  000017  001226  TST17:  MOV     #17,TSTNO
1722  004142  012737  004210  001216          MOV     #TST20,NEXT
1723  004150  013703  001360                  MOV     DQRCSR,R3               ;LOAD R3 WITH ADDRESS
1724                                                                          ;OF RECEIVER CONTROL REGISTER
1725  004154  012705  002000                  MOV     #BIT10,R5               ;RECEIVER CONTROL REGISTER WILL
1726                                                                          ;BE SET TO BIT10
1727  004160  010513                          MOV     R5,(R3)                 ;LOAD RECEIVER CONTROL
1728  004162  011304                          MOV     (R3),R4                 ;(R4)=ACTUAL DATA
1729                                                                          ;IN RECEIVER CONTROL REGISTER
1730  004164  020504                          CMP     R5,R4                   ;ARE EXPECTED AND RECEIVED VALUES THE SAME ?
1731  004166  001401                          BEQ     1$
1732  004170  104002                          HLT     2                       ;RECEIVER CONTROL REGISTER DATA ERROR
1733  004172  040513                  1$:     BIC     R5,(R3)                 ;CLEAR BITS SET
1734                                                                          ;IN RECEIVER CONTROL REGISTER
1735  004174  011304                          MOV     (R3),R4                 ;READ RECEIVER CONTROL REGISTER
1736  004176  005005                          CLR     R5                      ;(R5)=EXPECTED CONTENTS
1737                                                                          ;OF RECEIVER CONTROL REGISTER, 0
1738  004200  020504                          CMP     R5,R4                   ;WAS RECEIVER CONTROL CLEARED
1739  004202  001401                          BEQ     2$
1740  004204  104002                          HLT     2                       ;RECEIVER CONTROL REGISTER DATA ERROR
1741  004206  104400                  2$:     SCOPE                           ;CHECK FOR ITERATIONS, LOOP
1742
1743                                          ;RECEIVER CONTROL REGISTER READ/WRITE TEST
1744                                          ;SET BIT11, VERIFY BIT11 WAS SET
1745                                          ;CLEAR BIT11, VERIFY BIT11 WAS CLEARED
1746
1747                                  ;  TEST 20
1748                                  ;*************************************************************************
1749  004210  012737  000020  001226  TST20:  MOV     #20,TSTNO
1750  004216  012737  004264  001216          MOV     #TST21,NEXT
1751  004224  013703  001360                  MOV     DQRCSR,R3               ;LOAD R3 WITH ADDRESS
1752                                                                          ;OF RECEIVER CONTROL REGISTER
1753  004230  012705  004000                  MOV     #BIT11,R5               ;RECEIVER CONTROL REGISTER WILL
1754                                                                          ;BE SET TO BIT11
1755  004234  010513                          MOV     R5,(R3)                 ;LOAD RECEIVER CONTROL
1756  004236  011304                          MOV     (R3),R4                 ;(R4)=ACTUAL DATA
1757                                                                          ;IN RECEIVER CONTROL REGISTER
1758  004240  020504                          CMP     R5,R4                   ;ARE EXPECTED AND RECEIVED VALUES THE SAME ?
1759  004242  001401                          BEQ     1$
1760  004244  104002                          HLT     2                       ;RECEIVER CONTROL REGISTER DATA ERROR
1761  004246  040513                  1$:     BIC     R5,(R3)                 ;CLEAR BITS SET
1762                                                                          ;IN RECEIVER CONTROL REGISTER
1763  004250  011304                          MOV     (R3),R4                 ;READ RECEIVER CONTROL REGISTER
1764  004252  005005                          CLR     R5                      ;(R5)=EXPECTED CONTENTS
1765                                                                          ;OF RECEIVER CONTROL REGISTER, 0
1766  004254  020504                          CMP     R5,R4                   ;WAS RECEIVER CONTROL CLEARED
1767  004256  001401                          BEQ     2$
```

```
                                        HLT     2                       ;RECEIVER CONTROL REGISTER DATA ERROR
                                2$:     SCOPE                           ;CHECK FOR ITERATIONS, LOOP
                                CONT.0:

                                        ;RECEIVER CONTROL REGISTER READ/WRITE TEST
                                        ;SET BIT12, VERIFY BIT12 WAS SET
                                        ;CLEAR BIT12, VERIFY BIT12 WAS CLEARED

                                ;  TEST 21
                                ;*************************************************************************
004264  012737  000021  001226  TST21:  MOV     #21,TSTNO
004272  012737  004340  001216          MOV     #CHKBA1,NEXT
004300  013703  001360                  MOV     DQRCSR,R3               ;LOAD R3 WITH ADDRESS
                                                                        ;OF RECEIVER CONTROL REGISTER
004304  012705  010000                  MOV     #BIT12,R5               ;RECEIVER CONTROL REGISTER WILL
                                                                        ;BE SET TO BIT12
004310  010513                          MOV     R5,(R3)                 ;LOAD RECEIVER CONTROL
004312  011304                          MOV     (R3),R4                 ;(R4)=ACTUAL DATA
                                                                        ;IN RECEIVER CONTROL REGISTER
004314  020504                          CMP     R5,R4                   ;ARE EXPECTED AND RECEIVED VALUES THE SAME ?
004316  001401                          BEQ     1$
004320  104002                          HLT     2                       ;RECEIVER CONTROL REGISTER DATA ERROR
004322  040513                  1$:     BIC     R5,(R3)                 ;CLEAR BITS SET
                                                                        ;IN RECEIVER CONTROL REGISTER
004324  011304                          MOV     (R3),R4                 ;READ RECEIVER CONTROL REGISTER
004326  005005                          CLR     R5                      ;(R5)=EXPECTED CONTENTS
                                                                        ;OF RECEIVER CONTROL REGISTER, 0
004330  020504                          CMP     R5,R4                   ;WAS RECEIVER CONTROL CLEARED
004332  001401                          BEQ     2$
004334  104002                          HLT     2                       ;RECEIVER CONTROL REGISTER DATA ERROR
004336  104400                  2$:     SCOPE                           ;CHECK FOR ITERATIONS, LOOP

                                        ;IF DATASET CONTROL OPTION IS INSTALLED,
                                        ;TEST 22 AND TEST 23 WILL BE EXECUTED

004340  032737  010000  001510  CHKBA1: BIT     #BABIT,DQSTAT
004346  001454                          BEQ     TST24

                                        ;RECEIVER CONTROL REGISTER READ/WRITE TEST
                                        ;SET BIT13, VERIFY BIT13 WAS SET
                                        ;CLEAR BIT13, VERIFY BIT13 WAS CLEARED

                                ;  TEST 22
                                ;*************************************************************************
004350  012737  000022  001226  TST22:  MOV     #22,TSTNO
004356  012737  004424  001216          MOV     #TST23,NEXT
004364  013703  001360                  MOV     DQRCSR,R3               ;LOAD R3 WITH ADDRESS
                                                                        ;OF RECEIVER CONTROL REGISTER
004370  012705  020000                  MOV     #BIT13,R5               ;RECEIVER CONTROL REGISTER WILL
                                                                        ;BE SET TO BIT13
004374  010513                          MOV     R5,(R3)                 ;LOAD RECEIVER CONTROL
004376  011304                          MOV     (R3),R4                 ;(R4)=ACTUAL DATA
                                                                        ;IN RECEIVER CONTROL REGISTER
004400  020504                          CMP     R5,R4                   ;ARE EXPECTED AND RECEIVED VALUES THE SAME ?
004402  001401                          BEQ     1$
004404  104002                          HLT     2                       ;RECEIVER CONTROL REGISTER DATA ERROR
```

```
1824  004406  040513                  1$:     BIC     R5,(R3)                 ;CLEAR BITS SET
1825                                                                          ;IN RECEIVER CONTROL REGISTER
1826  004410  011304                          MOV     (R3),R4                 ;READ RECEIVER CONTROL REGISTER
1827  004412  005005                          CLR     R5                      ;(R5)=EXPECTED CONTENTS
1828                                                                          ;OF RECEIVER CONTROL REGISTER, 0
1829  004414  020504                          CMP     R5,R4                   ;WAS RECEIVER CONTROL CLEARED
1830  004416  001401                          BEQ     2$
1831  004420  104002                          HLT     2                       ;RECEIVER CONTROL REGISTER DATA ERROR
1832  004422  104400                  2$:     SCOPE                           ;CHECK FOR ITERATIONS, LOOP
1833
1834                                          ;RECEIVER CONTROL REGISTER READ/WRITE TEST
1835                                          ;SET BIT14, VERIFY BIT14 WAS SET
1836                                          ;CLEAR BIT14, VERIFY BIT14 WAS CLEARED
1837
1838                                  ;  TEST 23
1839                                  ;*************************************************************************
1840  004424  012737  000023  001226  TST23:  MOV     #23,TSTNO
1841  004432  012737  004500  001216          MOV     #TST24,NEXT
1842  004440  013703  001360                  MOV     DQRCSR,R3               ;LOAD R3 WITH ADDRESS
1843                                                                          ;OF RECEIVER CONTROL REGISTER
1844  004444  012705  040000                  MOV     #BIT14,R5               ;RECEIVER CONTROL REGISTER WILL
1845                                                                          ;BE SET TO BIT14
1846  004450  010513                          MOV     R5,(R3)                 ;LOAD RECEIVER CONTROL
1847  004452  011304                          MOV     (R3),R4                 ;(R4)=ACTUAL DATA
1848                                                                          ;IN RECEIVER CONTROL REGISTER
1849  004454  020504                          CMP     R5,R4                   ;ARE EXPECTED AND RECEIVED VALUES THE SAME ?
1850  004456  001401                          BEQ     1$
1851  004460  104002                          HLT     2                       ;RECEIVER CONTROL REGISTER DATA ERROR
1852  004462  040513                  1$:     BIC     R5,(R3)                 ;CLEAR BITS SET
1853                                                                          ;IN RECEIVER CONTROL REGISTER
1854  004464  011304                          MOV     (R3),R4                 ;READ RECEIVER CONTROL REGISTER
1855  004466  005005                          CLR     R5                      ;(R5)=EXPECTED CONTENTS
1856                                                                          ;OF RECEIVER CONTROL REGISTER, 0
1857  004470  020504                          CMP     R5,R4                   ;WAS RECEIVER CONTROL CLEARED
1858  004472  001401                          BEQ     2$
1859  004474  104002                          HLT     2                       ;RECEIVER CONTROL REGISTER DATA ERROR
1860  004476  104400                  2$:     SCOPE                           ;CHECK FOR ITERATIONS, LOOP
1861
1862                                          ;RECEIVER CONTROL REGISTER READ/WRITE TEST
1863                                          ;SET BIT15, VERIFY BIT15 WAS SET
1864                                          ;CLEAR BIT15, VERIFY BIT15 WAS CLEARED
1865
1866                                  ;  TEST 24
1867                                  ;*************************************************************************
1868  004500  012737  000024  001226  TST24:  MOV     #24,TSTNO
1869  004506  012737  004554  001216          MOV     #TST25,NEXT
1870  004514  013703  001360                  MOV     DQRCSR,R3               ;LOAD R3 WITH ADDRESS
1871                                                                          ;OF RECEIVER CONTROL REGISTER
1872  004520  012705  100000                  MOV     #BIT15,R5               ;RECEIVER CONTROL REGISTER WILL
1873                                                                          ;BE SET TO BIT15
1874  004524  010513                          MOV     R5,(R3)                 ;LOAD RECEIVER CONTROL
1875  004526  011304                          MOV     (R3),R4                 ;(R4)=ACTUAL DATA
1876                                                                          ;IN RECEIVER CONTROL REGISTER
1877  004530  020504                          CMP     R5,R4                   ;ARE EXPECTED AND RECEIVED VALUES THE SAME ?
1878  004532  001401                          BEQ     1$
1879  004534  104002                          HLT     2                       ;RECEIVER CONTROL REGISTER DATA ERROR
```

```
1880  004536  040513          1$:     BIC     R5,(R3)         ;CLEAR BITS SET
1881                                                          ;IN RECEIVER CONTROL REGISTER
1882  004540  011304                  MOV     (R3),R4         ;READ RECEIVER CONTROL REGISTER
1883  004542  005005                  CLR     R5              ;(R5)=EXPECTED CONTENTS
1884                                                          ;OF RECEIVER CONTROL REGISTER, 0
1885  004544  020504                  CMP     R5,R4           ;WAS RECEIVER CONTROL CLEARED
1886  004546  001401                  BEQ     2$
1887  004550  104002                  HLT     2               ;RECEIVER CONTROL REGISTER DATA ERROR
1888  004552  104400          2$:     SCOPE                   ;CHECK FOR ITERATIONS, LOOP
```

```
                                        ;TRANSMIITER CONTROL REGISTER READ/WRITE TEST
                                        ;SET BIT3, VERIFY BIT3 WAS SET
                                        ;CLEAR BIT3, VERIFY BIT3 WAS CLEARED

                                ;  TEST 25
                                ;*************************************************************************
004554  012737  000025  001226  TST25:  MOV     #25,TSTNO
004562  012737  004640  001216          MOV     #CKBA1,NEXT
004570  013703  001360                  MOV     DQRCSR,R3       ;LOAD R3 WITH ADDRESS
                                                                ;OF TRANSMIITER CONTROL REGISTER
004574  012702  001400                  MOV     #1400,R2        ;LOAD R2 WITH 1400
                                                                ;TO CLEAR UNWANTED BITS
004600  012705  000010                  MOV     #BIT3,R5        ;TRANSMIITER CONTROL REGISTER WILL
                                                                ;BE SET TO BIT3
004604  010513                          MOV     R5,(R3)         ;LOAD TRANSMIITER CONTROL
004606  011304                          MOV     (R3),R4         ;(R4)=ACTUAL DATA
                                                                ;IN TRANSMIITER CONTROL REGISTER
004610  040204                          BIC     R2,R4           ;CLEAR UNWANTED BITS
004612  020504                          CMP     R5,R4           ;ARE EXPECTED AND RECEIVED VALUES THE SAME ?
004614  001401                          BEQ     1$
004616  104003                          HLT     3               ;TRANSMIITER CONTROL REGISTER DATA ERROR
004620  040513                  1$:     BIC     R5,(R3)         ;CLEAR BITS SET
                                                                ;IN TRANSMIITER CONTROL REGISTER
004622  011304                          MOV     (R3),R4         ;READ TRANSMIITER CONTROL REGISTER
004624  040204                          BIC     R2,R4           ;CLEAR UNWANTED BITS
004626  005005                          CLR     R5              ;(R5)=EXPECTED CONTENTS
                                                                ;OF TRANSMIITER CONTROL REGISTER, 0
004630  020504                          CMP     R5,R4           ;WAS TRANSMIITER CONTROL CLEARED
004632  001401                          BEQ     2$
004634  104003                          HLT     3               ;TRANSMIITER CONTROL REGISTER DATA ERROR
004636  104400                  2$:     SCOPE                   ;CHECK FOR ITERATIONS, LOOP
004640  032737  010000  001510  CKBA1:  BIT     #BABIT,DQSTAT
004646  001432                          BEQ     CONT.1

                                        ;TRANSMITTER CONTROL REGISTER READ/WRITE TEST
                                        ;SET BIT4, VERIFY BIT4 WAS SET
                                        ;CLEAR BIT4, VERIFY BIT4 WAS CLEARED

                                ;  TEST 26
                                ;*************************************************************************
004650  012737  000026  001226  TST26:  MOV     #26,TSTNO
004656  012737  004734  001216          MOV     #TST27,NEXT
004664  013703  001364                  MOV     DQTCSR,R3       ;LOAD R3 WITH ADDRESS
                                                                ;OF TRANSMITTER CONTROL REGISTER
004670  012702  001400                  MOV     #1400,R2        ;LOAD R2 WITH 1400
                                                                ;TO CLEAR UNWANTED BITS
004674  012705  000020                  MOV     #BIT4,R5        ;TRANSMITTER CONTROL REGISTER WILL
                                                                ;BE SET TO BIT4
004700  010513                          MOV     R5,(R3)         ;LOAD TRANSMITTER CONTROL
004702  011304                          MOV     (R3),R4         ;(R4)=ACTUAL DATA
                                                                ;IN TRANSMITTER CONTROL REGISTER
004704  040204                          BIC     R2,R4           ;CLEAR UNWANTED BITS
004706  020504                          CMP     R5,R4           ;ARE EXPECTED AND RECEIVED VALUES THE SAME ?
004710  001401                          BEQ     1$
004712  104003                          HLT     3               ;TRANSMITTER CONTROL REGISTER DATA ERROR
```

```
                                1$:     BIC     R5,(R3)                 ;CLEAR BITS SET
                                                                        ;IN TRANSMITTER CONTROL REGISTER
 004714  040513                        MOV     (R3),R4                 ;READ TRANSMITTER CONTROL REGISTER
 004716  011304                        BIC     R2,R4                   ;CLEAR UNWANTED BITS
 004720  040204                        CLR     R5                      ;(R5)=EXPECTED CONTENTS
 004722  005005                                                        ;OF TRANSMITTER CONTROL REGISTER, 0
                                        CMP     R5,R4                   ;WAS TRANSMITTER CONTROL CLEARED
 004724  020504                        BEQ     2$
 004726  001401                        HLT     3                       ;TRANSMITTER CONTROL REGISTER DATA ERROR
 004730  000003                2$:     SCOPE                           ;CHECK FOR ITERATIONS, LOOP
 004732  104400                CONT.1:
 004734

                                        ;TRANSMITTER CONTROL REGISTER READ-WRITE TEST
                                        ;SET BITS, VERIFY BITS WAS SET
                                        ;CLEAR BITS, VERIFY BITS WAS CLEARED

                                ;  TEST 27
                                ;*************************************************************************
 004734  012737  000027  001226 TST27:  MOV     #27,TSTNO
 004742  012737  005020  001216         MOV     #TST30,NEXT
 004750  013703  001364                 MOV     DGTCSR,R3               ;LOAD R3 WITH ADDRESS
                                                                        ;OF TRANSMITTER CONTROL REGISTER
 004754  012702  001400                 MOV     #1400,R2                ;LOAD R2 WITH 1400
                                                                        ;TO CLEAR UNWANTED BITS
 004760  012705  000040                 MOV     #BIT5,R5                ;TRANSMITTER CONTROL REGISTER WILL
                                                                        ;BE SET TO BITS
 004764  010513                         MOV     R5,(R3)                 ;LOAD TRANSMITTER CONTROL
 004766  011304                         MOV     (R3),R4                 ;(R4)=ACTUAL DATA
                                                                        ;IN TRANSMITTER CONTROL REGISTER
 004770  040204                         BIC     R2,R4                   ;CLEAR UNWANTED BITS
 004772  020504                         CMP     R5,R4                   ;ARE EXPECTED AND RECEIVED VALUES THE SAME ?
 004774  001401                         BEQ     1$
 004776  104003                         HLT     3                       ;TRANSMITTER CONTROL REGISTER DATA ERROR
 005000  040513                 1$:     BIC     R5,(R3)                 ;CLEAR BITS SET
                                                                        ;IN TRANSMITTER CONTROL REGISTER
 005002  011304                         MOV     (R3),R4                 ;READ TRANSMITTER CONTROL REGISTER
 005004  040204                         BIC     R2,R4                   ;CLEAR UNWANTED BITS
 005006  005005                         CLR     R5                      ;(R5)=EXPECTED CONTENTS
                                                                        ;OF TRANSMITTER CONTROL REGISTER, 0
 005010  020504                         CMP     R5,R4                   ;WAS TRANSMITTER CONTROL CLEARED
 005012  001401                         BEQ     2$
 005014  104003                         HLT     3                       ;TRANSMITTER CONTROL REGISTER DATA ERROR
 005016  104400                 2$:     SCOPE                           ;CHECK FOR ITERATIONS, LOOP

                                        ;TRANSMITTER CONTROL REGISTER READ/WRITE TEST
                                        ;SET BIT6, VERIFY BIT6 WAS SET
                                        ;CLEAR BIT6, VERIFY BIT6 WAS CLEARED

                                ;  TEST 30
                                ;*************************************************************************
 005020  012737  000030  001226 TST30:  MOV     #30,TSTNO
 005026  012737  005104  001216         MOV     #TST31,NEXT
 005034  013703  001364                 MOV     DGTCSR,R3               ;LOAD R3 WITH ADDRESS
                                                                        ;OF TRANSMITTER CONTROL REGISTER
 005040  012702  001400                 MOV     #1400,R2                ;LOAD R2 WITH 1400
                                                                        ;TO CLEAR UNWANTED BITS
```

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 2001  005044  012705  000100                MOV     #BIT6,R5        ;TRANSMITTER CONTROL REGISTER WILL
 2002                                                                  ;BE SET TO BIT6
 2003  005050  010513                        MOV     R5,(R3)         ;LOAD TRANSMITTER CONTROL
 2004  005052  011304                        MOV     (R3),R4         ;(R4)=ACTUAL DATA
 2005                                                                  ;IN TRANSMITTER CONTROL REGISTER
 2006  005054  040204                        BIC     R2,R4           ;CLEAR UNWANTED BITS
 2007  005056  020504                        CMP     R5,R4           ;ARE EXPECTED AND RECEIVED VALUES THE SAME ?
 2008  005060  001401                        BEQ     1$
 2009  005062  104003                        HLT     3               ;TRANSMITTER CONTROL REGISTER DATA ERROR
 2010  005064  040513              1$:       BIC     R5,(R3)         ;CLEAR BITS SET
 2011                                                                  ;IN TRANSMITTER CONTROL REGISTER
 2012  005066  011304                        MOV     (R3),R4         ;READ TRANSMITTER CONTROL REGISTER
 2013  005070  040204                        BIC     R2,R4           ;CLEAR UNWANTED BITS
 2014  005072  005005                        CLR     R5              ;(R5)=EXPECTED CONTENTS
 2015                                                                  ;OF TRANSMITTER CONTROL REGISTER, 0
 2016  005074  020504                        CMP     R5,R4           ;WAS TRANSMITTER CONTROL CLEARED
 2017  005076  001401                        BEQ     2$
 2018  005100  104003                        HLT     3               ;TRANSMITTER CONTROL REGISTER DATA ERROR
 2019  005102  104400              2$:       SCOPE                   ;CHECK FOR ITERATIONS, LOOP
 2020
 2021                                        ;TRANSMITTER CONTROL REGISTER READ/WRITE TEST
 2022                                        ;SET BIT7, VERIFY BIT7 WAS SET
 2023                                        ;CLEAR BIT7, VERIFY BIT7 WAS CLEARED
 2024
 2025                                ;  TEST 31
 2026                                ;*****************************************************************
 2027  005104  012737  000031  001226 TST31:  MOV     #31,TSTNO
 2028  005112  012737  005170  001216         MOV     #CHKBA2,NEXT
 2029  005120  013703  001364                MOV     DQTCSR,R3       ;LOAD R3 WITH ADDRESS
 2030                                                                  ;OF TRANSMITTER CONTROL REGISTER
 2031  005124  012702  001400                MOV     #1400,R2        ;LOAD R2 WITH 1400
 2032                                                                  ;TO CLEAR UNWANTED BITS
 2033  005130  012705  000200                MOV     #BIT7,R5        ;TRANSMITTER CONTROL REGISTER WILL
 2034                                                                  ;BE SET TO BIT7
 2035  005134  010513                        MOV     R5,(R3)         ;LOAD TRANSMITTER CONTROL
 2036  005136  011304                        MOV     (R3),R4         ;(R4)=ACTUAL DATA
 2037                                                                  ;IN TRANSMITTER CONTROL REGISTER
 2038  005140  040204                        BIC     R2,R4           ;CLEAR UNWANTED BITS
 2039  005142  020504                        CMP     R5,R4           ;ARE EXPECTED AND RECEIVED VALUES THE SAME ?
 2040  005144  001401                        BEQ     1$
 2041  005146  104003                        HLT     3               ;TRANSMITTER CONTROL REGISTER DATA ERROR
 2042  005150  040513              1$:       BIC     R5,(R3)         ;CLEAR BITS SET
 2043                                                                  ;IN TRANSMITTER CONTROL REGISTER
 2044  005152  011304                        MOV     (R3),R4         ;READ TRANSMITTER CONTROL REGISTER
 2045  005154  040204                        BIC     R2,R4           ;CLEAR UNWANTED BITS
 2046  005156  005005                        CLR     R5              ;(R5)=EXPECTED CONTENTS
 2047                                                                  ;OF TRANSMITTER CONTROL REGISTER, 0
 2048  005160  020504                        CMP     R5,R4           ;WAS TRANSMITTER CONTROL CLEARED
 2049  005162  001401                        BEQ     2$
 2050  005164  104003                        HLT     3               ;TRANSMITTER CONTROL REGISTER DATA ERROR
 2051  005166  104400              2$:       SCOPE                   ;CHECK FOR ITERATIONS, LOOP
 2052
 2053                                        ;IF DATASET CONTROL OPTION IS INSTALLED,
 2054                                        ;TEST 32 AND TEST 33 WILL BE EXECUTED
 2055
 2056  005170  032737  010000  001510 CHKBA2: BIT     #BABIT,DQSTAT
```

```
                                        BNE     .+6
                                        JMP     CHKBA3
                                
                                        ;TRANSMITTER CONTROL REGISTER READ/WRITE TEST
                                        ;SET BIT8 IN TRANSMITER CONTROL REGISTER
                                        ;VERIFY THAT BIT8,BIT 10 AND BIT11 ARE SET
                                        ;CLEAR BIT8
                                        ;VERIFY THAT BIT8,BIT 10 AND BIT11 WERE CLEARED
                                
                                ;  TEST 32
                                ;*************************************************************************
005204  012737  000032  001226  TST32:  MOV     #32,TSTNO
005212  012737  005366  001216          MOV     #TST33,NEXT
005220  013703  001364                  MOV     DQTCSR,R3               ;ADDRESS OF TRANSMITTER CONTROL REGISTER
005224  012705  000400                  MOV     #BIT8,R5                        ;(R5)=BIT8
005230  010513                          MOV     R5,(R3)                 ;LOAD TRANSMITTER CONTROL REGISTER
005232  112777  000012  174130          MOVB    #12,@DQREG              ;TRY TO SEL MISC REGISTER
005240  012777  000002  174124          MOV     #2,@DQSEC               ;TRY TO SET AUTO/STEP
005246  005277  174120                  INC     @DQSEC                  ;CLOCK UP!!
005252  005377  174114                  DEC     @DQSEC                  ;CLOCK DN!!
005256  004737  005524                  JSR     PC,DELAY                ;DELAY FOR REAL CABLE.
005262  011304                          MOV     (R3),R4                 ;READ TRANSMITTER CONTROL REGISTER
005264  032737  040000  001510          BIT     #JUMBIT,DQSTAT          ;IS TEST JUMPER INSTALLED
005272  001404                          BEQ     .+12                    ;BR IF NO JUMPER
005274  052705  006000                  BIS     #BIT10+BIT11,R5                 ;EXPECT BIT8,BIT 10 AND BIT11
005300  052705  100000                  BIS     #BIT15,R5               ;ADJUST EXPECTED RESULTS.
                                                                        ;FOR DATA SET INTR
005304  020504                          CMP     R5,R4                   ;ARE EXPECTED AND RECEIVED DATA THE SAME ?
005306  001401                          BEQ     1$
005310  104003                          HLT     3                       ;TRANSMITTER CONTROL REGISTER DATA ERROR
005312  042713  000400          1$:     BIC     #BIT8,(R3)              ;CLEAR BIT8
005316  112777  000012  174044          MOVB    #12,@DQREG              ;TRY AND SELECT THE MISC REG
005324  012777  000002  174040          MOV     #2,@DQSEC               ;TRY AND SET AUTO/STEP TO STEP
005332  005277  174034                  INC     @DQSEC                  ;SET CLOCK UP!
005336  005377  174030                  DEC     @DQSEC                  ;   CLOCK DOWN!
005342  004737  005524                  JSR     PC,DELAY                ;DELAY.
005346  011304                          MOV     (R3),R4                 ;READ TRANSMITTER CONTROL REGISTER
005350  042704  100000                  BIC     #BIT15,R4               ;IGNORE BIT 15 FOR NOW.
005354  005005                          CLR     R5                      ;EXPECT 0
005356  020504                          CMP     R5,R4                   ;WAS TRANSMITTER CONTROL REGISTER CLEARED
005360  001401                          BEQ     2$                      ;BR IF GOOD
005362  104003                          HLT     3                       ;TRANSMITTER CONTROL REGISTER DATA ERROR
005364  104400          2$:     SCOPE                                   ;CHECK FOR ITERATIONS, LOOP
                                
                                        ;TRANSMITTER CONTROL REGISTER READ/WRITE TEST
                                        ;SET BIT9 IN TRANSMITER CONTROL REGISTER
                                        ;VERIFY THAT BIT9,BIT12 AND BIT13 ARE SET
                                        ;CLEAR BIT9
                                        ;VERIFY THAT BIT9,BIT12 AND BIT13 WERE CLEARED
                                
                                ;  TEST 33
                                ;*************************************************************************
005366  012737  000033  001226  TST33:  MOV     #33,TSTNO
005374  012737  005540  001216          MOV     #TST34,NEXT
005402  013703  001364                  MOV     DQTCSR,R3               ;ADDRESS OF TRANSMITTER CONTROL REGISTER
005406  012705  001000                  MOV     #BIT9,R5                        ;(R5)=BIT9
```

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 2113  005412  010513                        MOV     R5,(R3)         ;LOAD TRANSMITTER CONTROL REGISTER
 2114  005414  004737  005524                JSR     PC,DELAY        ;DELAY FOR REAL CABLE.
 2115  005420  011304                        MOV     (R3),R4         ;READ TRANSMITTER CONTROL REGISTER
*2116  005422  032737  040000  001510        BIT     #JUMBIT,DQSTAT  ;IS TEST JUMPER INSTALLED
 2117  005430  001404                        BEQ     .+12            ;BR IF NO JUMPER
 2118  005432  052705  030000                BIS     #BIT12+BIT13,R5         ;EXPECT BIT9,BIT12 AND BIT13
 2119  005436  052705  100000                BIS     #BIT15,R5       ;ADJUST EXPECTED RESULTS.
 2120                                                                ;FOR DATA SET INTR
 2121  005442  020504                        CMP     R5,R4           ;ARE EXPECTED AND RECEIVED DATA THE SAME ?
 2122  005444  001401                        BEQ     1$
 2123  005446  104003                        HLT     3               ;TRANSMITTER CONTROL REGISTER DATA ERROR
 2124  005450  042713  001000          1$:   BIC     #BIT9,(R3)      ;CLEAR BIT9
 2125  005454  112777  000012  173706        MOVB    #12,@DQREG      ;TRY AND SELECT THE MISC REG
 2126  005462  012777  000002  173702        MOV     #2,@DQSEC       ;TRY AND SET AUTO/STEP TO STEP
 2127  005470  005277  173676                INC     @DQSEC          ;SET CLOCK UP!
 2128  005474  005377  173672                DEC     @DQSEC          ;   CLOCK DOWN!
 2129  005500  004737  005524                JSR     PC,DELAY        ;DELAY.
 2130  005504  011304                        MOV     (R3),R4         ;READ TRANSMITTER CONTROL REGISTER
 2131  005506  042704  100000                BIC     #BIT15,R4       ;IGNORE BIT 15 FOR NOW.
 2132  005512  005005                        CLR     R5              ;EXPECT 0
 2133  005514  020504                        CMP     R5,R4           ;WAS TRANSMITTER CONTROL REGISTER CLEARED
 2134  005516  001401                        BEQ     2$              ;BR IF GOOD
 2135  005520  104003                        HLT     3               ;TRANSMITTER CONTROL REGISTER DATA ERROR
 2136  005522  104400                2$:     SCOPE                   ;CHECK FOR ITERATIONS, LOOP
 2137  005524  010046          DELAY:  MOV     R0,-(SP)        ;SAVE R0 ON THE STACK
 2138  005526  005000                        CLR     R0              ;ZERO R0
 2139  005530  105200                        INCB    R0              ;DELAY...
 2140  005532  100376                        BPL     .-2             ;DONE YET?
 2141  005534  012600                        MOV     (SP)+,R0        ;RESTORE R0
 2142  005536  000207                        RTS     PC              ;RETURN.
 2143
 2144                                        ;READ WRITE TEST OF BIT 15 OF TRANSMITTER CSR.
 2145                                        ;SET BIT 15 VERIFY SET; CLEAR BIT 15 VERIFY CLEARED.
 2146
 2147                                ;  TEST 34
 2148                                ;*****************************************************************************
 2149  005540  012737  000034  001226  TST34:  MOV     #34,TSTNO
 2150  005546  012737  005626  001216          MOV     #CHKBA3,NEXT
 2151  005554  013703  001364                MOV     DQTCSR,R3       ;GET TX CSR
 2152  005560  005005                        CLR     R5
 2153  005562  005013                        CLR     (R3)            ;CLR TX CSR
 2154  005564  005013                        CLR     (R3)            ;DO IT AGAIN.
 2155  005566  011304                        MOV     (R3),R4         ;READ TX CSR
 2156  005570  001401                        BEQ     1$
 2157  005572  104003                        HLT     3               ;TX CSR NO ZERO.
 2158  005574  052705  100000          1$:   BIS     #BIT15,R5       ;SET EXPECETD.
 2159  005600  010513                        MOV     R5,(R3)         ;SET BIT 15
 2160  005602  011304                        MOV     (R3),R4         ;READ CSR.
 2161  005604  020504                        CMP     R5,R4           ;EXPECTED=RECEIVED?
 2162  005606  001401                        BEQ     2$
 2163  005610  104003                        HLT     3               ;TRANSMITTER DATA ERROR.
 2164  005612  005005                2$:     CLR     R5              ;SET EXPECETD
 2165  005614  010513                        MOV     R5,(R3)         ;CLEAR BIT 15
 2166  005616  011304                        MOV     (R3),R4         ;READ CSR
 2167  005620  001401                        BEQ     .+4
 2168  005622  104003                        HLT     3               ;TX CSR NOT ZERO
```

```
                                        SCOPE

                                        ;IF DATASET CONTROL OPTION IS NOT INSTALLED,
                                        ;TEST 35 WILL BE EXECUTED

005626  032737  010000  001510  CHKBA3: BIT     #BABIT,DQSTAT
005634  001017                  BNE     TST36

                                        ;IF DATASET CONTROL OPTION IS NOT INSTALLED,
                                        ;THE WHOLE UPPER BYTE OF THE TX CSR SHOULD BE
                                        ;EQUAL TO ZERO.

                                ;  TEST 35
                                ;*************************************************************************
005636  012737  000035  001226  TST35:  MOV     #35,TSTNO
005644  012737  005674  001216          MOV     #TST36,NEXT
005652  013703  001364                  MOV     DQTCSR,R3               ;LOAD REG
005656  005005                          CLR     R5                      ;SET EXPECTED.
005660  012713  177400                  MOV     #177400,(R3)            ;SET UPPER BYTE TO ALL 1'S
005664  011304                          MOV     (R3),R4                 ;READ IT BACK.
005666  001401                          BEQ     .+4
005670  104003                          HLT     3                       ;TRANSMITTER CSR NOT ZERO.
005672  104400                  1$:     SCOPE


                                        ;ERROR REGISTER READ/WRITE TEST
                                        ;SET BIT0, VERIFY BIT0 AND BIT15 WERE SET
                                        ;CLEAR BIT0, VERIFY BIT0 AND BIT15 WERE CLEARED

                                ;  TEST 36
                                ;*************************************************************************
005674  012737  000036  001226  TST36:  MOV     #36,TSTNO
005702  012737  005764  001216          MOV     #TST37,NEXT
005710  013703  001366                  MOV     DQERR,R3                ;LOAD R3 WITH ADDRESS
                                                                        ;OF ERROR REGISTER
005714  012702  060000                  MOV     #60000,R2               ;LOAD R2 WITH 60000
                                                                        ;TO CLEAR UNWANTED BITS
005720  012705  000001                  MOV     #BIT0,R5                ;ERROR REGISTER WILL
                                                                        ;BE SET TO BIT0
005724  010513                          MOV     R5,(R3)                 ;LOAD ERROR
005726  011304                          MOV     (R3),R4                 ;(R4)=ACTUAL DATA
                                                                        ;IN ERROR REGISTER
005730  052705  100000                  BIS     #BIT15,R5               ;EXPECT BIT15 TO BE SET ALSO
005734  040204                          BIC     R2,R4                   ;CLEAR UNWANTED BITS
005736  020504                          CMP     R5,R4                   ;ARE EXPECTED AND RECEIVED VALUES THE SAME ?
005740  001401                          BEQ     1$
005742  104004                          HLT     4                       ;ERROR REGISTER DATA ERROR
005744  040513                  1$:     BIC     R5,(R3)                 ;CLEAR BITS SET
                                                                        ;IN ERROR REGISTER
005746  011304                          MOV     (R3),R4                 ;READ ERROR REGISTER
005750  040204                          BIC     R2,R4                   ;CLEAR UNWANTED BITS
005752  005005                          CLR     R5                      ;(R5)=EXPECTED CONTENTS
                                                                        ;OF ERROR REGISTER, 0
005754  020504                          CMP     R5,R4                   ;WAS ERROR CLEARED
005756  001401                          BEQ     2$
005760  104004                          HLT     4                       ;ERROR REGISTER DATA ERROR
```

```
2225  005762  104400                  2$:     SCOPE                           ;CHECK FOR ITERATIONS, LOOP
2226
2227                                          ;ERROR REGISTER READ/WRITE TEST
2228                                          ;SET BIT1, VERIFY BIT1 AND BIT15 WERE SET
2229                                          ;CLEAR BIT1, VERIFY BIT1 AND BIT15 WERE CLEARED
2230
2231                                  ;  TEST 37
2232                                  ;*****************************************************************
2233  005764  012737  000037  001226  TST37:  MOV     #37,TSTNO
2234  005772  012737  006054  001216          MOV     #TST40,NEXT
2235  006000  013703  001366                  MOV     DQERR,R3                ;LOAD R3 WITH ADDRESS
2236                                                                          ;OF ERROR REGISTER
2237  006004  012702  060000                  MOV     #60000,R2               ;LOAD R2 WITH 60000
2238                                                                          ;TO CLEAR UNWANTED BITS
2239  006010  012705  000002                  MOV     #BIT1,R5                ;ERROR REGISTER WILL
2240                                                                          ;BE SET TO BIT1
2241  006014  010513                          MOV     R5,(R3)                 ;LOAD ERROR
2242  006016  011304                          MOV     (R3),R4                 ;(R4)=ACTUAL DATA
2243                                                                          ;IN ERROR REGISTER
2244  006020  052705  100000                  BIS     #BIT15,R5               ;EXPECT BIT15 TO BE SET ALSO
2245  006024  040204                          BIC     R2,R4                   ;CLEAR UNWANTED BITS
2246  006026  020504                          CMP     R5,R4                   ;ARE EXPECTED AND RECEIVED VALUES THE SAME ?
2247  006030  001401                          BEQ     1$
2248  006032  104004                          HLT     4                       ;ERROR REGISTER DATA ERROR
2249  006034  040513                  1$:     BIC     R5,(R3)                 ;CLEAR BITS SET
2250                                                                          ;IN ERROR REGISTER
2251  006036  011304                          MOV     (R3),R4                 ;READ ERROR REGISTER
2252  006040  040204                          BIC     R2,R4                   ;CLEAR UNWANTED BITS
2253  006042  005005                          CLR     R5                      ;(R5)=EXPECTED CONTENTS
2254                                                                          ;OF ERROR REGISTER, 0
2255  006044  020504                          CMP     R5,R4                   ;WAS ERROR CLEARED
2256  006046  001401                          BEQ     2$
2257  006050  104004                          HLT     4                       ;ERROR REGISTER DATA ERROR
2258  006052  104400                  2$:     SCOPE                           ;CHECK FOR ITERATIONS, LOOP
2259
2260                                          ;ERROR REGISTER READ/WRITE TEST
2261                                          ;SET BIT2, VERIFY BIT2 AND BIT15 WERE SET
2262                                          ;CLEAR BIT2, VERIFY BIT2 AND BIT15 WERE CLEARED
2263
2264                                  ;  TEST 40
2265                                  ;*****************************************************************
2266  006054  012737  000040  001226  TST40:  MOV     #40,TSTNO
2267  006062  012737  006144  001216          MOV     #TST41,NEXT
2268  006070  013703  001366                  MOV     DQERR,R3                ;LOAD R3 WITH ADDRESS
2269                                                                          ;OF ERROR REGISTER
2270  006074  012702  060000                  MOV     #60000,R2               ;LOAD R2 WITH 60000
2271                                                                          ;TO CLEAR UNWANTED BITS
2272  006100  012705  000004                  MOV     #BIT2,R5                ;ERROR REGISTER WILL
2273                                                                          ;BE SET TO BIT2
2274  006104  010513                          MOV     R5,(R3)                 ;LOAD ERROR
2275  006106  011304                          MOV     (R3),R4                 ;(R4)=ACTUAL DATA
2276                                                                          ;IN ERROR REGISTER
2277  006110  052705  100000                  BIS     #BIT15,R5               ;EXPECT BIT15 TO BE SET ALSO
2278  006114  040204                          BIC     R2,R4                   ;CLEAR UNWANTED BITS
2279  006116  020504                          CMP     R5,R4                   ;ARE EXPECTED AND RECEIVED VALUES THE SAME ?
2280  006120  001401                          BEQ     1$
```

```
2281  006122  104004                          HLT     4                       ;ERROR REGISTER DATA ERROR
2282  006124  040513                  1$:     BIC     R5,(R3)                 ;CLEAR BITS SET
2283                                                                          ;IN ERROR REGISTER
2284  006126  011304                          MOV     (R3),R4                 ;READ ERROR REGISTER
2285  006130  040204                          BIC     R2,R4                   ;CLEAR UNWANTED BITS
2286  006132  005005                          CLR     R5                      ;(R5)=EXPECTED CONTENTS
2287                                                                          ;OF ERROR REGISTER, 0
2288  006134  020504                          CMP     R5,R4                   ;WAS ERROR CLEARED
2289  006136  001401                          BEQ     2$
2290  006140  104004                          HLT     4                       ;ERROR REGISTER DATA ERROR
2291  006142  104400                  2$:     SCOPE                           ;CHECK FOR ITERATIONS, LOOP
2292
2293                                          ;ERROR REGISTER READ/WRITE TEST
2294                                          ;SET BIT3, VERIFY BIT3 AND BIT15 WERE SET
2295                                          ;CLEAR BIT3, VERIFY BIT3 AND BIT15 WERE CLEARED
2296
2297                                  ;  TEST 41
2298                                  ;*************************************************************************
2299  006144  012737  000041  001226  TST41:  MOV     #41,TSTNO
2300  006152  012737  006234  001216          MOV     #TST42,NEXT
2301  006160  013703  001366                  MOV     DQERR,R3                ;LOAD R3 WITH ADDRESS
2302                                                                          ;OF ERROR REGISTER
2303  006164  012702  060000                  MOV     #60000,R2               ;LOAD R2 WITH 60000
2304                                                                          ;TO CLEAR UNWANTED BITS
2305  006170  012705  000010                  MOV     #BIT3,R5                ;ERROR REGISTER WILL
2306                                                                          ;BE SET TO BIT3
2307  006174  010513                          MOV     R5,(R3)                 ;LOAD ERROR
2308  006176  011304                          MOV     (R3),R4                 ;(R4)=ACTUAL DATA
2309                                                                          ;IN ERROR REGISTER
2310  006200  052705  100000                  BIS     #BIT15,R5               ;EXPECT BIT15 TO BE SET ALSO
2311  006204  040204                          BIC     R2,R4                   ;CLEAR UNWANTED BITS
2312  006206  020504                          CMP     R5,R4                   ;ARE EXPECTED AND RECEIVED VALUES THE SAME ?
2313  006210  001401                          BEQ     1$
2314  006212  104004                          HLT     4                       ;ERROR REGISTER DATA ERROR
2315  006214  040513                  1$:     BIC     R5,(R3)                 ;CLEAR BITS SET
2316                                                                          ;IN ERROR REGISTER
2317  006216  011304                          MOV     (R3),R4                 ;READ ERROR REGISTER
2318  006220  040204                          BIC     R2,R4                   ;CLEAR UNWANTED BITS
2319  006222  005005                          CLR     R5                      ;(R5)=EXPECTED CONTENTS
2320                                                                          ;OF ERROR REGISTER, 0
2321  006224  020504                          CMP     R5,R4                   ;WAS ERROR CLEARED
2322  006226  001401                          BEQ     2$
2323  006230  104004                          HLT     4                       ;ERROR REGISTER DATA ERROR
2324  006232  104400                  2$:     SCOPE                           ;CHECK FOR ITERATIONS, LOOP
2325
2326                                          ;ERROR REGISTER READ/WRITE TEST
2327                                          ;SET BIT4, VERIFY BIT4 AND BIT15 WERE SET
2328                                          ;CLEAR BIT4, VERIFY BIT4 AND BIT15 WERE CLEARED
2329
2330                                  ;  TEST 42
2331                                  ;*************************************************************************
2332  006234  012737  000042  001226  TST42:  MOV     #42,TSTNO
2333  006242  012737  006324  001216          MOV     #TST43,NEXT
2334  006250  013703  001366                  MOV     DQERR,R3                ;LOAD R3 WITH ADDRESS
2335                                                                          ;OF ERROR REGISTER
2336  006254  012702  060000                  MOV     #60000,R2               ;LOAD R2 WITH 60000
```

```
2337
2338  006260  012705  000020                    MOV     #BIT4,R5        ;TO CLEAR UNWANTED BITS
2339                                                                      ;ERROR REGISTER WILL
2340  006264  010513                            MOV     R5,(R3)         ;BE SET TO BIT4
2341  006266  011304                            MOV     (R3),R4         ;LOAD ERROR
2342                                                                      ;(R4)=ACTUAL DATA
2343  006270  052705  100000                    BIS     #BIT15,R5       ;IN ERROR REGISTER
2344  006274  040204                            BIC     R2,R4           ;EXPECT BIT15 TO BE SET ALSO
2345  006276  020504                            CMP     R5,R4           ;CLEAR UNWANTED BITS
2346  006300  001401                            BEQ     1$              ;ARE EXPECTED AND RECEIVED VALUES THE SAME ?
2347  006302  104004                            HLT     4
2348  006304  040513                    1$:     BIC     R5,(R3)         ;ERROR REGISTER DATA EPROR
2349                                                                      ;CLEAR BITS SET
2350  006306  011304                            MOV     (R3),R4         ;IN ERROR REGISTER
2351  006310  040204                            BIC     R2,R4           ;READ ERROR REGISTER
2352  006312  005005                            CLR     R5              ;CLEAR UNWANTED BITS
2353                                                                      ;(R5)=EXPECTED CONTENTS
2354  006314  020504                            CMP     R5,R4           ;OF ERROR REGISTER, 0
2355  006316  001401                            BEQ     2$              ;WAS ERROR CLEARED
2356  006320  104004                            HLT     4
2357  006322  104400                    2$:     SCOPE                   ;ERROR REGISTER DATA ERROR
2358                                                                      ;CHECK FOR ITERATIONS, LOOP
2359                                            ;ERROR REGISTER READ/WRITE TEST
2360                                            ;SET BIT5, VERIFY BIT5 AND BIT15 WERE SET
2361                                            ;CLEAR BIT5, VERIFY BIT5 AND BIT15 WERE CLEARED
2362
2363                                    ;  TEST 43
2364                                    ;*************************************************************
2365  006324  012737  000043  001226    TST43:  MOV     #43,TSTNO
2366  006332  012737  006414  001216            MOV     #TST44,NEXT
2367  006340  013703  001366                    MOV     DQERR,R3        ;LOAD R3 WITH ADDRESS
2368                                                                      ;OF ERROR REGISTER
2369  006344  012702  060000                    MOV     #60000,R2       ;LOAD R2 WITH 60000
2370                                                                      ;TO CLEAR UNWANTED BITS
2371  006350  012705  000040                    MOV     #BIT5,R5        ;ERROR REGISTER WILL
2372                                                                      ;BE SET TO BIT5
2373  006354  010513                            MOV     R5,(R3)         ;LOAD ERROR
2374  006356  011304                            MOV     (R3),R4         ;(R4)=ACTUAL DATA
2375                                                                      ;IN ERROR REGISTER
2376  006360  052705  100000                    BIS     #BIT15,R5       ;EXPECT BIT15 TO BE SET ALSO
2377  006364  040204                            BIC     R2,R4           ;CLEAR UNWANTED BITS
2378  006366  020504                            CMP     R5,R4           ;ARE EXPECTED AND RECEIVED VALUES THE SAME ?
2379  006370  001401                            BEQ     1$
2380  006372  104004                            HLT     4               ;ERROR REGISTER DATA ERROR
2381  006374  040513                    1$:     BIC     R5,(R3)         ;CLEAR BITS SET
2382                                                                      ;IN ERROR REGISTER
2383  006376  011304                            MOV     (R3),R4         ;READ ERROR REGISTER
2384  006400  040204                            BIC     R2,R4           ;CLEAR UNWANTED BITS
2385  006402  005005                            CLR     R5              ;(R5)=EXPECTED CONTENTS
2386                                                                      ;OF ERROR REGISTER, 0
2387  006404  020504                            CMP     R5,R4           ;WAS ERROR CLEARED
2388  006406  001401                            BEQ     2$
2389  006410  104004                            HLT     4               ;ERROR REGISTER DATA ERROR
2390  006412  104400                    2$:     SCOPE                   ;CHECK FOR ITERATIONS, LOOP
2391
2392                                            ;ERROR REGISTER READ-WRITE TEST
```

```
                                        ;SET BIT6, VERIFY BIT6 AND BIT15 WERE SET
                                        ;CLEAR BIT6, VERIFY BIT6 AND BIT15 WERE CLEARED

                                ;  TEST 44
                                ;*****************************************************************
006414  012737  000044  001226  TST44:  MOV     #44,TSTNO
006422  012737  006504  001216          MOV     #TST45,NEXT
006430  013703  001366                  MOV     DQERR,R3        ;LOAD R3 WITH ADDRESS
                                                                ;OF ERROR REGISTER
006434  012702  060000                  MOV     #60000,R2       ;LOAD R2 WITH 60000
                                                                ;TO CLEAR UNWANTED BITS
006440  012705  000100                  MOV     #BIT6,R5        ;ERROR REGISTER WILL
                                                                ;BE SET TO BIT6
006444  010513                          MOV     R5,(R3)         ;LOAD ERROR
006446  011304                          MOV     (R3),R4         ;(R4)=ACTUAL DATA
                                                                ;IN ERROR REGISTER
006450  052705  100000                  BIS     #BIT15,R5       ;EXPECT BIT15 TO BE SET ALSO
006454  040204                          BIC     R2,R4           ;CLEAR UNWANTED BITS
006456  020504                          CMP     R5,R4           ;ARE EXPECTED AND RECEIVED VALUES THE SAME ?
006460  001401                          BEQ     1$
006462  104004                          HLT     4               ;ERROR REGISTER DATA ERROR
006464  040513                  1$:     BIC     R5,(R3)         ;CLEAR BITS SET
                                                                ;IN ERROR REGISTER
006466  011304                          MOV     (R3),R4         ;READ ERROR REGISTER
005470  040204                          BIC     R2,R4           ;CLEAR UNWANTED BITS
006472  005005                          CLR     R5              ;(R5)=EXPECTED CONTENTS
                                                                ;OF ERROR REGISTER, 0
005474  020504                          CMP     R5,R4           ;WAS ERROR CLEARED
005476  001401                          BEQ     2$
006500  104004                          HLT     4               ;ERROR REGISTER DATA ERROR
006502  104400                  2$:     SCOPE                   ;CHECK FOR ITERATIONS, LOOP

                                        ;ERROR REGISTER READ/WRITE TEST
                                        ;SET BIT7, VERIFY BIT7 AND BIT15 WERE SET
                                        ;CLEAR BIT7, VERIFY BIT7 AND BIT15 WERE CLEARED

                                ;  TEST 45
                                ;*****************************************************************
006504  012737  000045  001226  TST45:  MOV     #45,TSTNO
006512  012737  006574  001216          MOV     #TST46,NEXT
006520  013703  001366                  MOV     DQERR,R3        ;LOAD R3 WITH ADDRESS
                                                                ;OF ERROR REGISTER
006524  012702  060000                  MOV     #60000,R2       ;LOAD R2 WITH 60000
                                                                ;TO CLEAR UNWANTED BITS
006530  012705  000200                  MOV     #BIT7,R5        ;ERROR REGISTER WILL
                                                                ;BE SET TO BIT7
006534  010513                          MOV     R5,(R3)         ;LOAD ERROR
006536  011304                          MOV     (R3),R4         ;(R4)=ACTUAL DATA
                                                                ;IN ERROR REGISTER
006540  052705  100000                  BIS     #BIT15,R5       ;EXPECT BIT15 TO BE SET ALSO
006544  040204                          BIC     R2,R4           ;CLEAR UNWANTED BITS
006546  020504                          CMP     R5,R4           ;ARE EXPECTED AND RECEIVED VALUES THE SAME ?
006550  001401                          BEQ     1$
006552  104004                          HLT     4               ;ERROR REGISTER DATA ERROR
006554  040513                  1$:     BIC     R5,(R3)         ;CLEAR BITS SET
                                                                ;IN ERROR REGISTER
```

```
2449  006556  011304                          MOV     (R3),R4                 ;READ ERROR REGISTER
2450  006560  040204                          BIC     R2,R4                   ;CLEAR UNWANTED BITS
2451  006562  005005                          CLR     R5                      ;(R5)=EXPECTED CONTENTS
2452                                                                          ;OF ERROR REGISTER, 0
2453  006564  020504                          CMP     R5,R4                   ;WAS ERROR CLEARED
2454  006566  001401                          BEQ     2$
2455  006570  104004                          HLT     4                       ;ERROR REGISTER DATA ERROR
2456  006572  104400                  2$:     SCOPE                           ;CHECK FOR ITERATIONS, LOOP
2457
2458                                          ;ERROR REGISTER READ/WRITE TEST
2459                                          ;SET BIT8, VERIFY BIT8 WAS SET
2460                                          ;CLEAR BIT8, VERIFY BIT8 WAS CLEARED
2461
2462                                  ;  TEST 46
2463                                  ;*************************************************************************
2464  006574  012737  000046  001226  TST46:  MOV     #46,TSTNO
2465  006602  012737  006660  001216          MOV     #TST47,NEXT
2466  006610  013703  001366                  MOV     DQERR,R3                ;LOAD R3 WITH ADDRESS
2467                                                                          ;OF ERROR REGISTER
2468  006614  012702  060000                  MOV     #60000,R2               ;LOAD R2 WITH 60000
2469                                                                          ;TO CLEAR UNWANTED BITS
2470  006620  012705  000400                  MOV     #BIT8,R5                ;ERROR REGISTER WILL
2471                                                                          ;BE SET TO BIT8
2472  006624  010513                          MOV     R5,(R3)                 ;LOAD ERROR
2473  006626  011304                          MOV     (R3),R4                 ;(R4)=ACTUAL DATA
2474                                                                          ;IN ERROR REGISTER
2475  006630  040204                          BIC     R2,R4                   ;CLEAR UNWANTED BITS
2476  006632  020504                          CMP     R5,R4                   ;ARE EXPECTED AND RECEIVED VALUES THE SAME ?
2477  006634  001401                          BEQ     1$
2478  006636  104004                          HLT     4                       ;ERROR REGISTER DATA ERROR
2479  006640  040513                  1$:     BIC     R5,(R3)                 ;CLEAR BITS SET
2480                                                                          ;IN ERROR REGISTER
2481  006642  011304                          MOV     (R3),R4                 ;READ ERROR REGISTER
2482  006644  040204                          BIC     R2,R4                   ;CLEAR UNWANTED BITS
2483  006646  005005                          CLR     R5                      ;(R5)=EXPECTED CONTENTS
2484                                                                          ;OF ERROR REGISTER, 0
2485  006650  020504                          CMP     R5,R4                   ;WAS ERROR CLEARED
2486  006652  001401                          BEQ     2$
2487  006654  104004                          HLT     4                       ;ERROR REGISTER DATA ERROR
2488  006656  104400                  2$:     SCOPE                           ;CHECK FOR ITERATIONS, LOOP
2489
2490                                          ;ERROR REGISTER READ/WRITE TEST
2491                                          ;SET BIT9, VERIFY BIT9 WAS SET
2492                                          ;CLEAR BIT9, VERIFY BIT9 WAS CLEARED
2493
2494                                  ;  TEST 47
2495                                  ;*************************************************************************
2496  006660  012737  000047  001226  TST47:  MOV     #47,TSTNO
2497  006666  012737  006744  001216          MOV     #TST50,NEXT
2498  006674  013703  001366                  MOV     DQERR,R3                ;LOAD R3 WITH ADDRESS
2499                                                                          ;OF ERROR REGISTER
2500  006700  012702  060000                  MOV     #60000,R2               ;LOAD R2 WITH 60000
2501                                                                          ;TO CLEAR UNWANTED BITS
2502  006704  012705  001000                  MOV     #BIT9,R5                ;ERROR REGISTER WILL
2503                                                                          ;BE SET TO BIT9
2504  006710  010513                          MOV     R5,(R3)                 ;LOAD ERROR
```

```
2505  006712  011304                          MOV     (R3),R4                 ;(R4)=ACTUAL DATA
2506                                                                          ;IN ERROR REGISTER
2507  006714  040204                          BIC     R2,R4                   ;CLEAR UNWANTED BITS
2508  006716  020504                          CMP     R5,R4                   ;ARE EXPECTED AND RECEIVED VALUES THE SAME ?
2509  006720  001401                          BEQ     1$
2510  006722  104004                          HLT     4                       ;ERROR REGISTER DATA ERROR
2511  006724  040513                  1$:     BIC     R5,(R3)                 ;CLEAR BITS SET
2512                                                                          ;IN ERROR REGISTER
2513  006726  011304                          MOV     (R3),R4                 ;READ ERROR REGISTER
2514  006730  040204                          BIC     R2,R4                   ;CLEAR UNWANTED BITS
2515  006732  005005                          CLR     R5                      ;(R5)=EXPECTED CONTENTS
2516                                                                          ;OF ERROR REGISTER, 0
2517  006734  020504                          CMP     R5,R4                   ;WAS ERROR CLEARED
2518  006736  001401                          BEQ     2$
2519  006740  104004                          HLT     4                       ;ERROR REGISTER DATA ERROR
2520  006742  104400                  2$:     SCOPE                           ;CHECK FOR ITERATIONS, LOOP
2521
2522                                          ;ERROR REGISTER READ/WRITE TEST
2523                                          ;SET BIT10, VERIFY BIT10 WAS SET
2524                                          ;CLEAR BIT10, VERIFY BIT10 WAS CLEARED
2525
2526                                  ;  TEST 50
2527                                  ;*************************************************************************
2528  006744  012737  000050  001226  TST50:  MOV     #50,TSTNO
2529  006752  012737  007030  001216          MOV     #TST51,NEXT
2530  006760  013703  001366                  MOV     DQERR,R3                ;LOAD R3 WITH ADDRESS
2531                                                                          ;OF ERROR REGISTER
2532  006764  012702  060000                  MOV     #60000,R2               ;LOAD R2 WITH 60000
2533                                                                          ;TO CLEAR UNWANTED BITS
2534  006770  012705  002000                  MOV     #BIT10,R5               ;ERROR REGISTER WILL
2535                                                                          ;BE SET TO BIT10
2536  006774  010513                          MOV     R5,(R3)                 ;LOAD ERROR
2537  006776  011304                          MOV     (R3),R4                 ;(R4)=ACTUAL DATA
2538                                                                          ;IN ERROR REGISTER
2539  007000  040204                          BIC     R2,R4                   ;CLEAR UNWANTED BITS
2540  007002  020504                          CMP     R5,R4                   ;ARE EXPECTED AND RECEIVED VALUES THE SAME ?
2541  007004  001401                          BEQ     1$
2542  007006  104004                          HLT     4                       ;ERROR REGISTER DATA ERROR
2543  007010  040513                  1$:     BIC     R5,(R3)                 ;CLEAR BITS SET
2544                                                                          ;IN ERROR REGISTER
2545  007012  011304                          MOV     (R3),R4                 ;READ ERROR REGISTER
2546  007014  040204                          BIC     R2,R4                   ;CLEAR UNWANTED BITS
2547  007016  005005                          CLR     R5                      ;(R5)=EXPECTED CONTENTS
2548                                                                          ;OF ERROR REGISTER, 0
2549  007020  020504                          CMP     R5,R4                   ;WAS ERROR CLEARED
2550  007022  001401                          BEQ     2$
2551  007024  104004                          HLT     4                       ;ERROR REGISTER DATA ERROR
2552  007026  104400                  2$:     SCOPE                           ;CHECK FOR ITERATIONS, LOOP
2553
2554                                          ;ERROR REGISTER READ/WRITE TEST
2555                                          ;SET BIT11, VERIFY BIT11 WAS SET
2556                                          ;CLEAR BIT11, VERIFY BIT11 WAS CLEARED
2557
2558                                  ;  TEST 51
2559                                  ;*************************************************************************
2560  007030  012737  000051  001226  TST51:  MOV     #51,TSTNO
```

```
2561  007036  012737  007114  001216          MOV     #TST52,NEXT
2562  007044  013703  001366                  MOV     DQERR,R3        ;LOAD R3 WITH ADDRESS
2563                                                                  ;OF ERROR REGISTER
2564  007050  012702  060000                  MOV     #60000,R2       ;LOAD R2 WITH 60000
2565                                                                  ;TO CLEAR UNWANTED BITS
2566  007054  012705  004000                  MOV     #BIT11,R5       ;ERROR REGISTER WILL
2567                                                                  ;BE SET TO BIT11
2568  007060  010513                          MOV     R5,(R3)         ;LOAD ERROR
2569  007062  011304                          MOV     (R3),R4         ;(R4)=ACTUAL DATA
2570                                                                  ;IN ERROR REGISTER
2571  007064  040204                          BIC     R2,R4           ;CLEAR UNWANTED BITS
2572  007066  020504                          CMP     R5,R4           ;ARE EXPECTED AND RECEIVED VALUES THE SAME ?
2573  007070  001401                          BEQ     1$
2574  007072  104004                          HLT     4               ;ERROR REGISTER DATA ERROR
2575  007074  040513                  1$:     BIC     R5,(R3)         ;CLEAR BITS SET
2576                                                                  ;IN ERROR REGISTER
2577  007076  011304                          MOV     (R3),R4         ;READ ERROR REGISTER
2578  007100  040204                          BIC     R2,R4           ;CLEAR UNWANTED BITS
2579  007102  005005                          CLR     R5              ;(R5)=EXPECTED CONTENTS
2580                                                                  ;OF ERROR REGISTER, 0
2581  007104  020504                          CMP     R5,R4           ;WAS ERROR CLEARED
2582  007106  001401                          BEQ     2$
2583  007110  104004                          HLT     4               ;ERROR REGISTER DATA ERROR
2584  007112  104400                  2$:     SCOPE                   ;CHECK FOR ITERATIONS, LOOP
```

```
2595
2596                                    ;IF CHARACTER DETECT AND BCC OPTIONS ARE OR ARE NOT
2597                                    ;INSTALLED, TEST 52 WILL BE EXECUTED
2598
2599
2590                                    ;SECONDARY REGISTER ADDRESSING TEST
2591
2592                                ;  TEST 52
2593                                ;*****************************************************************
2594  007114  012737  000052  001226 TST52:  MOV     #52,TSTNO
2595  007122  012737  007240  001216         MOV     #OPT1,NEXT
2596  007130  012737  007202  001220         MOV     #2$,LOCK
2597  007136  012700  000010                MOV     #10,R0
2598  007142  012701  020016                MOV     #DATAB,R1               ;GET POINTER TO ADDRESS TEST DATA
2599  007146  005003                        CLR     R3                      ;FIRST SECONDARY REGISTER=0
2600  007150  012105                1$:     MOV     (R1)+,R5                ;GET DATA TO BE LOADE
2601  007152  110377  172212                MOVB    R3,@DQREG               ;SELECTED SECONDARY REGISTER
2602  007156  010577  172210                MOV     R5,@DQSEC               ;LOAD SECONDARY REGISTER
2603  007162  005203                        INC     R3                      ;ADDRESS OF NEXT SECONDARY REGISTER
2604  007164  005300                        DEC     R0                      ;CONTINUE IF NOT DONE
2605  007166  001370                        BNE     1$
2606  007170  012700  000010                MOV     #10,R0
2607  007174  012701  020016                MOV     #DATAB,R1               ;GET POINTER TO ADDRESSS TEST DATA
2608  007200  005003                        CLR     R3                      ;FIRST SECONDARY REGISTER TO BE CHECKED
2609  007202  110377  172162        2$:     MOVB    R3,@DQREG               ;SELECT SECONDARY REGISTER
2610  007206  017704  172160                MOV     @DQSEC,R4               ;READ SECONDARY REGISTER
2611  007212  011105                        MOV     (R1),R5                 ;GET TEST DATA
2612  007214  020504                        CMP     R5,R4                   ;CHECK DATA
2613  007216  001401                        BEQ     3$
2614  007220  104005                        HLT     5                       ;SECONDARY REGISTER ADDRESSING ERROR
2615  007222  104401                3$:     SCOP1                           ;CHECK FOR LOOP ON CURENT ADDRESS
2616  007224  005203                        INC     R3                      ;UPDATE ADDRESS
2617  007226  062701  000002                ADD     #2,R1                   ;UPDATE REGISTER DATA POINTER
2618  007232  005300                        DEC     R0                      ;CONTINUE IF NOT DONE
2619  007234  001362                        BNE     2$
2620  007236  104400                4$:     SCOPE                           ;CHECK FOR ITERATIONS, LOOP
2621
2622                                    ;IF CHARACTER DETECT OPTION IS INSTALLED,
2623                                    ;TEST 53 WILL BE EXECUTED
2624
2625  007240  032737  020000  001510 OPT1:   BIT     #BBBIT,DQSTAT
2626  007246  001005                        BNE     .+14
2627  007250  012737  007554  001214         MOV     #OPT2X,RETURN
2628  007256  000177  171732                JMP     @RETURN
2629
2630                                    ;SECONDARY REGISTER ADDRESSING TEST
2631
2632                                ;  TEST 53
2633                                ;*****************************************************************
2634  007262  012737  000053  001226 TST53:  MOV     #53,TSTNO
2635  007270  012737  007406  001216         MOV     #EOPT1,NEXT
2636  007276  012737  007350  001220         MOV     #2$,LOCK
2637  007304  012700  000015                MOV     #13.,R0
2638  007310  012701  020016                MOV     #DATAB,R1               ;GET POINTER TO ADDRESS TEST DATA
2639  007314  005003                        CLR     R3                      ;FIRST SECONDARY REGISTER=0
2640  007316  012105                1$:     MOV     (R1)+,R5                ;GET DATA TO BE LOADE
```

```
                                                MOVB    R3,@DQREG               ;SELECTED SECONDARY REGISTER
                                                MOV     R5,@DQSEC               ;LOAD SECONDARY REGISTER
                                                INC     R3                      ;ADDRESS OF NEXT SECONDARY REGISTER
                                                DEC     R0                      ;CONTINUE IF NOT DONE
                                                BNE     1$
                                                MOV     #13.,R0
                                                MOV     #DATAB,R1               ;GET POINTER TO ADDRESSS TEST DATA
                                                CLR     R3                      ;FIRST SECONDARY REGISTER TO BE CHECKED
                                2$:             MOVB    R3,@DQREG               ;SELECT SECONDARY REGISTER
                                                MOV     @DQSEC,R4               ;READ SECONDARY REGISTER
                                                MOV     (R1)+,R5                ;GET TEST DATA
                                                CMP     R5,R4                   ;CHECK DATA
                                                BEQ     3$
                                                HLT     5                       ;SECONDARY REGISTER ADDRESSING ERROR
                                3$:             SCOP1                           ;CHECK FOR LOOP ON CURENT ADDRESS
                                                INC     R3                      ;UPDATE ADDRESS
                                                ADD     #2,R1                   ;UPDATE REGISTER DATA POINTER
                                                DEC     R0                      ;CONTINUE IF NOT DONE
                                                BNE     2$
                                4$:             SCOPE                           ;CHECK FOR ITERATIONS, LOOP
001510                          EOPT1:  BIT     #ABBIT,@DQSTAT
                                        BNE     .+14
001214                                  MOV     #OPT2X,RETURN
                                        JMP     @RETURN


                                ;IF CHARACTER DETECT AND BCC OPTIONS ARE INSTALLED,
                                ;EXECUTE TEST 54


                                ;SECONDARY REGISTER ADDRESSING TEST

                                ;  TEST 54
                                ;*****************************************************************************
001225                  TST54:  MOV     #54,TSTNO
                                MOV     #TST55,NEXT
                                MOV     #2$,LOCK
                                MOV     #16.,R0
                                MOV     #DATAB,R1               ;GET POINTER TO ADDRESS TEST DATA
                                CLR     R3                      ;FIRST SECONDARY REGISTER=0
                        1$:     MOV     (R1)+,R5                ;GET DATA TO BE LOADE
                                MOVB    R3,@DQREG               ;SELECTED SECONDARY REGISTER
                                MOV     R5,@DQSEC               ;LOAD SECONDARY REGISTER
                                INC     R3                      ;ADDRESS OF NEXT SECONDARY REGISTER
                                DEC     R0                      ;CONTINUE IF NOT DONE
                                BNE     1$
                                MOV     #16.,R0
                                MOV     #DATAB,R1               ;GET POINTER TO ADDRESSS TEST DATA
                                CLR     R3                      ;FIRST SECONDARY REGISTER TO BE CHECKED
                        2$:     MOVB    R3,@DQREG               ;SELECT SECONDARY REGISTER
                                MOV     @DQSEC,R4               ;READ SECONDARY REGISTER
                                MOV     (R1),R5                 ;GET TEST DATA
                                CMP     R5,R4                   ;CHECK DATA
                                BEQ     3$
                                HLT     5                       ;SECONDARY REGISTER ADDRESSING ERROR
                        3$:     SCOP1                           ;CHECK FOR LOOP ON CURENT ADDRESS
```

```
 2697  007540  005203                        INC     R3              ;UPDATE ADDRESS
 2698  007542  062701  000002                ADD     #2,R1           ;UPDATE REGISTER DATA POINTER
 2699  007546  005300                        DEC     R0              ;CONTINUE IF NOT DONE
 2700  007550  001362                        BNE     2$
 2701  007552  104400              4$:       SCOPE                   ;CHECK FOR ITERATIONS, LOOP
 2702
```

```
                                OPT2%:

                                        ;SECONDARY REGISTER READ/WRITE TEST
                                        ;SET BIT0 IN SYNC REGISTER
                                        ;VERIFY THAT BIT0 WAS SET
                                        ;CLEAR BIT0
                                        ;VERIFY THAT BIT0 WAS CLEARED

                                ;  TEST 55
                                ;*************************************************************************
007554  012737  000055  001226  TST55:  MOV     #55,TSTNO
007562  012737  007644  001216          MOV     #TST56,NEXT
007570  012703  000011                  MOV     #11,R3                  ;ADDRESS OF SECONDARY REGISTER
                                                                        ;SYNC
007574  110377  171570                  MOVB    R3,@DQREG               ;SELECT SYNC REGISTER
007600  012705  000001                  MOV     #BIT0,R5                ;(R5)=BIT0
007604  010577  171562                  MOV     R5,@DQSEC               ;SET BIT0 IN
                                                                        ;SYNC REGISTER
007610  017704  171556                  MOV     @DQSEC,R4               ;(R4)=ACTUAL DATA IN
                                                                        ;SYNC REGISTER
007614  020504                          CMP     R5,R4                   ;ARE EXPECTED AND RECEIVED DATA THE SAME ?
007616  001401                          BEQ     1$                      ;BR IF GOOD
007620  104006                          HLT     6                       ;SECONDARY REGISTER DATA ERROR
007622  040577  171544          1$:     BIC     R5,@DQSEC               ;CLEAR BIT0
007626  017704  171540                  MOV     @DQSEC,R4               ;READ SYNC REGISTER
007632  005005                          CLR     R5                      ;EXPECT SYNC REGISTER
                                                                        ;TO CONTAIN 0
007634  020504                          CMP     R5,R4                   ;ARE EXPECTED AND RECEIVED DATA THE SAME ?
007636  001401                          BEQ     2$                      ;BR IF GOOD
007640  104006                          HLT     6                       ;SECONDARY REGISTER DATA ERROR
007642  104400                  2$:     SCOPE                           ;CHECK FOR ITERATIONS, LOOP

                                        ;SECONDARY REGISTER READ WRITE TEST
                                        ;SET BIT1 IN SYNC REGISTER
                                        ;VERIFY THAT BIT1 WAS SET
                                        ;CLEAR BIT1
                                        ;VERIFY THAT BIT1 WAS CLEARED

                                ;  TEST 56
                                ;*************************************************************************
007644  012737  000056  001226  TST56:  MOV     #56,TSTNO
007652  012737  007734  001216          MOV     #TST57,NEXT
007660  012703  000011                  MOV     #11,R3                  ;ADDRESS OF SECONDARY REGISTER
                                                                        ;SYNC
007664  110377  171500                  MOVB    R3,@DQREG               ;SELECT SYNC REGISTER
007670  012705  000002                  MOV     #BIT1,R5                ;(R5)=BIT1
007674  010577  171472                  MOV     R5,@DQSEC               ;SET BIT1 IN
                                                                        ;SYNC REGISTER
007700  017704  171466                  MOV     @DQSEC,R4               ;(R4)=ACTUAL DATA IN
                                                                        ;SYNC REGISTER
007704  020504                          CMP     R5,R4                   ;ARE EXPECTED AND RECEIVED DATA THE SAME ?
007706  001401                          BEQ     1$                      ;BR IF GOOD
007710  104006                          HLT     6                       ;SECONDARY REGISTER DATA ERROR
007712  040577  171454          1$:     BIC     R5,@DQSEC               ;CLEAR BIT1
007716  017704  171450                  MOV     @DQSEC,R4               ;READ SYNC REGISTER
007722  005005                          CLR     R5                      ;EXPECT SYNC REGISTER
```

```
                                                                        ;TO CONTAIN 0
007724  020504                          CMP     R5,R4                   ;ARE EXPECTED AND RECEIVED DATA THE SAME ?
007726  001401                          BEQ     2$                      ;BR IF GOOD
007730  104006                          HLT     6                       ;SECONDARY REGISTER DATA ERROR
007732  104400                  2$:     SCOPE                           ;CHECK FOR ITERATIONS, LOOP

                                        ;SECONDARY REGISTER READ/WRITE TEST
                                        ;SET BIT2 IN SYNC REGISTER
                                        ;VERIFY THAT BIT2 WAS SET
                                        ;CLEAR BIT2
                                        ;VERIFY THAT BIT2 WAS CLEARED

                                ;  TEST 57
                                ;*************************************************************************
007734  012737  000057  001226  TST57:  MOV     #57,TSTNO
007742  012737  010024  001216          MOV     #TST60,NEXT
007750  012703  000011                  MOV     #11,R3                  ;ADDRESS OF SECONDARY REGISTER
                                                                        ;SYNC
007754  110377  171410                  MOVB    R3,@DQREG               ;SELECT SYNC REGISTER
007760  012705  000004                  MOV     #BIT2,R5                ;(R5)=BIT2
007764  010577  171402                  MOV     R5,@DQSEC               ;SET BIT2 IN
                                                                        ;SYNC REGISTER
007770  017704  171376                  MOV     @DQSEC,R4               ;(R4)=ACTUAL DATA IN
                                                                        ;SYNC REGISTER
007774  020504                          CMP     R5,R4                   ;ARE EXPECTED AND RECEIVED DATA THE SAME ?
007776  001401                          BEQ     1$                      ;BR IF GOOD
010000  104006                          HLT     6                       ;SECONDARY REGISTER DATA ERROR
010002  040577  171364          1$:     BIC     R5,@DQSEC               ;CLEAR BIT2
010006  017704  171360                  MOV     @DQSEC,R4               ;READ SYNC REGISTER
010012  005005                          CLR     R5                      ;EXPECT SYNC REGISTER
                                                                        ;TO CONTAIN 0
010014  020504                          CMP     R5,R4                   ;ARE EXPECTED AND RECEIVED DATA THE SAME ?
010016  001401                          BEQ     2$                      ;BR IF GOOD
010020  104006                          HLT     6                       ;SECONDARY REGISTER DATA ERROR
010022  104400                  2$:     SCOPE                           ;CHECK FOR ITERATIONS, LOOP

                                        ;SECONDARY REGISTER READ/WRITE TEST
                                        ;SET BIT3 IN SYNC REGISTER
                                        ;VERIFY THAT BIT3 WAS SET
                                        ;CLEAR BIT3
                                        ;VERIFY THAT BIT3 WAS CLEARED

                                ;  TEST 60
                                ;*************************************************************************
010024  012737  000060  001226  TST60:  MOV     #60,TSTNO
010032  012737  010114  001216          MOV     #TST61,NEXT
010040  012703  000011                  MOV     #11,R3                  ;ADDRESS OF SECONDARY REGISTER
                                                                        ;SYNC
010044  110377  171320                  MOVB    R3,@DQREG               ;SELECT SYNC REGISTER
010050  012705  000010                  MOV     #BIT3,R5                ;(R5)=BIT3
010054  010577  171312                  MOV     R5,@DQSEC               ;SET BIT3 IN
                                                                        ;SYNC REGISTER
010060  017704  171306                  MOV     @DQSEC,R4               ;(R4)=ACTUAL DATA IN
                                                                        ;SYNC REGISTER
010064  020504                          CMP     R5,R4                   ;ARE EXPECTED AND RECEIVED DATA THE SAME ?
010066  001401                          BEQ     1$                      ;BR IF GOOD
```

```
2815  010070  104006                          HLT     6                       ;SECONDARY REGISTER DATA ERROR
2816  010072  040577  171274          1$:     BIC     R5,@DQSEC               ;CLEAR BIT3
2817  010076  017704  171270                  MOV     @DQSEC,R4               ;READ SYNC REGISTER
2818  010102  005005                          CLR     R5                      ;EXPECT SYNC REGISTER
2819                                                                          ;TO CONTAIN 0
2820  010104  020504                          CMP     R5,R4                   ;ARE EXPECTED AND RECEIVED DATA THE SAME ?
2821  010106  001401                          BEQ     2$                      ;BR IF GOOD
2822  010110  104006                          HLT     6                       ;SECONDARY REGISTER DATA ERROR
2823  010112  104400                  2$:     SCOPE                           ;CHECK FOR ITERATIONS, LOOP
2824
2825                                          ;SECONDARY REGISTER READ/WRITE TEST
2826                                          ;SET BIT4 IN SYNC REGISTER
2827                                          ;VERIFY THAT BIT4 WAS SET
2828                                          ;CLEAR BIT4
2829                                          ;VERIFY THAT BIT4 WAS CLEARED
2830
2831                                  ;  TEST 61
2832                                  ;*************************************************************************
2833  010114  012737  000061  001226  TST61:  MOV     #61,TSTNO
2834  010122  012737  010204  001216          MOV     #TST62,NEXT
2835  010130  012703  000011                  MOV     #11,R3                  ;ADDRESS OF SECONDARY REGISTER
2836                                                                          ;SYNC
2837  010134  110377  171230                  MOVB    R3,@DQREG               ;SELECT SYNC REGISTER
2838  010140  012705  000020                  MOV     #BIT4,R5                ;(R5)=BIT4
2839  010144  010577  171222                  MOV     R5,@DQSEC               ;SET BIT4 IN
2840                                                                          ;SYNC REGISTER
2841  010150  017704  171216                  MOV     @DQSEC,R4               ;(R4)=ACTUAL DATA IN
2842                                                                          ;SYNC REGISTER
2843  010154  020504                          CMP     R5,R4                   ;ARE EXPECTED AND RECEIVED DATA THE SAME ?
2844  010156  001401                          BEQ     1$                      ;BR IF GOOD
2845  010160  104006                          HLT     6                       ;SECONDARY REGISTER DATA ERROR
2846  010162  040577  171204          1$:     BIC     R5,@DQSEC               ;CLEAR BIT4
2847  010166  017704  171200                  MOV     @DQSEC,R4               ;READ SYNC REGISTER
2848  010172  005005                          CLR     R5                      ;EXPECT SYNC REGISTER
2849                                                                          ;TO CONTAIN 0
2850  010174  020504                          CMP     R5,R4                   ;ARE EXPECTED AND RECEIVED DATA THE SAME ?
2851  010176  001401                          BEQ     2$                      ;BR IF GOOD
2852  010200  104006                          HLT     6                       ;SECONDARY REGISTER DATA ERROR
2853  010202  104400                  2$:     SCOPE                           ;CHECK FOR ITERATIONS, LOOP
2854
2855                                          ;SECONDARY REGISTER READ WRITE TEST
2856                                          ;SET BIT5 IN SYNC REGISTER
2857                                          ;VERIFY THAT BIT5 WAS SET
2858                                          ;CLEAR BIT5
2859                                          ;VERIFY THAT BIT5 WAS CLEARED
2860
2861                                  ;  TEST 62
2862                                  ;*************************************************************************
2863  010204  012737  000062  001226  TST62:  MOV     #62,TSTNO
2864  010212  012737  010274  001216          MOV     #TST63,NEXT
2865  010220  012703  000011                  MOV     #11,R3                  ;ADDRESS OF SECONDARY REGISTER
2866                                                                          ;SYNC
2867  010224  110377  171140                  MOVB    R3,@DQREG               ;SELECT SYNC REGISTER
2868  010230  012705  000040                  MOV     #BIT5,R5                ;(R5)=BIT5
2869  010234  010577  171132                  MOV     R5,@DQSEC               ;SET BIT5 IN
2870                                                                          ;SYNC REGISTER
```

```
2871  010240  017704  171126                MOV     @DQSEC,R4               ;(R4)=ACTUAL DATA IN
2872                                                                          ;SYNC REGISTER
2873  010244  020504                        CMP     R5,R4                   ;ARE EXPECTED AND RECEIVED DATA THE SAME ?
2874  010246  001401                        BEQ     1$                      ;BR IF GOOD
2875  010250  104006                        HLT     6                       ;SECONDARY REGISTER DATA ERROR
2876  010252  040577  171114        1$:     BIC     R5,@DQSEC               ;CLEAR BIT5
2877  010256  017704  171110                MOV     @DQSEC,R4               ;READ SYNC REGISTER
2878  010262  005005                        CLR     R5                      ;EXPECT SYNC REGISTER
2879                                                                          ;TO CONTAIN 0
2880  010264  020504                        CMP     R5,R4                   ;ARE EXPECTED AND RECEIVED DATA THE SAME ?
2881  010266  001401                        BEQ     2$                      ;BR IF GOOD
2882  010270  104006                        HLT     6                       ;SECONDARY REGISTER DATA ERROR
2883  010272  104400                2$:     SCOPE                           ;CHECK FOR ITERATIONS, LOOP
2884
2885                                        ;SECONDARY REGISTER READ/WRITE TEST
2886                                        ;SET BIT6 IN SYNC REGISTER
2887                                        ;VERIFY THAT BIT6 WAS SET
2888                                        ;CLEAR BIT6
2889                                        ;VERIFY THAT BIT6 WAS CLEARED
2890
2891                                ;  TEST 63
2892                                ;*****************************************************************
2893  010274  012737  000063  001226 TST63:  MOV     #63,TSTNO
2894  010302  012737  010364  001216         MOV     #TST64,NEXT
2895  010310  012703  000011                MOV     #11,R3                  ;ADDRESS OF SECONDARY REGISTER
2896                                                                          ;SYNC
2897  010314  110377  171050                MOVB    R3,@DQREG               ;SELECT SYNC REGISTER
2898  010320  012705  000100                MOV     #BIT6,R5                ;(R5)=BIT6
2899  010324  010577  171042                MOV     R5,@DQSEC               ;SET BIT6 IN
2900                                                                          ;SYNC REGISTER
2901  010330  017704  171036                MOV     @DQSEC,R4               ;(R4)=ACTUAL DATA IN
2902                                                                          ;SYNC REGISTER
2903  010334  020504                        CMP     R5,R4                   ;ARE EXPECTED AND RECEIVED DATA THE SAME ?
2904  010336  001401                        BEQ     1$                      ;BR IF GOOD
2905  010340  104006                        HLT     6                       ;SECONDARY REGISTER DATA ERROR
2906  010342  040577  171024        1$:     BIC     R5,@DQSEC               ;CLEAR BIT6
2907  010346  017704  171020                MOV     @DQSEC,R4               ;READ SYNC REGISTER
2908  010352  005005                        CLR     R5                      ;EXPECT SYNC REGISTER
2909                                                                          ;TO CONTAIN 0
2910  010354  020504                        CMP     R5,R4                   ;ARE EXPECTED AND RECEIVED DATA THE SAME ?
2911  010356  001401                        BEQ     2$                      ;BR IF GOOD
2912  010360  104006                        HLT     6                       ;SECONDARY REGISTER DATA ERROR
2913  010362  104400                2$:     SCOPE                           ;CHECK FOR ITERATIONS, LOOP
2914
2915                                        ;SECONDARY REGISTER READ/WRITE TEST
2916                                        ;SET BIT7 IN SYNC REGISTER
2917                                        ;VERIFY THAT BIT7 WAS SET
2918                                        ;CLEAR BIT7
2919                                        ;VERIFY THAT BIT7 WAS CLEARED
2920
2921                                ;  TEST 64
2922                                ;*****************************************************************
2923  010364  012737  000064  001226 TST64:  MOV     #64,TSTNO
2924  010372  012737  010454  001216         MOV     #TST65,NEXT
2925  010400  012703  000011                MOV     #11,R3                  ;ADDRESS OF SECONDARY REGISTER
2926                                                                          ;SYNC
```

```
2927  010404  110377  170760                MOVB    R3,@DQREG               ;SELECT SYNC REGISTER
2928  010410  012705  000200                MOV     #BIT7,R5                ;(R5)=BIT7
2929  010414  010577  170752                MOV     R5,@DQSEC               ;SET BIT7 IN
2930                                                                          ;SYNC REGISTER
2931  010420  017704  170746                MOV     @DQSEC,R4               ;(R4)=ACTUAL DATA IN
2932                                                                          ;SYNC REGISTER
2933  010424  020504                        CMP     R5,R4                   ;ARE EXPECTED AND RECEIVED DATA THE SAME ?
2934  010426  001401                        BEQ     1$                      ;BR IF GOOD
2935  010430  104006                        HLT     6                       ;SECONDARY REGISTER DATA ERROR
2936  010432  040577  170734          1$:   BIC     R5,@DQSEC               ;CLEAR BIT7
2937  010436  017704  170730                MOV     @DQSEC,R4               ;READ SYNC REGISTER
2938  010442  005005                        CLR     R5                      ;EXPECT SYNC REGISTER
2939                                                                          ;TO CONTAIN 0
2940  010444  020504                        CMP     R5,R4                   ;ARE EXPECTED AND RECEIVED DATA THE SAME ?
2941  010446  001401                        BEQ     2$                      ;BR IF GOOD
2942  010450  104006                        HLT     6                       ;SECONDARY REGISTER DATA ERROR
2943  010452  104400                2$:     SCOPE                           ;CHECK FOR ITERATIONS, LOOP
2944
2945                                        ;SECONDARY REGISTER READ/WRITE TEST
2946                                        ;SET BIT8 IN SYNC REGISTER
2947                                        ;VERIFY THAT BIT8 WAS SET
2948                                        ;CLEAR BIT8
2949                                        ;VERIFY THAT BIT8 WAS CLEARED
2950
2951                                ;  TEST 65
2952                                ;*************************************************************************
2953  010454  012737  000065  001226  TST65: MOV     #65,TSTNO
2954  010462  012737  010544  001216        MOV     #TST66,NEXT
2955  010470  012703  000011                MOV     #11,R3                  ;ADDRESS OF SECONDARY REGISTER
2956                                                                          ;SYNC
2957  010474  110377  170670                MOVB    R3,@DQREG               ;SELECT SYNC REGISTER
2958  010500  012705  000400                MOV     #BIT8,R5                ;(R5)=BIT8
2959  010504  010577  170662                MOV     R5,@DQSEC               ;SET BIT8 IN
2960                                                                          ;SYNC REGISTER
2961  010510  017704  170656                MOV     @DQSEC,R4               ;(R4)=ACTUAL DATA IN
2962                                                                          ;SYNC REGISTER
2963  010514  020504                        CMP     R5,R4                   ;ARE EXPECTED AND RECEIVED DATA THE SAME ?
2964  010516  001401                        BEQ     1$                      ;BR IF GOOD
2965  010520  104006                        HLT     6                       ;SECONDARY REGISTER DATA ERROR
2966  010522  040577  170644          1$:   BIC     R5,@DQSEC               ;CLEAR BIT8
2967  010526  017704  170640                MOV     @DQSEC,R4               ;READ SYNC REGISTER
2968  010532  005005                        CLR     R5                      ;EXPECT SYNC REGISTER
2969                                                                          ;TO CONTAIN 0
2970  010534  020504                        CMP     R5,R4                   ;ARE EXPECTED AND RECEIVED DATA THE SAME ?
2971  010536  001401                        BEQ     2$                      ;BR IF GOOD
2972  010540  104006                        HLT     6                       ;SECONDARY REGISTER DATA ERROR
2973  010542  104400                2$:     SCOPE                           ;CHECK FOR ITERATIONS, LOOP
2974
2975                                        ;SECONDARY REGISTER READ/WRITE TEST
2976                                        ;SET BIT9 IN SYNC REGISTER
2977                                        ;VERIFY THAT BIT9 WAS SET
2978                                        ;CLEAR BIT9
2979                                        ;VERIFY THAT BIT9 WAS CLEARED
2980
2981                                ;  TEST 66
2982                                ;*************************************************************************
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DZDQAB.P11      SYNC REGISTER READ/WRITE TESTS.

 2983  010544  012737  000066  001226  TST66:  MOV     #66,TSTNO
 2984  010552  012737  010634  001216          MOV     #TST67,NEXT
 2985  010560  012703  000011                  MOV     #11,R3          ;ADDRESS OF SECONDARY REGISTER
 2986                                                                  ;SYNC
 2987  010564  110377  170600                  MOVB    R3,@DQREG       ;SELECT SYNC REGISTER
 2988  010570  012705  001000                  MOV     #BIT9,R5        ;(R5)=BIT9
 2989  010574  010577  170572                  MOV     R5,@DQSEC       ;SET BIT9 IN
 2990                                                                  ;SYNC REGISTER
 2991  010600  017704  170566                  MOV     @DQSEC,R4       ;(R4)=ACTUAL DATA IN
 2992                                                                  ;SYNC REGISTER
 2993  010604  020504                          CMP     R5,R4           ;ARE EXPECTED AND RECEIVED DATA THE SAME ?
 2994  010606  001401                          BEQ     1$              ;BR IF GOOD
 2995  010610  104006                          HLT     6               ;SECONDARY REGISTER DATA ERROR
 2996  010612  040577  170554          1$:     BIC     R5,@DQSEC       ;CLEAR BIT9
 2997  010616  017704  170550                  MOV     @DQSEC,R4       ;READ SYNC REGISTER
 2998  010622  005005                          CLR     R5              ;EXPECT SYNC REGISTER
 2999                                                                  ;TO CONTAIN 0
 3000  010624  020504                          CMP     R5,R4           ;ARE EXPECTED AND RECEIVED DATA THE SAME ?
 3001  010626  001401                          BEQ     2$              ;BR IF GOOD
 3002  010630  104006                          HLT     6               ;SECONDARY REGISTER DATA ERROR
 3003  010632  104400                  2$:     SCOPE                   ;CHECK FOR ITERATIONS, LOOP
 3004
 3005                                          ;SECONDARY REGISTER READ/WRITE TEST
 3006                                          ;SET BIT10 IN SYNC REGISTER
 3007                                          ;VERIFY THAT BIT10 WAS SET
 3008                                          ;CLEAR BIT10
 3009                                          ;VERIFY THAT BIT10 WAS CLEARED
 3010
 3011                                  ;  TEST 67
 3012                                  ;*****************************************************************
 3013  010634  012737  000067  001226  TST67:  MOV     #67,TSTNO
 3014  010642  012737  010724  001216          MOV     #TST70,NEXT
 3015  010650  012703  000011                  MOV     #11,R3          ;ADDRESS OF SECONDARY REGISTER
 3016                                                                  ;SYNC
 3017  010654  110377  170510                  MOVB    R3,@DQREG       ;SELECT SYNC REGISTER
 3018  010660  012705  002000                  MOV     #BIT10,R5       ;(R5)=BIT10
 3019  010664  010577  170502                  MOV     R5,@DQSEC       ;SET BIT10 IN
 3020                                                                  ;SYNC REGISTER
 3021  010670  017704  170476                  MOV     @DQSEC,R4       ;(R4)=ACTUAL DATA IN
 3022                                                                  ;SYNC REGISTER
 3023  010674  020504                          CMP     R5,R4           ;ARE EXPECTED AND RECEIVED DATA THE SAME ?
 3024  010676  001401                          BEQ     1$              ;BR IF GOOD
 3025  010700  104006                          HLT     6               ;SECONDARY REGISTER DATA ERROR
 3026  010702  040577  170464          1$:     BIC     R5,@DQSEC       ;CLEAR BIT10
 3027  010706  017704  170460                  MOV     @DQSEC,R4       ;READ SYNC REGISTER
 3028  010712  005005                          CLR     R5              ;EXPECT SYNC REGISTER
 3029                                                                  ;TO CONTAIN 0
 3030  010714  020504                          CMP     R5,R4           ;ARE EXPECTED AND RECEIVED DATA THE SAME ?
 3031  010716  001401                          BEQ     2$              ;BR IF GOOD
 3032  010720  104006                          HLT     6               ;SECONDARY REGISTER DATA ERROR
 3033  010722  104400                  2$:     SCOPE                   ;CHECK FOR ITERATIONS, LOOP
 3034
 3035                                          ;SECONDARY REGISTER READ/WRITE TEST
 3036                                          ;SET BIT11 IN SYNC REGISTER
 3037                                          ;VERIFY THAT BIT11 WAS SET
 3038                                          ;CLEAR BIT11
```

```
                                                ;VERIFY THAT BIT11 WAS CLEARED

                                        ;  TEST 70
                                        ;*****************************************************************
010724  012737  000070  001226  TST70:  MOV     #70,TSTNO
010732  012737  011014  001216          MOV     #TST71,NEXT
010740  012703  000011                  MOV     #11,R3                  ;ADDRESS OF SECONDARY REGISTER
                                                                        ;SYNC
010744  110377  170420                  MOVB    R3,@DQREG               ;SELECT SYNC REGISTER
010750  012705  004000                  MOV     #BIT11,R5               ;(R5)=BIT11
010754  010577  170412                  MOV     R5,@DQSEC               ;SET BIT11 IN
                                                                        ;SYNC REGISTER
010760  017704  170406                  MOV     @DQSEC,R4               ;(R4)=ACTUAL DATA IN
                                                                        ;SYNC REGISTER
010764  020504                          CMP     R5,R4                   ;ARE EXPECTED AND RECEIVED DATA THE SAME ?
010766  001401                          BEQ     1$                      ;BR IF GOOD
010770  104006                          HLT     6                       ;SECONDARY REGISTER DATA ERROR
010772  040577  170374          1$:     BIC     R5,@DQSEC               ;CLEAR BIT11
010776  017704  170370                  MOV     @DQSEC,R4               ;READ SYNC REGISTER
011002  005005                          CLR     R5                      ;EXPECT SYNC REGISTER
                                                                        ;TO CONTAIN 0
011004  020504                          CMP     R5,R4                   ;ARE EXPECTED AND RECEIVED DATA THE SAME ?
011006  001401                          BEQ     2$                      ;BR IF GOOD
011010  104006                          HLT     6                       ;SECONDARY REGISTER DATA ERROR
011012  104400          2$:             SCOPE                           ;CHECK FOR ITERATIONS, LOOP

                                        ;SECONDARY REGISTER READ/WRITE TEST
                                        ;SET BIT12 IN SYNC REGISTER
                                        ;VERIFY THAT BIT12 WAS SET
                                        ;CLEAR BIT12
                                        ;VERIFY THAT BIT12 WAS CLEARED

                                        ;  TEST 71
                                        ;*****************************************************************
011014  012737  000071  001226  TST71:  MOV     #71,TSTNO
011022  012737  011104  001216          MOV     #TST72,NEXT
011030  012703  000011                  MOV     #11,R3                  ;ADDRESS OF SECONDARY REGISTER
                                                                        ;SYNC
011034  110377  170330                  MOVB    R3,@DQREG               ;SELECT SYNC REGISTER
011040  012705  010000                  MOV     #BIT12,R5               ;(R5)=BIT12
011044  010577  170322                  MOV     R5,@DQSEC               ;SET BIT12 IN
                                                                        ;SYNC REGISTER
011050  017704  170316                  MOV     @DQSEC,R4               ;(R4)=ACTUAL DATA IN
                                                                        ;SYNC REGISTER
011054  020504                          CMP     R5,R4                   ;ARE EXPECTED AND RECEIVED DATA THE SAME ?
011056  001401                          BEQ     1$                      ;BR IF GOOD
011060  104006                          HLT     6                       ;SECONDARY REGISTER DATA ERROR
011062  040577  170304          1$:     BIC     R5,@DQSEC               ;CLEAR BIT12
011056  017704  170300                  MOV     @DQSEC,R4               ;READ SYNC REGISTER
011072  005005                          CLR     R5                      ;EXPECT SYNC REGISTER
                                                                        ;TO CONTAIN 0
011074  020504                          CMP     R5,R4                   ;ARE EXPECTED AND RECEIVED DATA THE SAME ?
011076  001401                          BEQ     2$                      ;BR IF GOOD
011100  104006                          HLT     6                       ;SECONDARY REGISTER DATA ERROR
011102  104400          2$:             SCOPE                           ;CHECK FOR ITERATIONS, LOOP
```

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                                        ;SECONDARY REGISTER READ/WRITE TEST
                                        ;SET BIT13 IN SYNC REGISTER
                                        ;VERIFY THAT BIT13 WAS SET
                                        ;CLEAR BIT13
                                        ;VERIFY THAT BIT13 WAS CLEARED

                                ;  TEST 72
                                ;*************************************************************************
011104  012737  000072  001226  TST72:  MOV     #72,TSTNO
011112  012737  011174  001216         MOV     #TST73,NEXT
011120  012703  000011                 MOV     #11,R3          ;ADDRESS OF SECONDARY REGISTER
                                                               ;SYNC
011124  110377  170240                 MOVB    R3,@DQREG       ;SELECT SYNC REGISTER
011130  012705  020000                 MOV     #BIT13,R5       ;(R5)=BIT13
011134  010577  170232                 MOV     R5,@DQSEC       ;SET BIT13 IN
                                                               ;SYNC REGISTER
011140  017704  170226                 MOV     @DQSEC,R4       ;(R4)=ACTUAL DATA IN
                                                               ;SYNC REGISTER
011144  020504                         CMP     R5,R4           ;ARE EXPECTED AND RECEIVED DATA THE SAME ?
011146  001401                         BEQ     1$              ;BR IF GOOD
011150  104006                         HLT     6               ;SECONDARY REGISTER DATA ERROR
011152  040577  170214         1$:     BIC     R5,@DQSEC       ;CLEAR BIT13
011156  017704  170210                 MOV     @DQSEC,R4       ;READ SYNC REGISTER
011162  005005                         CLR     R5              ;EXPECT SYNC REGISTER
                                                               ;TO CONTAIN 0
011164  020504                         CMP     R5,R4           ;ARE EXPECTED AND RECEIVED DATA THE SAME ?
011166  001401                         BEQ     2$              ;BR IF GOOD
011170  104006                         HLT     6               ;SECONDARY REGISTER DATA ERROR
011172  104400                 2$:     SCOPE                   ;CHECK FOR ITERATIONS, LOOP

                                        ;SECONDARY REGISTER READ/WRITE TEST
                                        ;SET BIT14 IN SYNC REGISTER
                                        ;VERIFY THAT BIT14 WAS SET
                                        ;CLEAR BIT14
                                        ;VERIFY THAT BIT14 WAS CLEARED

                                ;  TEST 73
                                ;*************************************************************************
011174  012737  000073  001226  TST73:  MOV     #73,TSTNO
011202  012737  011264  001216         MOV     #TST74,NEXT
011210  012703  000011                 MOV     #11,R3          ;ADDRESS OF SECONDARY REGISTER
                                                               ;SYNC
011214  110377  170150                 MOVB    R3,@DQREG       ;SELECT SYNC REGISTER
011220  012705  040000                 MOV     #BIT14,R5       ;(R5)=BIT14
011224  010577  170142                 MOV     R5,@DQSEC       ;SET BIT14 IN
                                                               ;SYNC REGISTER
011230  017704  170136                 MOV     @DQSEC,R4       ;(R4)=ACTUAL DATA IN
                                                               ;SYNC REGISTER
011234  020504                         CMP     R5,R4           ;ARE EXPECTED AND RECEIVED DATA THE SAME ?
011236  001401                         BEQ     1$              ;BR IF GOOD
011240  104006                         HLT     6               ;SECONDARY REGISTER DATA ERROR
011242  040577  170124         1$:     BIC     R5,@DQSEC       ;CLEAR BIT14
011246  017704  170120                 MOV     @DQSEC,R4       ;READ SYNC REGISTER
011252  005005                         CLR     R5              ;EXPECT SYNC REGISTER
                                                               ;TO CONTAIN 0
011254  020504                         CMP     R5,R4           ;ARE EXPECTED AND RECEIVED DATA THE SAME ?
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3151  011256  001401                        BEQ     2$                      ;BR IF GOOD
3152  011260  104006                        HLT     6                       ;SECONDARY REGISTER DATA ERROR
3153  011262  104400              2$:       SCOPE                           ;CHECK FOR ITERATIONS, LOOP
3154
3155                                        ;SECONDARY REGISTER READ/WRITE TEST
3156                                        ;SET BIT15 IN SYNC REGISTER
3157                                        ;VERIFY THAT BIT15 WAS SET
3158                                        ;CLEAR BIT15
3159                                        ;VERIFY THAT BIT15 WAS CLEARED
3160
3161                                        ;  TEST 74
3162                                        ;*************************************************************************
3163  011264  012737  000074  001226 TST74:  MOV     #74,TSTNO
3164  011272  012737  011354  001216         MOV     #TST75,NEXT
3165  011300  012703  000011                MOV     #11,R3                  ;ADDRESS OF SECONDARY REGISTER
3166                                                                        ;SYNC
3167  011304  110377  170060                MOVB    R3,@DQREG               ;SELECT SYNC REGISTER
3168  011310  012705  100000                MOV     #BIT15,R5               ;(R5)=BIT15
3169  011314  010577  170052                MOV     R5,@DQSEC               ;SET BIT15 IN
3170                                                                        ;SYNC REGISTER
3171  011320  017704  170046                MOV     @DQSEC,R4               ;(R4)=ACTUAL DATA IN
3172                                                                        ;SYNC REGISTER
3173  011324  020504                        CMP     R5,R4                   ;ARE EXPECTED AND RECEIVED DATA THE SAME ?
3174  011326  001401                        BEQ     1$                      ;BR IF GOOD
3175  011330  104006                        HLT     6                       ;SECONDARY REGISTER DATA ERROR
3176  011332  040577  170034          1$:   BIC     R5,@DQSEC               ;CLEAR BIT15
3177  011336  017704  170030                MOV     @DQSEC,R4               ;READ SYNC REGISTER
3178  011342  005005                        CLR     R5                      ;EXPECT SYNC REGISTER
3179                                                                        ;TO CONTAIN 0
3180  011344  020504                        CMP     R5,R4                   ;ARE EXPECTED AND RECEIVED DATA THE SAME ?
3181  011346  001401                        BEQ     2$                      ;BR IF GOOD
3182  011350  104006                        HLT     6                       ;SECONDARY REGISTER DATA ERROR
3183  011352  104400              3$:       SCOPE                           ;CHECK FOR ITERATIONS, LOOP
```

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3184
3185                                        ;SECONDARY REGISTER READ/WRITE TEST
3186                                        ;SET BIT0 IN MISCELLANEOUS REGISTER
3187                                        ;VERIFY THAT BIT0 WAS SET
3188                                        ;CLEAR BIT0
3189                                        ;VERIFY THAT BIT0 WAS CLEARED
3190
3191                                    ;  TEST 75
3192                                    ;*************************************************************************
3193  011354  012737  000075  001226  TST75:  MOV     #75,TSTNO
3194  011362  012737  011444  001216          MOV     #TST76,NEXT
3195  011370  012703  000012                 MOV     #12,R3          ;ADDRESS OF SECONDARY REGISTER
3196                                                                  ;MISCELLANEOUS
3197  011374  110377  167770                 MOVB    R3,@DQREG       ;SELECT MISCELLANEOUS REGISTER
3198  011400  012705  000001                 MOV     #BIT0,R5        ;(R5)=BIT0
3199  011404  010577  167762                 MOV     R5,@DQSEC       ;SET BIT0 IN
3200                                                                  ;MISCELLANEOUS REGISTER
3201  011410  017704  167756                 MOV     @DQSEC,R4       ;(R4)=ACTUAL DATA IN
3202                                                                  ;MISCELLANEOUS REGISTER
3203  011414  020504                         CMP     R5,R4           ;ARE EXPECTED AND RECEIVED DATA THE SAME ?
3204  011416  001401                         BEQ     1$              ;BR IF GOOD
3205  011420  104006                         HLT     6               ;SECONDARY REGISTER DATA ERROR
3206  011422  040577  167744          1$:    BIC     R5,@DQSEC       ;CLEAR BIT0
3207  011426  017704  167740                 MOV     @DQSEC,R4       ;READ MISCELLANEOUS REGISTER
3208  011432  005005                         CLR     R5              ;EXPECT MISCELLANEOUS REGISTER
3209                                                                  ;TO CONTAIN 0
3210  011434  020504                         CMP     R5,R4           ;ARE EXPECTED AND RECEIVED DATA THE SAME ?
3211  011436  001401                         BEQ     2$              ;BR IF GOOD
3212  011440  104006                         HLT     6               ;SECONDARY REGISTER DATA ERROR
3213  011442  104400                 2$:     SCOPE                   ;CHECK FOR ITERATIONS, LOOP
3214
3215                                        ;SECONDARY REGISTER READ/WRITE TEST
3216                                        ;SET BIT1 IN MISCELLANEOUS REGISTER
3217                                        ;VERIFY THAT BIT1 WAS SET
3218                                        ;CLEAR BIT1
3219                                        ;VERIFY THAT BIT1 WAS CLEARED
3220
3221                                    ;  TEST 76
3222                                    ;*************************************************************************
3223  011444  012737  000076  001226  TST76:  MOV     #76,TSTNO
3224  011452  012737  011534  001216          MOV     #TST77,NEXT
3225  011460  012703  000012                 MOV     #12,R3          ;ADDRESS OF SECONDARY REGISTER
3226                                                                  ;MISCELLANEOUS
3227  011464  110377  167700                 MOVB    R3,@DQREG       ;SELECT MISCELLANEOUS REGISTER
3228  011470  012705  000002                 MOV     #BIT1,R5        ;(R5)=BIT1
3229  011474  010577  167672                 MOV     R5,@DQSEC       ;SET BIT1 IN
3230                                                                  ;MISCELLANEOUS REGISTER
3231  011500  017704  167666                 MOV     @DQSEC,R4       ;(R4)=ACTUAL DATA IN
3232                                                                  ;MISCELLANEOUS REGISTER
3233  011504  020504                         CMP     R5,R4           ;ARE EXPECTED AND RECEIVED DATA THE SAME ?
3234  011506  001401                         BEQ     1$              ;BR IF GOOD
3235  011510  104006                         HLT     6               ;SECONDARY REGISTER DATA ERROR
3236  011512  040577  167654          1$:    BIC     R5,@DQSEC       ;CLEAR BIT1
3237  011516  017704  167650                 MOV     @DQSEC,R4       ;READ MISCELLANEOUS REGISTER
3238  011522  005005                         CLR     R5              ;EXPECT MISCELLANEOUS REGISTER
3239                                                                  ;TO CONTAIN 0
```

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3240  011524  020504                          CMP     R5,R4                   ;ARE EXPECTED AND RECEIVED DATA THE SAME ?
3241  011526  001401                          BEQ     2$                      ;BR IF GOOD
3242  011530  104006                          HLT     6                       ;SECONDARY REGISTER DATA ERROR
3243  011532  104400                  2$:     SCOPE                           ;CHECK FOR ITERATIONS, LOOP
3244
3245                                          ;SECONDARY REGISTER READ/WRITE TEST
3246                                          ;SET BIT3 IN MISCELLANEOUS REGISTER
3247                                          ;VERIFY THAT BIT3 WAS SET
3248                                          ;CLEAR BIT3
3249                                          ;VERIFY THAT BIT3 WAS CLEARED
3250
3251                                  ;  TEST 77
3252                                  ;*************************************************************************
3253  011534  012737  000077  001226  TST77:  MOV     #77,TSTNO
3254  011542  012737  011624  001216          MOV     #TST100,NEXT
3255  011550  012703  000012                  MOV     #12,R3                  ;ADDRESS OF SECONDARY REGISTER
3256                                                                          ;MISCELLANEOUS
3257  011554  110377  167610                  MOVB    R3,@DQREG               ;SELECT MISCELLANEOUS REGISTER
3258  011560  012705  000010                  MOV     #BIT3,R5                ;(R5)=BIT3
3259  011564  010577  167602                  MOV     R5,@DQSEC               ;SET BIT3 IN
3260                                                                          ;MISCELLANEOUS REGISTER
3261  011570  017704  167576                  MOV     @DQSEC,R4               ;(R4)=ACTUAL DATA IN
3262                                                                          ;MISCELLANEOUS REGISTER
3263  011574  020504                          CMP     R5,R4                   ;ARE EXPECTED AND RECEIVED DATA THE SAME ?
3264  011576  001401                          BEQ     1$                      ;BR IF GOOD
3265  011600  104006                          HLT     6                       ;SECONDARY REGISTER DATA ERROR
3266  011602  040577  167564          1$:     BIC     R5,@DQSEC               ;CLEAR BIT3
3267  011606  017704  167560                  MOV     @DQSEC,R4               ;READ MISCELLANEOUS REGISTER
3268  011612  005005                          CLR     R5                      ;EXPECT MISCELLANEOUS REGISTER
3269                                                                          ;TO CONTAIN 0
3270  011614  020504                          CMP     R5,R4                   ;ARE EXPECTED AND RECEIVED DATA THE SAME ?
3271  011616  001401                          BEQ     2$                      ;BR IF GOOD
3272  011620  104006                          HLT     6                       ;SECONDARY REGISTER DATA ERROR
3273  011622  104400                  2$:     SCOPE                           ;CHECK FOR ITERATIONS, LOOP
3274
3275                                          ;SECONDARY REGISTER READ/WRITE TEST
3276                                          ;SET BIT6 IN MISCELLANEOUS REGISTER
3277                                          ;VERIFY THAT BIT6 WAS SET
3278                                          ;CLEAR BIT6
3279                                          ;VERIFY THAT BIT6 WAS CLEARED
3280
3281                                  ;  TEST 100
3282                                  ;*************************************************************************
3283  011624  012737  000100  001226  TST100: MOV     #100,TSTNO
3284  011632  012737  011714  001216          MOV     #TST101,NEXT
3285  011640  012703  000012                  MOV     #12,R3                  ;ADDRESS OF SECONDARY REGISTER
3286                                                                          ;MISCELLANEOUS
3287  011644  110377  167520                  MOVB    R3,@DQREG               ;SELECT MISCELLANEOUS REGISTER
3288  011650  012705  000100                  MOV     #BIT6,R5                ;(R5)=BIT6
3289  011654  010577  167512                  MOV     R5,@DQSEC               ;SET BIT6 IN
3290                                                                          ;MISCELLANEOUS REGISTER
3291  011660  017704  167506                  MOV     @DQSEC,R4               ;(R4)=ACTUAL DATA IN
3292                                                                          ;MISCELLANEOUS REGISTER
3293  011664  020504                          CMP     R5,R4                   ;ARE EXPECTED AND RECEIVED DATA THE SAME ?
3294  011666  001401                          BEQ     1$                      ;BR IF GOOD
3295  011670  104006                          HLT     6                       ;SECONDARY REGISTER DATA ERROR
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011672  040577  167474          18.     BIC     R5,@DQSEC              ;CLEAR BIT6
011676  011704  167470                  MOV     @DQSEC,R4              ;READ MISCELLANEOUS REGISTER
011702  005005                          CLR     R5                     ;EXPECT MISCELLANEOUS REGISTER
                                                                       ;TO CONTAIN 0
011704  020504                          CMP     R5,R4                  ;ARE EXPECTED AND RECEIVED DATA THE SAME ?
011706  001401                          BEQ     2$                     ;BR IF GOOD
011710  104006                          HLT     6                      ;SECONDARY REGISTER DATA ERROR
011712  104400                  2$:     SCOPE                          ;CHECK FOR ITERATIONS, LOOP

                                        ;SECONDARY REGISTER READ/WRITE TEST
                                        ;SET BIT7 IN MISCELLANEOUS REGISTER
                                        ;VERIFY THAT BIT7 WAS SET
                                        ;CLEAR BIT7
                                        ;VERIFY THAT BIT7 WAS CLEARED

                                ;  TEST 101
                                ;*****************************************************************
011714  012737  000101  001226  TST101: MOV     #101,TSTNO
011722  012737  012004  001216          MOV     #TST102,NEXT
011730  012703  000012                  MOV     #12,R3                 ;ADDRESS OF SECONDARY REGISTER
                                                                       ;MISCELLANEOUS
011734  110377  167430                  MOVB    R3,@DQREG              ;SELECT MISCELLANEOUS REGISTER
011740  012705  000200                  MOV     #BIT7,R5               ;(R5)=BIT7
011744  010577  167422                  MOV     R5,@DQSEC              ;SET BIT7 IN
                                                                       ;MISCELLANEOUS REGISTER
011750  017704  167416                  MOV     @DQSEC,R4              ;(R4)=ACTUAL DATA IN
                                                                       ;MISCELLANEOUS REGISTER
011754  020504                          CMP     R5,R4                  ;ARE EXPECTED AND RECEIVED DATA THE SAME ?
011756  001401                          BEQ     1$                     ;BR IF GOOD
011760  104006                          HLT     6                      ;SECONDARY REGISTER DATA ERROR
011762  040577  167404          1$:     BIC     R5,@DQSEC              ;CLEAR BIT7
011766  017704  167400                  MOV     @DQSEC,R4              ;READ MISCELLANEOUS REGISTER
011772  005005                          CLR     R5                     ;EXPECT MISCELLANEOUS REGISTER
                                                                       ;TO CONTAIN 0
011774  020504                          CMP     R5,R4                  ;ARE EXPECTED AND RECEIVED DATA THE SAME ?
011776  001401                          BEQ     2$                     ;BR IF GOOD
012000  104006                          HLT     6                      ;SECONDARY REGISTER DATA ERROR
012002  104400                  2$:     SCOPE                          ;CHECK FOR ITERATIONS, LOOP

                                        ;SECONDARY REGISTER READ/WRITE TEST
                                        ;SET BIT8 IN MISCELLANEOUS REGISTER
                                        ;VERIFY THAT BIT8 WAS SET
                                        ;CLEAR BIT8
                                        ;VERIFY THAT BIT8 WAS CLEARED

                                ;  TEST 102
                                ;*****************************************************************
012004  012737  000102  001226  TST102: MOV     #102,TSTNO
012012  012737  012074  001216          MOV     #TST103,NEXT
012020  012703  000012                  MOV     #12,R3                 ;ADDRESS OF SECONDARY REGISTER
                                                                       ;MISCELLANEOUS
012024  110377  167340                  MOVB    R3,@DQREG              ;SELECT MISCELLANEOUS REGISTER
012030  012705  000400                  MOV     #BIT8,R5               ;(R5)=BIT8
012034  010577  167332                  MOV     R5,@DQSEC              ;SET BIT8 IN
                                                                       ;MISCELLANEOUS REGISTER
012040  017704  167326                  MOV     @DQSEC,R4              ;(R4)=ACTUAL DATA IN
```

```
                                                                        ;MISCELLANEOUS REGISTER
012044  020504                        CMP     R5,R4                   ;ARE EXPECTED AND RECEIVED DATA THE SAME ?
012046  001401                        BEQ     1$                      ;BR IF GOOD
012050  104006                        HLT     6                       ;SECONDARY REGISTER DATA ERROR
012052  040577  167314          1$:   BIC     R5,@DQSEC               ;CLEAR BIT8
012056  017704  167310                MOV     @DQSEC,R4               ;READ MISCELLANEOUS REGISTER
012062  005005                        CLR     R5                      ;EXPECT MISCELLANEOUS REGISTER
                                                                        ;TO CONTAIN 0
012064  020504                        CMP     R5,R4                   ;ARE EXPECTED AND RECEIVED DATA THE SAME ?
012066  001401                        BEQ     2$                      ;BR IF GOOD
012070  104006                        HLT     6                       ;SECONDARY REGISTER DATA ERROR
012072  104400                  2$:   SCOPE                           ;CHECK FOR ITERATIONS, LOOP

                                      ;SECONDARY REGISTER READ/WRITE TEST
                                      ;SET BIT9 IN MISCELLANEOUS REGISTER
                                      ;VERIFY THAT BIT9 WAS SET
                                      ;CLEAR BIT9
                                      ;VERIFY THAT BIT9 WAS CLEARED

                                ;  TEST 103
                                ;*************************************************************************
012074  012737  000103  001226  TST103: MOV     #103,TSTNO
012102  012737  012164  001216        MOV     #TST104,NEXT
012110  012703  000012                MOV     #12,R3                  ;ADDRESS OF SECONDARY REGISTER
                                                                        ;MISCELLANEOUS
012114  110377  167250                MOVB    R3,@DQREG               ;SELECT MISCELLANEOUS REGISTER
012120  012705  001000                MOV     #BIT9,R5                ;(R5)=BIT9
012124  010577  167242                MOV     R5,@DQSEC               ;SET BIT9 IN
                                                                        ;MISCELLANEOUS REGISTER
012130  017704  167236                MOV     @DQSEC,R4               ;(R4)=ACTUAL DATA IN
                                                                        ;MISCELLANEOUS REGISTER
012134  020504                        CMP     R5,R4                   ;ARE EXPECTED AND RECEIVED DATA THE SAME ?
012136  001401                        BEQ     1$                      ;BR IF GOOD
012140  104006                        HLT     6                       ;SECONDARY REGISTER DATA ERROR
012142  040577  167224          1$:   BIC     R5,@DQSEC               ;CLEAR BIT9
012146  017704  167220                MOV     @DQSEC,R4               ;READ MISCELLANEOUS REGISTER
012152  005005                        CLR     R5                      ;EXPECT MISCELLANEOUS REGISTER
                                                                        ;TO CONTAIN 0
012154  020504                        CMP     R5,R4                   ;ARE EXPECTED AND RECEIVED DATA THE SAME ?
012156  001401                        BEQ     2$                      ;BR IF GOOD
012160  104006                        HLT     6                       ;SECONDARY REGISTER DATA ERROR
012162  104400                  2$:   SCOPE                           ;CHECK FOR ITERATIONS, LOOP

                                      ;SECONDARY REGISTER READ/WRITE TEST
                                      ;SET BIT10 IN MISCELLANEOUS REGISTER
                                      ;VERIFY THAT BIT10 WAS SET
                                      ;CLEAR BIT10
                                      ;VERIFY THAT BIT10 WAS CLEARED

                                ;  TEST 104
                                ;*************************************************************************
012164  012737  000104  001226  TST104: MOV     #104,TSTNO
012172  012737  012254  001216        MOV     #TST105,NEXT
012200  012703  000012                MOV     #12,R3                  ;ADDRESS OF SECONDARY REGISTER
                                                                        ;MISCELLANEOUS
012204  110377  167160                MOVB    R3,@DQREG               ;SELECT MISCELLANEOUS REGISTER
```

```
 3408  012210  012705  002000                MOV     #BIT10,R5               ;(R5)=BIT10
 3409  012214  010577  167152                MOV     R5,@DQSEC               ;SET BIT10 IN
 3410                                                                          ;MISCELLANEOUS REGISTER
 3411  012220  017704  167146                MOV     @DQSEC,R4               ;(R4)=ACTUAL DATA IN
 3412                                                                          ;MISCELLANEOUS REGISTER
 3413  012224  020504                        CMP     R5,R4                   ;ARE EXPECTED AND RECEIVED DATA THE SAME ?
 3414  012226  001401                        BEQ     1$                      ;BR IF GOOD
 3415  012230  104006                        HLT     6                       ;SECONDARY REGISTER DATA ERROR
 3416  012232  040577  167134          1$:   BIC     R5,@DQSEC               ;CLEAR BIT10
 3417  012236  017704  167130                MOV     @DQSEC,R4               ;READ MISCELLANEOUS REGISTER
 3418  012242  005005                        CLR     R5                      ;EXPECT MISCELLANEOUS REGISTER
 3419                                                                          ;TO CONTAIN 0
 3420  012244  020504                        CMP     R5,R4                   ;ARE EXPECTED AND RECEIVED DATA THE SAME ?
 3421  012246  001401                        BEQ     2$                      ;BR IF GOOD
 3422  012250  104006                        HLT     6                       ;SECONDARY REGISTER DATA ERROR
 3423  012252  104400                  2$:   SCOPE                           ;CHECK FOR ITERATIONS, LOOP
 3424
 3425                                        ;SECONDARY REGISTER READ/WRITE TEST
 3426                                        ;SET BIT11 IN MISCELLANEOUS REGISTER
 3427                                        ;VERIFY THAT BIT11 WAS SET
 3428                                        ;CLEAR BIT11
 3429                                        ;VERIFY THAT BIT11 WAS CLEARED
 3430
 3431                                  ;  TEST 105
 3432                                  ;*************************************************************************
 3433  012254  012737  000105  001236  TST105: MOV     #105,TSTNO
 3434  012262  012737  012344  001216          MOV     #TST106,NEXT
 3435  012270  012703  000012                MOV     #12,R3                  ;ADDRESS OF SECONDARY REGISTER
 3436                                                                          ;MISCELLANEOUS
 3437  012274  110377  167070                MOVB    R3,@DQREG               ;SELECT MISCELLANEOUS REGISTER
 3438  012300  012705  004000                MOV     #BIT11,R5               ;(R5)=BIT11
 3439  012304  010577  167062                MOV     R5,@DQSEC               ;SET BIT11 IN
 3440                                                                          ;MISCELLANEOUS REGISTER
 3441  012310  017704  167055                MOV     @DQSEC,R4               ;(R4)=ACTUAL DATA IN
 3442                                                                          ;MISCELLANEOUS REGISTER
 3443  012314  020504                        CMP     R5,R4                   ;ARE EXPECTED AND RECEIVED DATA THE SAME ?
 3444  012316  001401                        BEQ     1$                      ;BR IF GOOD
 3445  012320  104006                        HLT     6                       ;SECONDARY REGISTER DATA ERROR
 3446  012322  040577  167044          1$:   BIC     R5,@DQSEC               ;CLEAR BIT11
 3447  012326  017704  167040                MOV     @DQSEC,R4               ;READ MISCELLANEOUS REGISTER
 3448  012332  005005                        CLR     R5                      ;EXPECT MISCELLANEOUS REGISTER
 3449                                                                          ;TO CONTAIN 0
 3450  012334  020504                        CMP     R5,R4                   ;ARE EXPECTED AND RECEIVED DATA THE SAME ?
 3451  012336  001401                        BEQ     2$                      ;BR IF GOOD
 3452  012340  104006                        HLT     6                       ;SECONDARY REGISTER DATA ERROR
 3453  012342  104400                  2$:   SCOPE                           ;CHECK FOR ITERATIONS, LOOP
 3454
 3455                                        ;SECONDARY REGISTER READ/WRITE TEST
 3456                                        ;SET BIT15 IN MISCELLANEOUS REGISTER
 3457                                        ;VERIFY THAT BIT15 WAS SET
 3458                                        ;CLEAR BIT15
 3459                                        ;VERIFY THAT BIT15 WAS CLEARED
 3460
 3461                                  ;  TEST 106
 3462                                  ;*************************************************************************
 3463  012344  012737  000106  001226  TST106: MOV     #106, STNO
```

E06


```
  3464  012352  012737  012434  001216          MOV     #CHKAB1,NEXT
  3465  012360  012703  000012                  MOV     #12,R3          ;ADDRESS OF SECONDARY REGISTER
  3466                                                                  ;MISCELLANEOUS
  3467  012364  110377  167000                  MOVB    R3,@DQREG       ;SELECT MISCELLANEOUS REGISTER
  3468  012370  012705  100000                  MOV     #BIT15,R5       ;(R5)=BIT15
  3469  012374  010577  166772                  MOV     R5,@DQSEC       ;SET BIT15 IN
  3470                                                                  ;MISCELLANEOUS REGISTER
  3471  012400  017704  166766                  MOV     @DQSEC,R4       ;(R4)=ACTUAL DATA IN
  3472                                                                  ;MISCELLANEOUS REGISTER
  3473  012404  020504                          CMP     R5,R4           ;ARE EXPECTED AND RECEIVED DATA THE SAME ?
  3474  012406  001401                          BEQ     1$              ;BR IF GOOD
  3475  012410  104006                          HLT     6               ;SECONDARY REGISTER DATA ERROR
  3476  012412  040577  166754          1$:     BIC     R5,@DQSEC       ;CLEAR BIT15
  3477  012416  017704  166750                  MOV     @DQSEC,R4       ;READ MISCELLANEOUS REGISTER
  3478  012422  005005                          CLR     R5              ;EXPECT MISCELLANEOUS REGISTER
  3479                                                                  ;TO CONTAIN 0
  3480  012424  020504                          CMP     R5,R4           ;ARE EXPECTED AND RECEIVED DATA THE SAME ?
  3481  012426  001401                          BEQ     2$              ;BR IF GOOD
  3482  012430  104006                          HLT     6               ;SECONDARY REGISTER DATA ERROR
  3483  012432  104400          2$:             SCOPE                   ;CHECK FOR ITERATIONS, LOOP
```

```
                                        ;IF BCC OPTION IS INSTALLED
                                        ;TESTS 107 THRU 126 WILL BE EXECUTED

012434  032737  002000  001510  CHKAB1: BIT     #ABBIT,DQSTAT
012442  001002                        BNE     TST107
012444  000137  014250                JMP     .EOP

                                        ;SECONDARY REGISTER READ/WRITE TEST
                                        ;SET BIT0 IN BCC POLYNOMIAL REGISTER
                                        ;VERIFY THAT BIT0 WAS SET
                                        ;CLEAR BIT0
                                        ;VERIFY THAT BIT0 WAS CLEARED

                                ;  TEST 107
                                ;*************************************************************************
012450  012737  000107  001226  TST107: MOV     #107,TSTNO
012456  012737  012540  001216          MOV     #TST110,NEXT
012464  012703  000017                  MOV     #17,R3                  ;ADDRESS OF SECONDARY REGISTER
                                                                        ;BCC POLYNOMIAL
012470  110377  166674                  MOVB    R3,@DQREG               ;SELECT BCC POLYNOMIAL REGISTER
012474  012705  000001                  MOV     #BIT0,R5                ;(R5)=BIT0
012500  010577  166666                  MOV     R5,@DQSEC               ;SET BIT0 IN
                                                                        ;BCC POLYNOMIAL REGISTER
012504  017704  166662                  MOV     @DQSEC,R4               ;(R4)=ACTUAL DATA IN
                                                                        ;BCC POLYNOMIAL REGISTER
012510  020504                          CMP     R5,R4                   ;ARE EXPECTED AND RECEIVED DATA THE SAME ?
012512  001401                          BEQ     1$                      ;BR IF GOOD
012514  104006                          HLT     6                       ;SECONDARY REGISTER DATA ERROR
012516  040577  166650          1$:     BIC     R5,@DQSEC               ;CLEAR BIT0
012522  017704  166644                  MOV     @DQSEC,R4               ;READ BCC POLYNOMIAL REGISTER
012526  005005                          CLR     R5                      ;EXPECT BCC POLYNOMIAL REGISTER
                                                                        ;TO CONTAIN 0
012530  020504                          CMP     R5,R4                   ;ARE EXPECTED AND RECEIVED DATA THE SAME ?
012532  001401                          BEQ     2$                      ;BR IF GOOD
012534  104006                          HLT     6                       ;SECONDARY REGISTER DATA ERROR
012536  104400          2$:     SCOPE                                   ;CHECK FOR ITERATIONS, LOOP

                                        ;SECONDARY REGISTER READ/WRITE TEST
                                        ;SET BIT1 IN BCC POLYNOMIAL REGISTER
                                        ;VERIFY THAT BIT1 WAS SET
                                        ;CLEAR BIT1
                                        ;VERIFY THAT BIT1 WAS CLEARED

                                ;  TEST 110
                                ;*************************************************************************
012540  012737  000110  001226  TST110: MOV     #110,TSTNO
012546  012737  012630  001216          MOV     #TST111,NEXT
012554  012703  000017                  MOV     #17,R3                  ;ADDRESS OF SECONDARY REGISTER
                                                                        ;BCC POLYNOMIAL
012560  110377  166604                  MOVB    R3,@DQREG               ;SELECT BCC POLYNOMIAL REGISTER
012564  012705  000002                  MOV     #BIT1,R5                ;(R5)=BIT1
012570  010577  166576                  MOV     R5,@DQSEC               ;SET BIT1 IN
                                                                        ;BCC POLYNOMIAL REGISTER
012574  017704  166572                  MOV     @DQSEC,R4               ;(R4)=ACTUAL DATA IN
                                                                        ;BCC POLYNOMIAL REGISTER
012600  020504                          CMP     R5,R4                   ;ARE EXPECTED AND RECEIVED DATA THE SAME ?
```

```
3540  012602  001401                        BEQ     1$                      ;BR IF GOOD
3541  012604  104006                        HLT     6                       ;SECONDARY REGISTER DATA ERROR
3542  012606  040577  166560          1$:   BIC     R5,@DQSEC               ;CLEAR BIT1
3543  012612  017704  166554                MOV     @DQSEC,R4               ;READ BCC POLYNOMIAL REGISTER
3544  012616  005005                        CLR     R5                      ;EXPECT BCC POLYNOMIAL REGISTER
3545                                                                        ;TO CONTAIN 0
3546  012620  020504                        CMP     R5,R4                   ;ARE EXPECTED AND RECEIVED DATA THE SAME ?
3547  012622  001401                        BEQ     2$                      ;BR IF GOOD
3548  012624  104006                        HLT     6                       ;SECONDARY REGISTER DATA ERROR
3549  012626  104400                  2$:   SCOPE                           ;CHECK FOR ITERATIONS, LOOP
3550
3551                                        ;SECONDARY REGISTER READ/WRITE TEST
3552                                        ;SET BIT2 IN BCC POLYNOMIAL REGISTER
3553                                        ;VERIFY THAT BIT2 WAS SET
3554                                        ;CLEAR BIT2
3555                                        ;VERIFY THAT BIT2 WAS CLEARED
3556
3557                                  ;  TEST 111
3558                                  ;*************************************************************************
3559  012630  012737  000111  001226 TST111: MOV     #111,TSTNO
3560  012636  012737  012720  001216        MOV     #TST112,NEXT
3561  012644  012703  000017                MOV     #17,R3                  ;ADDRESS OF SECONDARY REGISTER
3562                                                                        ;BCC POLYNOMIAL
3563  012650  110377  166514                MOVB    R3,@DQREG               ;SELECT BCC POLYNOMIAL REGISTER
3564  012654  012705  000004                MOV     #BIT2,R5                ;(R5)=BIT2
3565  012660  010577  166506                MOV     R5,@DQSEC               ;SET BIT2 IN
3566                                                                        ;BCC POLYNOMIAL REGISTER
3567  012664  017704  166502                MOV     @DQSEC,R4               ;(R4)=ACTUAL DATA IN
3568                                                                        ;BCC POLYNOMIAL REGISTER
3569  012670  020504                        CMP     R5,R4                   ;ARE EXPECTED AND RECEIVED DATA THE SAME ?
3570  012672  001401                        BEQ     1$                      ;BR IF GOOD
3571  012674  104006                        HLT     6                       ;SECONDARY REGISTER DATA ERROR
3572  012676  040577  166470          1$:   BIC     R5,@DQSEC               ;CLEAR BIT2
3573  012702  017704  166464                MOV     @DQSEC,R4               ;READ BCC POLYNOMIAL REGISTER
3574  012706  005005                        CLR     R5                      ;EXPECT BCC POLYNOMIAL REGISTER
3575                                                                        ;TO CONTAIN 0
3576  012710  020504                        CMP     R5,R4                   ;ARE EXPECTED AND RECEIVED DATA THE SAME ?
3577  012712  001401                        BEQ     2$                      ;BR IF GOOD
3578  012714  104006                        HLT     6                       ;SECONDARY REGISTER DATA ERROR
3579  012716  104400                  2$:   SCOPE                           ;CHECK FOR ITERATIONS, LOOP
3580
3581                                        ;SECONDARY REGISTER READ/WRITE TEST
3582                                        ;SET BIT3 IN BCC POLYNOMIAL REGISTER
3583                                        ;VERIFY THAT BIT3 WAS SET
3584                                        ;CLEAR BIT3
3585                                        ;VERIFY THAT BIT3 WAS CLEARED
3586
3587                                  ;  TEST 112
3588                                  ;*************************************************************************
3589  012720  012737  000112  001226 TST112: MOV     #112,TSTNO
3590  012726  012737  013010  001216        MOV     #TST113,NEXT
3591  012734  012703  000017                MOV     #17,R3                  ;ADDRESS OF SECONDARY REGISTER
3592                                                                        ;BCC POLYNOMIAL
3593  012740  110377  166424                MOVB    R3,@DQREG               ;SELECT BCC POLYNOMIAL REGISTER
3594  012744  012705  000010                MOV     #BIT3,R5                ;(R5)=BIT3
3595  012750  010577  166416                MOV     R5,@DQSEC               ;SET BIT3 IN
```

```
                                                                ;BCC POLYNOMIAL REGISTER
013754  017704  166412                MOV     @DQSEC,R4       ;(R4)=ACTUAL DATA IN
                                                                ;BCC POLYNOMIAL REGISTER
012760  020504                        CMP     R5,R4           ;ARE EXPECTED AND RECEIVED DATA THE SAME ?
012762  001401                        BEQ     1$              ;BR IF GOOD
012764  104006                        HLT     6               ;SECONDARY REGISTER DATA ERROR
012766  040577  166400        1$:     BIC     R5,@DQSEC       ;CLEAR BIT3
012772  017704  166374                MOV     @DQSEC,R4       ;READ BCC POLYNOMIAL REGISTER
012776  005005                        CLR     R5              ;EXPECT BCC POLYNOMIAL REGISTER
                                                                ;TO CONTAIN 0
013000  020504                        CMP     R5,R4           ;ARE EXPECTED AND RECEIVED DATA THE SAME ?
013002  001401                        BEQ     2$              ;BR IF GOOD
013004  104006                        HLT     6               ;SECONDARY REGISTER DATA ERROR
013006  104400        2$:     SCOPE                           ;CHECK FOR ITERATIONS, LOOP

                                ;SECONDARY REGISTER READ/WRITE TEST
                                ;SET BIT4 IN BCC POLYNOMIAL REGISTER
                                ;VERIFY THAT BIT4 WAS SET
                                ;CLEAR BIT4
                                ;VERIFY THAT BIT4 WAS CLEARED

                        ;  TEST 113
                        ;*************************************************************************
013010  012737  000113  001226  TST113: MOV     #113,TSTNO
013016  012737  013100  001216          MOV     #TST114,NEXT
013024  012703  000017                  MOV     #17,R3          ;ADDRESS OF SECONDARY REGISTER
                                                                ;BCC POLYNOMIAL
013030  110377  166334                  MOVB    R3,@DQREG       ;SELECT BCC POLYNOMIAL REGISTER
013034  012705  000020                  MOV     #BIT4,R5        ;(R5)=BIT4
013040  010577  166326                  MOV     R5,@DQSEC       ;SET BIT4 IN
                                                                ;BCC POLYNOMIAL REGISTER
013044  017704  166322                  MOV     @DQSEC,R4       ;(R4)=ACTUAL DATA IN
                                                                ;BCC POLYNOMIAL REGISTER
013050  020504                          CMP     R5,R4           ;ARE EXPECTED AND RECEIVED DATA THE SAME ?
013052  001401                          BEQ     1$              ;BR IF GOOD
013054  104006                          HLT     6               ;SECONDARY REGISTER DATA ERROR
013056  040577  166310          1$:     BIC     R5,@DQSEC       ;CLEAR BIT4
013062  017704  166304                  MOV     @DQSEC,R4       ;READ BCC POLYNOMIAL REGISTER
013066  005005                          CLR     R5              ;EXPECT BCC POLYNOMIAL REGISTER
                                                                ;TO CONTAIN 0
013070  020504                          CMP     R5,R4           ;ARE EXPECTED AND RECEIVED DATA THE SAME ?
013072  001401                          BEQ     2$              ;BR IF GOOD
013074  104006                          HLT     6               ;SECONDARY REGISTER DATA ERROR
013076  104400          2$:     SCOPE                           ;CHECK FOR ITERATIONS, LOOP

                                ;SECONDARY REGISTER READ/WRITE TEST
                                ;SET BITS IN BCC POLYNOMIAL REGISTER
                                ;VERIFY THAT BITS WAS SET
                                ;CLEAR BITS
                                ;VERIFY THAT BITS WAS CLEARED

                        ;  TEST 114
                        ;*************************************************************************
013100  012737  000114  001226  TST114: MOV     #114,TSTNO
013106  012737  013170  001216          MOV     #TST115,NEXT
013114  012703  000017                  MOV     #17,R3          ;ADDRESS OF SECONDARY REGISTER
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3652
3653  013120  110377  166244                  MOVB    R3,@DQREG       ;BCC POLYNOMIAL
                                                                      ;SELECT BCC POLYNOMIAL REGISTER
3654  013124  012705  000040                  MOV     #BIT5,R5        ;(R5)=BIT5
3655  013130  010577  166236                  MOV     R5,@DQSEC       ;SET BIT5 IN
                                                                      ;BCC POLYNOMIAL REGISTER
3656
3657  013134  017704  166232                  MOV     @DQSEC,R4       ;(R4)=ACTUAL DATA IN
                                                                      ;BCC POLYNOMIAL REGISTER
3658
3659  013140  020504                          CMP     R5,R4           ;ARE EXPECTED AND RECEIVED DATA THE SAME ?
3660  013142  001401                          BEQ     1$              ;BR IF GOOD
3661  013144  104006                          HLT     6               ;SECONDARY REGISTER DATA ERROR
3662  013146  040577  166220          1$:     BIC     R5,@DQSEC       ;CLEAR BIT5
3663  013152  017704  166214                  MOV     @DQSEC,R4       ;READ BCC POLYNOMIAL REGISTER
3664  013156  005005                          CLR     R5              ;EXPECT BCC POLYNOMIAL REGISTER
3665                                                                  ;TO CONTAIN 0
3666  013160  020504                          CMP     R5,R4           ;ARE EXPECTED AND RECEIVED DATA THE SAME ?
3667  013162  001401                          BEQ     2$              ;BR IF GOOD
3668  013164  104006                          HLT     6               ;SECONDARY REGISTER DATA ERROR
3669  013166  104400                  2$:     SCOPE                   ;CHECK FOR ITERATIONS, LOOP
3670
3671                                          ;SECONDARY REGISTER READ/WRITE TEST
3672                                          ;SET BIT6 IN BCC POLYNOMIAL REGISTER
3673                                          ;VERIFY THAT BIT6 WAS SET
3674                                          ;CLEAR BIT6
3675                                          ;VERIFY THAT BIT6 WAS CLEARED
3676
3677                                  ;  TEST 115
3678                                  ;*************************************************************************
3679  013170  012737  000115  001226  TST115: MOV     #115,TSTNO
3680  013176  012737  013260  001216          MOV     #TST116,NEXT
3681  013204  012703  000017                  MOV     #17,R3          ;ADDRESS OF SECONDARY REGISTER
3682                                                                  ;BCC POLYNOMIAL
3683  013210  110377  166154                  MOVB    R3,@DQREG       ;SELECT BCC POLYNOMIAL REGISTER
3684  013214  012705  000100                  MOV     #BIT6,R5        ;(R5)=BIT6
3685  013220  010577  166146                  MOV     R5,@DQSEC       ;SET BIT6 IN
                                                                      ;BCC POLYNOMIAL REGISTER
3686
3687  013224  017704  166142                  MOV     @DQSEC,R4       ;(R4)=ACTUAL DATA IN
                                                                      ;BCC POLYNOMIAL REGISTER
3688
3689  013230  020504                          CMP     R5,R4           ;ARE EXPECTED AND RECEIVED DATA THE SAME ?
3690  013232  001401                          BEQ     1$              ;BR IF GOOD
3691  013234  104006                          HLT     6               ;SECONDARY REGISTER DATA ERROR
3692  013236  040577  166130          1$:     BIC     R5,@DQSEC       ;CLEAR BIT6
3693  013242  017704  166124                  MOV     @DQSEC,R4       ;READ BCC POLYNOMIAL REGISTER
3694  013246  005005                          CLR     R5              ;EXPECT BCC POLYNOMIAL REGISTER
3695                                                                  ;TO CONTAIN 0
3696  013250  020504                          CMP     R5,R4           ;ARE EXPECTED AND RECEIVED DATA THE SAME ?
3697  013252  001401                          BEQ     2$              ;BR IF GOOD
3698  013254  104006                          HLT     6               ;SECONDARY REGISTER DATA ERROR
3699  013256  104400                  2$:     SCOPE                   ;CHECK FOR ITERATIONS, LOOP
3700
3701                                          ;SECONDARY REGISTER READ/WRITE TEST
3702                                          ;SET BIT7 IN BCC POLYNOMIAL REGISTER
3703                                          ;VERIFY THAT BIT7 WAS SET
3704                                          ;CLEAR BIT7
3705                                          ;VERIFY THAT BIT7 WAS CLEARED
2706
2707                                  ;  TEST 116
```

```
3708                                        ;*****************************************************************
3709  013260  012737  000116  001226  TST116: MOV     #116,TSTNO
3710  013266  012737  013350  001216           MOV     #TST117,NEXT
3711  013274  012703  000017                   MOV     #17,R3                  ;ADDRESS OF SECONDARY REGISTER
3712                                                                          ;BCC POLYNOMIAL
3713  013300  110377  166064                   MOVB    R3,@DQREG               ;SELECT BCC POLYNOMIAL REGISTER
3714  013304  012705  000200                   MOV     #BIT7,R5                ;(R5)=BIT7
3715  013310  010577  166056                   MOV     R5,@DQSEC               ;SET BIT7 IN
3716                                                                          ;BCC POLYNOMIAL REGISTER
3717  013314  017704  166052                   MOV     @DQSEC,R4               ;(R4)=ACTUAL DATA IN
3718                                                                          ;BCC POLYNOMIAL REGISTER
3719  013320  020504                           CMP     R5,R4                   ;ARE EXPECTED AND RECEIVED DATA THE SAME ?
3720  013322  001401                           BEQ     1$                      ;BR IF GOOD
3721  013324  104006                           HLT     6                       ;SECONDARY REGISTER DATA ERROR
3722  013326  040577  166040           1$:     BIC     R5,@DQSEC               ;CLEAR BIT7
3723  013332  017704  166034                   MOV     @DQSEC,R4               ;READ BCC POLYNOMIAL REGISTER
3724  013336  005005                           CLR     R5                      ;EXPECT BCC POLYNOMIAL REGISTER
3725                                                                          ;TO CONTAIN 0
3726  013340  020504                           CMP     R5,R4                   ;ARE EXPECTED AND RECEIVED DATA THE SAME ?
3727  013342  001401                           BEQ     2$                      ;BR IF GOOD
3728  013344  104006                           HLT     6                       ;SECONDARY REGISTER DATA ERROR
3729  013346  104400           2$:     SCOPE                                   ;CHECK FOR ITERATIONS, LOOP
3730
3731                                        ;SECONDARY REGISTER READ/WRITE TEST
3732                                        ;SET BIT8 IN BCC POLYNOMIAL REGISTER
3733                                        ;VERIFY THAT BIT8 WAS SET
3734                                        ;CLEAR BIT8
3735                                        ;VERIFY THAT BIT8 WAS CLEARED
3736
3737                                        ;  TEST 117
3738                                        ;*****************************************************************
3739  013350  012737  000117  001226  TST117: MOV     #117,TSTNO
3740  013356  012737  013440  001216           MOV     #TST120,NEXT
3741  013364  012703  000017                   MOV     #17,R3                  ;ADDRESS OF SECONDARY REGISTER
3742                                                                          ;BCC POLYNOMIAL
3743  013370  110377  165774                   MOVB    R3,@DQREG               ;SELECT BCC POLYNOMIAL REGISTER
3744  013374  012705  000400                   MOV     #BIT8,R5                ;(R5)=BIT8
3745  013400  010577  165766                   MOV     R5,@DQSEC               ;SET BIT8 IN
3746                                                                          ;BCC POLYNOMIAL REGISTER
3747  013404  017704  165762                   MOV     @DQSEC,R4               ;(R4)=ACTUAL DATA IN
3748                                                                          ;BCC POLYNOMIAL REGISTER
3749  013410  020504                           CMP     R5,R4                   ;ARE EXPECTED AND RECEIVED DATA THE SAME ?
3750  013412  001401                           BEQ     1$                      ;BR IF GOOD
3751  013414  104006                           HLT     6                       ;SECONDARY REGISTER DATA ERROR
3752  013416  040577  165750           1$:     BIC     R5,@DQSEC               ;CLEAR BIT8
3753  013422  017704  165744                   MOV     @DQSEC,R4               ;READ BCC POLYNOMIAL REGISTER
3754  013426  005005                           CLR     R5                      ;EXPECT BCC POLYNOMIAL REGISTER
3755                                                                          ;TO CONTAIN 0
3756  013430  020504                           CMP     R5,R4                   ;ARE EXPECTED AND RECEIVED DATA THE SAME ?
3757  013432  001401                           BEQ     2$                      ;BR IF GOOD
3758  013434  104006                           HLT     6                       ;SECONDARY REGISTER DATA ERROR
3759  013436  104400           2$:     SCOPE                                   ;CHECK FOR ITERATIONS, LOOP
3760
3761                                        ;SECONDARY REGISTER READ/WRITE TEST
3762                                        ;SET BIT9 IN BCC POLYNOMIAL REGISTER
3763                                        ;VERIFY THAT BIT9 WAS SET
```

```
3764                                                    ;CLEAR BIT9
3765                                                    ;VERIFY THAT BIT9 WAS CLEARED
3766
3767                                            ;  TEST 120
3768                                            ;*****************************************************************
3769  013440  012737  000120  001226  TST120:  MOV     #120,TSTNO
3770  013446  012737  013530  001216          MOV     #TST121,NEXT
3771  013454  012703  000017                  MOV     #17,R3          ;ADDRESS OF SECONDARY REGISTER
3772                                                                  ;BCC POLYNOMIAL
3773  013460  110377  165704                  MOVB    R3,@DQREG       ;SELECT BCC POLYNOMIAL REGISTER
3774  013464  012705  001000                  MOV     #BIT9,R5        ;(R5)=BIT9
3775  013470  010577  165676                  MOV     R5,@DQSEC       ;SET BIT9 IN
3776                                                                  ;BCC POLYNOMIAL REGISTER
3777  013474  017704  165672                  MOV     @DQSEC,R4       ;(R4)=ACTUAL DATA IN
3778                                                                  ;BCC POLYNOMIAL REGISTER
3779  013500  020504                          CMP     R5,R4           ;ARE EXPECTED AND RECEIVED DATA THE SAME ?
3780  013502  001401                          BEQ     1$              ;BR IF GOOD
3781  013504  104006                          HLT     6               ;SECONDARY REGISTER DATA ERROR
3782  013506  040577  165660          1$:     BIC     R5,@DQSEC       ;CLEAR BIT9
3783  013512  017704  165654                  MOV     @DQSEC,R4       ;READ BCC POLYNOMIAL REGISTER
3784  013516  005005                          CLR     R5              ;EXPECT BCC POLYNOMIAL REGISTER
3785                                                                  ;TO CONTAIN 0
3786  013520  020504                          CMP     R5,R4           ;ARE EXPECTED AND RECEIVED DATA THE SAME ?
3787  013522  001401                          BEQ     2$              ;BR IF GOOD
3788  013524  104006                          HLT     6               ;SECONDARY REGISTER DATA ERROR
3789  013526  104400                  2$:     SCOPE                   ;CHECK FOR ITERATIONS, LOOP
3790
3791                                                    ;SECONDARY REGISTER READ/WRITE TEST
3792                                                    ;SET BIT10 IN BCC POLYNOMIAL REGISTER
3793                                                    ;VERIFY THAT BIT10 WAS SET
3794                                                    ;CLEAR BIT10
3795                                                    ;VERIFY THAT BIT10 WAS CLEARED
3796
3797                                            ;  TEST 121
3798                                            ;*****************************************************************
3799  013530  012737  000121  001226  TST121:  MOV     #121,TSTNO
3800  013536  012737  013620  001216          MOV     #TST122,NEXT
3801  013544  012703  000017                  MOV     #17,R3          ;ADDRESS OF SECONDARY REGISTER
3802                                                                  ;BCC POLYNOMIAL
3803  013550  110377  165614                  MOVB    R3,@DQREG       ;SELECT BCC POLYNOMIAL REGISTER
3804  013554  012705  002000                  MOV     #BIT10,R5       ;(R5)=BIT10
3805  013560  010577  165606                  MOV     R5,@DQSEC       ;SET BIT10 IN
3806                                                                  ;BCC POLYNOMIAL REGISTER
3807  013564  017704  165602                  MOV     @DQSEC,R4       ;(R4)=ACTUAL DATA IN
3808                                                                  ;BCC POLYNOMIAL REGISTER
3809  013570  020504                          CMP     R5,R4           ;ARE EXPECTED AND RECEIVED DATA THE SAME ?
3810  013572  001401                          BEQ     1$              ;BR IF GOOD
3811  013574  104006                          HLT     6               ;SECONDARY REGISTER DATA ERROR
3812  013576  040577  165570          1$:     BIC     R5,@DQSEC       ;CLEAR BIT10
3813  013602  017704  165564                  MOV     @DQSEC,R4       ;READ BCC POLYNOMIAL REGISTER
3814  013606  005005                          CLR     R5              ;EXPECT BCC POLYNOMIAL REGISTER
3815                                                                  ;TO CONTAIN 0
3816  013610  020504                          CMP     R5,R4           ;ARE EXPECTED AND RECEIVED DATA THE SAME ?
3817  013612  001401                          BEQ     2$              ;BR IF GOOD
3818  013614  104006                          HLT     6               ;SECONDARY REGISTER DATA ERROR
3819  013616  104400                  2$:     SCOPE                   ;CHECK FOR ITERATIONS, LOOP
```

```
3820
3821                                            ;SECONDARY REGISTER READ/WRITE TEST
3822                                            ;SET BIT11 IN BCC POLYNOMIAL REGISTER
3823                                            ;VERIFY THAT BIT11 WAS SET
3824                                            ;CLEAR BIT11
3825                                            ;VERIFY THAT BIT11 WAS CLEARED
3826
3827                                        ;  TEST 122
3828                                        ;*************************************************************************
3829  013620  012737  000122  001226  TST122: MOV     #122,TSTNO
3830  013626  012737  013710  001216          MOV     #TST123,NEXT
3831  013634  012703  000017                 MOV     #17,R3                  ;ADDRESS OF SECONDARY REGISTER
3832                                                                          ;BCC POLYNOMIAL
3833  013640  110377  165524                 MOVB    R3,@DQREG               ;SELECT BCC POLYNOMIAL REGISTER
3834  013644  012705  004000                 MOV     #BIT11,R5               ;(R5)=BIT11
3835  013650  010577  165516                 MOV     R5,@DQSEC               ;SET BIT11 IN
3836                                                                          ;BCC POLYNOMIAL REGISTER
3837  013654  017704  165512                 MOV     @DQSEC,R4               ;(R4)=ACTUAL DATA IN
3838                                                                          ;BCC POLYNOMIAL REGISTER
3839  013660  020504                         CMP     R5,R4                   ;ARE EXPECTED AND RECEIVED DATA THE SAME ?
3840  013662  001401                         BEQ     1$                      ;BR IF GOOD
3841  013664  104006                         HLT     6                       ;SECONDARY REGISTER DATA ERROR
3842  013666  040577  165500          1$:    BIC     R5,@DQSEC               ;CLEAR BIT11
3843  013672  017704  165474                 MOV     @DQSEC,R4               ;READ BCC POLYNOMIAL REGISTER
3844  013676  005005                         CLR     R5                      ;EXPECT BCC POLYNOMIAL REGISTER
3845                                                                          ;TO CONTAIN 0
3846  013700  020504                         CMP     R5,R4                   ;ARE EXPECTED AND RECEIVED DATA THE SAME ?
3847  013702  001401                         BEQ     2$                      ;BR IF GOOD
3848  013704  104006                         HLT     6                       ;SECONDARY REGISTER DATA ERROR
3849  013706  104400                  2$:    SCOPE                           ;CHECK FOR ITERATIONS, LOOP
3850
3851                                            ;SECONDARY REGISTER READ/WRITE TEST
3852                                            ;SET BIT12 IN BCC POLYNOMIAL REGISTER
3853                                            ;VERIFY THAT BIT12 WAS SET
3854                                            ;CLEAR BIT12
3855                                            ;VERIFY THAT BIT12 WAS CLEARED
3856
3857                                        ;  TEST 123
3858                                        ;*************************************************************************
3859  013710  012737  000123  001226  TST123: MOV     #123,TSTNO
3860  013716  012737  014000  001216          MOV     #TST124,NEXT
3861  013724  012703  000017                 MOV     #17,R3                  ;ADDRESS OF SECONDARY REGISTER
3862                                                                          ;BCC POLYNOMIAL
3863  013730  110377  165434                 MOVB    R3,@DQREG               ;SELECT BCC POLYNOMIAL REGISTER
3864  013734  012705  010000                 MOV     #BIT12,R5               ;(R5)=BIT12
3865  013740  010577  165426                 MOV     R5,@DQSEC               ;SET BIT12 IN
3866                                                                          ;BCC POLYNOMIAL REGISTER
3867  013744  017704  165422                 MOV     @DQSEC,R4               ;(R4)=ACTUAL DATA IN
3868                                                                          ;BCC POLYNOMIAL REGISTER
3869  013750  020504                         CMP     R5,R4                   ;ARE EXPECTED AND RECEIVED DATA THE SAME ?
3870  013752  001401                         BEQ     1$                      ;BR IF GOOD
3871  013754  104006                         HLT     6                       ;SECONDARY REGISTER DATA ERROR
3872  013756  040577  165410          1$:    BIC     R5,@DQSEC               ;CLEAR BIT12
3873  013762  017704  165404                 MOV     @DQSEC,R4               ;READ BCC POLYNOMIAL REGISTER
3874  013766  005005                         CLR     R5                      ;EXPECT BCC POLYNOMIAL REGISTER
3875                                                                          ;TO CONTAIN 0
```

```
3876  013770  020504                          CMP     R5,R4                   ;ARE EXPECTED AND RECEIVED DATA THE SAME ?
3877  013772  001401                          BEQ     2$                      ;BR IF GOOD
3878  013774  104006                          HLT     6                       ;SECONDARY REGISTER DATA ERROR
3879  013776  104400                  2$:     SCOPE                           ;CHECK FOR ITERATIONS, LOOP
3880
3881                                          ;SECONDARY REGISTER READ/WRITE TEST
3882                                          ;SET BIT13 IN BCC POLYNOMIAL REGISTER
3883                                          ;VERIFY THAT BIT13 WAS SET
3884                                          ;CLEAR BIT13
3885                                          ;VERIFY THAT BIT13 WAS CLEARED
3886
3887                                  ;  TEST 124
3888                                  ;*************************************************************************
3889  014000  012737  000124  001226  TST124: MOV     #124,TSTNO
3890  014006  012737  014070  001216          MOV     #TST125,NEXT
3891  014014  012703  000017                  MOV     #17,R3                  ;ADDRESS OF SECONDARY REGISTER
3892                                                                          ;BCC POLYNOMIAL
3893  014020  110377  165344                  MOVB    R3,@DQREG               ;SELECT BCC POLYNOMIAL REGISTER
3894  014024  012705  020000                  MOV     #BIT13,R5               ;(R5)=BIT13
3895  014030  010577  165336                  MOV     R5,@DQSEC               ;SET BIT13 IN
3896                                                                          ;BCC POLYNOMIAL REGISTER
3897  014034  017704  165332                  MOV     @DQSEC,R4               ;(R4)=ACTUAL DATA IN
3898                                                                          ;BCC POLYNOMIAL REGISTER
3899  014040  020504                          CMP     R5,R4                   ;ARE EXPECTED AND RECEIVED DATA THE SAME ?
3900  014042  001401                          BEQ     1$                      ;BR IF GOOD
3901  014044  104006                          HLT     6                       ;SECONDARY REGISTER DATA ERROR
3902  014046  040577  165320          1$:     BIC     R5,@DQSEC               ;CLEAR BIT13
3903  014052  017704  165314                  MOV     @DQSEC,R4               ;READ BCC POLYNOMIAL REGISTER
3904  014056  005005                          CLR     R5                      ;EXPECT BCC POLYNOMIAL REGISTER
3905                                                                          ;TO CONTAIN 0
3906  014060  020504                          CMP     R5,R4                   ;ARE EXPECTED AND RECEIVED DATA THE SAME ?
3907  014062  001401                          BEQ     2$                      ;BR IF GOOD
3908  014064  104006                          HLT     6                       ;SECONDARY REGISTER DATA ERROR
3909  014066  104400                  2$:     SCOPE                           ;CHECK FOR ITERATIONS, LOOP
3910
3911                                          ;SECONDARY REGISTER READ/WRITE TEST
3912                                          ;SET BIT14 IN BCC POLYNOMIAL REGISTER
3913                                          ;VERIFY THAT BIT14 WAS SET
3914                                          ;CLEAR BIT14
3915                                          ;VERIFY THAT BIT14 WAS CLEARED
3916
3917                                  ;  TEST 125
3918                                  ;*************************************************************************
3919  014070  012737  000125  001226  TST125: MOV     #125,TSTNO
3920  014076  012737  014160  001216          MOV     #TST126,NEXT
3921  014104  012703  000017                  MOV     #17,R3                  ;ADDRESS OF SECONDARY REGISTER
3922                                                                          ;BCC POLYNOMIAL
3923  014110  110377  165254                  MOVB    R3,@DQREG               ;SELECT BCC POLYNOMIAL REGISTER
3924  014114  012705  040000                  MOV     #BIT14,R5               ;(R5)=BIT14
3925  014120  010577  165246                  MOV     R5,@DQSEC               ;SET BIT14 IN
3926                                                                          ;BCC POLYNOMIAL REGISTER
3927  014124  017704  165242                  MOV     @DQSEC,R4               ;(R4)=ACTUAL DATA IN
3928                                                                          ;BCC POLYNOMIAL REGISTER
3929  014130  020504                          CMP     R5,R4                   ;ARE EXPECTED AND RECEIVED DATA THE SAME ?
3930  014132  001401                          BEQ     1$                      ;BR IF GOOD
3931  014134  104006                          HLT     6                       ;SECONDARY REGISTER DATA ERROR
```

```
3932  014136  040577  165230          1$:     BIC     R5,@DQSEC               ;CLEAR BIT14
3933  014142  017704  165224                  MOV     @DQSEC,R4               ;READ BCC POLYNOMIAL REGISTER
3934  014146  005005                          CLR     R5                      ;EXPECT BCC POLYNOMIAL REGISTER
3935                                                                          ;TO CONTAIN 0
3936  014150  020504                          CMP     R5,R4                   ;ARE EXPECTED AND RECEIVED DATA THE SAME ?
3937  014152  001401                          BEQ     2$                      ;BR IF GOOD
3938  014154  104006                          HLT     6                       ;SECONDARY REGISTER DATA ERROR
3939  014156  104400                  2$:     SCOPE                           ;CHECK FOR ITERATIONS, LOOP
3940
3941                                          ;SECONDARY REGISTER READ/WRITE TEST
3942                                          ;SET BIT15 IN BCC POLYNOMIAL REGISTER
3943                                          ;VERIFY THAT BIT15 WAS SET
3944                                          ;CLEAR BIT15
3945                                          ;VERIFY THAT BIT15 WAS CLEARED
3946
3947                                  ;  TEST 126
3948                                  ;*************************************************************************
3949  014160  012737  000126  001226  TST126: MOV     #126,TSTNO
3950  014166  012737  014250  001216          MOV     #.EOP,NEXT
3951  014174  012703  000017                  MOV     #17,R3                  ;ADDRESS OF SECONDARY REGISTER
3952                                                                          ;BCC POLYNOMIAL
3953  014200  110377  165164                  MOVB    R3,@DQREG               ;SELECT BCC POLYNOMIAL REGISTER
3954  014204  012705  100000                  MOV     #BIT15,R5               ;(R5)=BIT15
3955  014210  010577  165156                  MOV     R5,@DQSEC               ;SET BIT15 IN
3956                                                                          ;BCC POLYNOMIAL REGISTER
3957  014214  017704  165152                  MOV     @DQSEC,R4               ;(R4)=ACTUAL DATA IN
3958                                                                          ;BCC POLYNOMIAL REGISTER
3959  014220  020504                          CMP     R5,R4                   ;ARE EXPECTED AND RECEIVED DATA THE SAME ?
3960  014222  001401                          BEQ     1$                      ;BR IF GOOD
3961  014224  104006                          HLT     6                       ;SECONDARY REGISTER DATA ERROR
3962  014226  040577  165140          1$:     BIC     R5,@DQSEC               ;CLEAR BIT15
3963  014232  017704  165134                  MOV     @DQSEC,R4               ;READ BCC POLYNOMIAL REGISTER
3964  014236  005005                          CLR     R5                      ;EXPECT BCC POLYNOMIAL REGISTER
3965                                                                          ;TO CONTAIN 0
3966  014240  020504                          CMP     R5,R4                   ;ARE EXPECTED AND RECEIVED DATA THE SAME ?
3967  014242  001401                          BEQ     2$                      ;BR IF GOOD
3968  014244  104006                          HLT     6                       ;SECONDARY REGISTER DATA ERROR
3969  014246  104400                  2$:     SCOPE                           ;CHECK FOR ITERATIONS, LOOP
```

```
                                                        ;END OF PASS
                                                        ;TYPE NAME OF TEST
                                                        ;UPDATE PASS COUNT
                                                        ;CHECK FOR EXIT TO ACT-11
                                                        ;RESTART TEST

 014250  005037  001234          .EOP:   CLR     LSTERR                  ;CLEAR LAST ERROR PC
 014254  005037  001312                  CLR     ERRFLG                  ;CLEAR ERROR FLAG
 014260  005237  001230                  INC     PASCNT                  ;UPDATE PASS COUNT
 014264  104402                          TYPE
 014266  016530                          MEPASS
 014270  104402                          TYPE
 014272  016661                          MCSRX
 014274  104411                          CNVRT
 014276  014406                          XCSR
 014300  104402                          TYPE
 014302  016667                          MVECX
 014304  104411                          CNVRT
 014306  014414                          XVEC
 014310  104402                          TYPE
 014312  016675                          MPASSX
 014314  104411                          CNVRT
 014316  014422                          XPASS
 014320  104402                          TYPE
 014322  016706                          MERRX
 014324  104411                          CNVRT
 014326  014430                          XERR
 014330  013777  001230  164644          MOV     PASCNT,@LIGHTS          ;DISPLAY PASS COUNT
 014336  005337  001276                  DEC     SAVNUM
 014342  001013                          BNE     RESTRT
 014344  013737  001504  001276          MOV     DQNUM,SAVNUM
 014352  013701  000042                  MOV     @#42,R1                 ;CHECK FOR ACT-11 OR DDP
 014356  001405                          BEQ     RESTRT                  ;IF NOT, CONTINUE TESTING
 014360  000005                          RESET
 014362                          LOGICAL:
 014362  004711                          JSR     PC,(R1)
 014364  000240                          NOP
 014366  000240                          NOP
 014370  000240                          NOP
 014372  104414                  RESTRT: CKSWR
 014374  012737  002254  001214          MOV     #TST1,RETURN
 014402  000137  002254                  JMP     TST1
 014406  000001                  XCSR:   1
 014410      006     002                 .BYTE   6,2
 014412  001360                          DQRCSR
 014414  000001                  XVEC:   1
 014416      003     002                 .BYTE   3,2
 014420  001350                          DQRVEC
 014422  000001                  XPASS:  1
 014424      006     002                 .BYTE   6,2
 014426  001230                          PASCNT
 014430  000001                  XERR:   1
 014432      006     002                 .BYTE   6,2
 014434  001232                          ERRCNT
```

```
                                                ;SCOPE LOOP AND INTERATION HANDLER
                                                
014436  104414                          .SCOPE: CKSWR
014440  032777  040000  164532                  BIT     #BIT14,@SWR
014446  001407                          TTST:   BEQ     1$
014450  000432                                  BR      3$
014452  105777  164526                          TSTB    @TKCSR
014456  100027                                  BPL     3$
014460  017700  164522                          MOV     @TKDBR,R0
014464  000412                                  BR      2$
014466  032777  004000  164504          1$:     BIT     #SW11,@SWR
014474  001006                                  BNE     2$
014476  005237  001224                          INC     LPCNT
014502  023737  001224  001222                  CMP     LPCNT,ICOUNT
014510  001012                                  BNE     3$
014512  105037  001312                  2$:     CLRB    ERRFLG
014516  005037  001224                          CLR     LPCNT
014522  012737  002000  001222                  MOV     #2000,ICOUNT
014530  013737  001216  001214                  MOV     NEXT,RETURN
014536  013716  001214                  3$:     MOV     RETURN,(SP)
014542  000002                                  RTI
014544  001407                          BRW:    1407
014546  000432                          BRX:    432

                                                ;CHECK FOR FREEZE ON CURRENT DATA

014550  104414                          .SCOP1: CKSWR
014552  032777  001000  164420                  BIT     #SW09,@SWR
014560  001402                                  BEQ     1$
014562  013716  001220                          MOV     LOCK,(SP)
014566  000002                          1$:     RTI

                                                ;TELETYPE OUTPUT ROUTINE

014570  010546                          .TYPE:  MOV     R5,-(SP)
014572  017605  000002                          MOV     @2(SP),R5
014576  062766  000002  000002                  ADD     #2,2(SP)
014604  005737  016260                  1$:     TST     @#RDSW
014610  001004                                  BNE     300$
014612  032777  010000  164360                  BIT     #SW12,@SWR
014620  001024                                  BNE     3$
014622  105715                          300$:   TSTB    (R5)
014624  100014                                  BPL     2$
014626  105777  164356                          TSTB    @TPCSR
014632  100375                                  BPL     .-4
014634  012777  000015  164350                  MOV     #15,@TPDBR
014642  105777  164342                          TSTB    @TPCSR
014646  100375                                  BPL     .-4
014650  012777  000012  164334                  MOV     #12,@TPDBR
014656  105777  164326                  2$:     TSTB    @TPCSR
014662  100375                                  BPL     2$
014664  112577  164322                          MOVB    (R5)+,@TPDBR
014670  001345                                  BNE     1$
014672  012605                          3$:     MOV     (SP)+,R5
014674  000002                                  RTI
```

```
                                                        ;ASCII STRING INPUT ROUTINE
                                                .INSTR: MOV     R3,-(SP)
                                                        MOV     R4,-(SP)
                                                        MOV     @4(SP),.MSG
                                                        ADD     #2,4(SP)
                                                .INST1: TYPE
                                                .MSG:   0
                                                        MOV     #INBUF,R4
                                                        MOV     #7,R3
                                                1$:     TSTB    @TKCSR
                                                        BPL     1$
                                                        MOVB    @TKDBR,(R4)
                                                        BICB    #200,(R4)
                                                        CMPB    (R4),#25                ;IS IT <^G>
                                                        BNE     200$
                                                        TYPE,MCRLF
                                                        BR      .INST1
                                                200$:   CMPB    (R4)+,#15
                                                        BEQ     INSTR2
                                                        MOVB    @TKDBR,@TPDBR
                                                2$:     TSTB    @TPCSR
                                                        BPL     2$
                                                        DEC     R3
                                                        BNE     1$
                                                        BR      .INSTG
                                                .INSTE: MOV     R3,-(SP)
                                                        MOV     R4,-(SP)
                                                .INSTG: TYPE
                                                        MQM
                                                        TST     @#RDSW
                                                        BEQ     400$
                                                        TYPE,MCRLF
                                                400$:   BR      .INST1
                                                INSTR2: MOV     (SP)+,R4
                                                        MOV     (SP)+,R3
                                                        RTI

                                                        ;CONVERT ASCII STRING TO OCTAL

                                                .PARAM: MOV     R5,-(SP)
                                                        MOV     R4,-(SP)
                                                        MOV     4(SP),R5
                                                        MOV     (R5)+,LOLIM
                                                        MOV     (R5)+,HILIM
                                                        MOV     (R5)+,DEVADR
                                                        MOVB    (R5)+,LOBITS
                                                        MOVB    (R5)+,ADRCNT
                                                        MOV     R5,4(SP)
                                                PARAM1: CLR     R5
                                                        MOV     #INBUF,R4
                                                        CMPB    #15,(R4)
                                                        BEQ     PARERR
                                                1$:     CMPB    (R4),#60
                                                        BLT     PARERR
                                                        CMPB    (R4),#67
```

```
 4138  015134  003012                        BGT     PARERR
 4139  015136  142714  000060                BICB    #60,(R4)
 4140  015142  152405                        BISB    (R4)+,R5
 4141  015144  122714  000015                CMPB    #15,(R4)
 4142  015150  001414                        BEQ     LIMITS
 4143  015152  006305                        ASL     R5
 4144  015154  006305                        ASL     R5
 4145  015156  006305                        ASL     R5
 4146  015160  000760                        BR      1$
 4147  015162  122714  000015        PARERR: CMPB    #15,(R4)                ;IS FIRST CHARACTER A <CR>
 4148  015166  001003                        BNE     120$
 4149  015170  005737  016260                TST     @#RDSW                  ;IS CKSWR ROUTINE BEING USED
 4150  015174  001023                        BNE     PART1
 4151  015176  104404                120$:   INSTER
 4152  015200  000742                        BR      PARAM1
 4153
 4154                                        ;TEST TO SEE IF NUMBER IS WITHIN LIMITS
 4155
 4156  015202  020537  015254        LIMITS: CMP     R5,HILIM
 4157  015206  101365                        BHI     PARERR
 4158  015210  020537  015252                CMP     R5,LOLIM
 4159  015214  103762                        BLO     PARERR
 4160  015216  133705  015260                BITB    LOBITS,R5
 4161  015222  001357                        BNE     PARERR
 4162
 4163                                        ;STORE NUMBER AT SPECIFIED ADDRESS
 4164
 4165  015224  013704  015256                MOV     DEVADR,R4
 4166  015230  010524                1$:     MOV     R5,(R4)+
 4167  015232  062705  000002                ADD     #2,R5
 4168  015236  105337  015261                DECB    ADRCNT
 4169  015242  001372                        BNE     1$
 4170  015244  012604                PART1:  MOV     (SP)+,R4
 4171  015246  012605                        MOV     (SP)+,R5
 4172  015250  000002                        RTI
 4173  015252  000000                LOLIM:  0
 4174  015254  000000                HILIM:  0
 4175  015256  000000                DEVADR: 0
 4176  015260  000000                LOBITS: 0
 4177          015261                ADRCNT=LOBITS+1
 4178
 4179                                        ;SAVE PC OF TEST THAT FAILED AND R0-R5
 4180
 4181  015262  016637  000004  001274  .SAVOS: MOV     4(SP),SAVPC
 4182
 4183                                        ;SAVE R0-R5
 4184
 4185  015270  010537  001270        SVOS:   MOV     R5,SAVR5
 4186  015274  010437  001266                MOV     R4,SAVR4
 4187  015300  010337  001264                MOV     R3,SAVR3
 4188  015304  010237  001262                MOV     R2,SAVR2
 4189  015310  010137  001260                MOV     R1,SAVR1
 4190  015314  010037  001256                MOV     R0,SAVR0
 4191  015320  000002                        RTI
 4192
 4193                                        ;RESTORE R0-R5
```

```
                                                ;
015322  013700  001256          .RESOS: MOV     SAVR0,R0
015326  013701  001260                  MOV     SAVR1,R1
015332  013702  001262                  MOV     SAVR2,R2
015336  013703  001264                  MOV     SAVR3,R3
015342  013704  001266                  MOV     SAVR4,R4
015346  013705  001270                  MOV     SAVR5,R5
015352  000002                          RTI
                                                ;
                                                ;CONVERT OCTAL NUMBER TO ASCII AND OUTPUT TO TELEPRINTER
                                                ;
015354  104402                  .CONVR: TYPE
015356  016440                          MCRLF
        010046                  .CNVRT: MOV     R0,-(SP)
        010146                          MOV     R1,-(SP)
        010346                          MOV     R3,-(SP)
        010446                          MOV     R4,-(SP)
        010546                          MOV     R5,-(SP)
        017601  000012                  MOV     @12(SP),R1
        013737  017114  001250          MOV     TEMP,TEMP3
015404  062766  000002  000012          ADD     #2,12(SP)
015412  012137  015574                  MOV     (R1)+,WRDCNT
015416  112137  015576          1$:     MOVB    (R1)+,CHRCNT
015422  112137  015577                  MOVB    (R1)+,SPACNT
015426  013137  015600                  MOV     @(R1)+,BINWRD
015432  013704  015600          2$:     MOV     BINWRD,R4
015436  113705  015576                  MOVB    CHRCNT,R5
015442  012700  017114                  MOV     #TEMP,R0
015446  010403                  3$:     MOV     R4,R3
015450  042703  177770                  BIC     #177770,R3
015454  062703  000060                  ADD     #060,R3
015460  110320                          MOVB    R3,(R0)+
015462  000241                          CLC
015464  006004                          ROR     R4
015466  000241                          CLC
015470  006004                          ROR     R4
015472  000241                          CLC
015474  006004                          ROR     R4
015476  005305                          DEC     R5
015500  001362                          BNE     3$
015502  012703  017156                  MOV     #MDATA,R3
015506  114023                  4$:     MOVB    -(R0),(R3)+
015510  105337  015576                  DECB    CHRCNT
015514  001374                          BNE     4$
015516  105737  015577                  TSTB    SPACNT
015522  001405                          BEQ     6$
015524  112723  000040          5$:     MOVB    #040,(R3)+
015530  105337  015577                  DECB    SPACNT
015534  001373                          BNE     5$
015536  105013                  6$:     CLRB    (R3)
015540  104402                          TYPE
015542  017156                          MDATA
015544  005337  015574                  DEC     WRDCNT
015550  001322                          BNE     1$
015552  013737  001250  017114          MOV     TEMP3,TEMP
015560  012605                          MOV     (SP)+,R5
```

```
 4250  015562  012604                          MOV     (SP)+,R4
 4251  015564  012603                          MOV     (SP)+,R3
 4252  015566  012601                          MOV     (SP)+,R1
 4253  015570  012600                          MOV     (SP)+,R0
 4254  015572  000002                          RTI
 4255  015574  000000                  WRDCNT: 0
 4256  015576  000000                  CHRCNT: 0
 4257          015577                  SPACNT=CHRCNT+1
 4258  015600  000000                  BINWRD: 0
 4259                                          ;TRAP DISPATCH SERVICE
 4260                                          ;ARGUMENT OF TRAP IS EXTRACTED
 4261                                          ;AND USED AS OFFSET TO OBTAIN POINTER
 4262                                          ;TO SELECTED SUBROUTINE
 4263
 4264  015602  011646                  .TRPSR: MOV     (SP),-(SP)              ;GET PC OF RETURN
 4265  015604  162716  000002                  SUB     #2,(SP)                 ;=PC OF TRAP
 4266  015610  017616  000000                  MOV     @2(SP),(SP)             ;GET TRP
 4267  015614  006316                  TRPOK:  ASL     (SP)                    ;MULTIPLY TRAP ARG BY 2
 4268  015616  042716  177001                  BIC     #177001,(SP)            ;CLEAR UNWANTED BITS
 4269  015622  062716  001314                  ADD     #.TRPTAB,(SP)           ;POINTER TO SUBROUTINE ADDRESS
 4270  015626  017616  000000                  MOV     @(SP),(SP)              ;SUBROUTINE ADDRESS
 4271  015632  000136                          JMP     @(SP)+                  ;GO TO SUBROUTINE
 4272
 4273                                          ;ERROR HANDLER
 4274
 4275  015634  104414                  .HLT:   CKSWR
 4276  015636  032777  010000  163334          BIT     #SW12,@SWR
 4277  015644  001406                          BEQ     XBX
 4278  015646  105777  163336                  TSTB    @TPCSR
 4279  015652  100003                          BPL     XBX
 4280  015654  112777  000207  163330          MOVB    #207,@TPDBR
 4281  015662  032777  020000  163310  XBX:    BIT     #SW13,@SWR
 4282  015670  001074                          BNE     HALTS
 4283  015672  021637  001234                  CMP     (SP),LSTERR
 4284  015676  001404                          BEQ     1$
 4285  015700  011637  001234                  MOV     (SP),LSTERR
 4286  015704  105037  001312                  CLRB    ERRFLG
 4287  015710  104406                  1$:     SAVDS
 4288  015712  011605                          MOV     (SP),R5
 4289  015714  162705  000002                  SUB     #2,R5
 4290  015720  011504                          MOV     (R5),R4
 4291  015722  006304                          ASL     R4
 4292  015724  061504                          ADD     (R5),R4
 4293  015726  006304                          ASL     R4
 4294  015730  042704  177001                  BIC     #177001,R4
 4295  015734  062704  017670                  ADD     #.ERRTAB,R4
 4296  015740  012437  016032                  MOV     (R4)+,ERRMSG
 4297  015744  012437  016044                  MOV     (R4)+,DATAHD
 4298  015750  011437  016056                  MOV     (R4),DATABP
 4299  015754  105737  001312                  TSTB    ERRFLG
 4300  015760  001403                          BEQ     TYPMSG
 4301  015762  005737  016056                  TST     DATABP
 4302  015766  001027                          BNE     TYPDAT
 4303  015770  104402                  TYPMSG: TYPE
 4304  015772  016717                          MTSTN
 4305  015774  104411                          CNVRT
```

```
 4306  015776  016156                          XTSTN
 4307  016000  104402                          TYPE
 4308  016002  017005                          MERRPC
 4309  016004  104411                          CNVRT
 4310  016006  016150                          ERTABO
 4311  016010  104402                          TYPE
 4312  016012  016440                          MCRLF
 4313  016014  112737  177777  001312          MOVB    #-1,ERRFLG
 4314  016022  005737  016032                  TST     ERRMSG
 4315  016026  001402                          BEQ     WRKO.FM
 4316  016030  104402                          TYPE
 4317  016032  000000                ERRMSG:   0
 4318  016034                      WRKO.FM:
 4319  016034  005737  016044                  TST     DATAHD
 4320  016040  001402                          BEQ     TYPDAT
 4321  016042  104402                          TYPE
 4322  016044  000000                DATAHD:   0
 4323  016046  005737  016056      TYPDAT:   TST     DATABP
 4324  016052  001402                          BEQ     RESREG
 4325  016054  104410                          CONVRT
 4326  016056  000000                DATABP:   0
 4327  016060  104407                RESREG:   RESO5
 4328  016062  005777  163112      HALTS:    TST     @SWR
 4329  016066  100005                          BPL     EXITER
 4330  016070  010046                          PUSHRO
 4331  016072  016600  000002                  MOV     2(SP),RO
 4332  016076  000000                          HALT
 4333  016100  012600                          POPRO
 4334  016102  104414                EXITER:   CKSWR
 4335  016104  005237  001232                  INC     ERRCNT
 4336  016110  032777  000400  163062          BIT     #SW08,@SWR
 4337  016116  001007                          BNE     1$
 4338  016120  032777  002000  163052          BIT     #SW10,@SWR
 4339  016126  001407                          BEQ     2$
 4340  016130  013737  001216  001214          MOV     NEXT,RETURN
 4341  016136  012706  001200          1$:     MOV     #STACK,SP
 4342  016142  000177  163046                  JMP     @RETURN
 4343  016146  000002                2$:       RTI
 4344  016150  000001                ERTABO:   1
 4345  016152     006     002                  .BYTE   6,2
 4346  016154  001274                          SAVPC
 4347  016156  000001                XTSTN:    1
 4348  016160     003     002                  .BYTE   3,2
 4349  016162  001226                          TSTNO
 4350                                          ;ENTER HERE ON POWER FAILURE
 4351
 4352
 4353  016164                      .PFAIL:
 4354  016164  012737  016176  000024          MOV     #RESTART,24             ;SET UP FOR POWER UP TRAP
 4355  016172  000000                          HALT                            ;HALT ON POWER DOWN NORMAL
 4356  016174  000777                          BR      .
 4357
 4358                                          ;PROCESSOR WILL TRAP HERE WHEN POWER IS RESTORED
 4359
 4360  016176                      RESTAR:
 4361  016176  012737  016164  000024          MOV     #.PFAIL,24              ;SET UP FOR POWER FAILURE
```

```
 4362  016204  012706  001200                    MOV     #STACK,SP
 4363  016210  005037  017114                    CLR     TEMP
 4364  016214  005237  017114                    INC     TEMP
 4365  016220  001375                            BNE     .-4
 4366  016222  104402                            TYPE
 4367  016224  016442                            MPFAIL
 4368  016226  104411                            CNVRT
 4369  016230  016252                            PFTAB
 4370  016232  005037  001312                    CLR     ERRFLG
 4371  016236  005037  001234                    CLR     LSTERR
 4372  016242  104412                            MSTCLR
 4373  016244  104413                            MEMCLR
 4374  016246  000177  162742                    JMP     @RETURN
 4375  016252  000001                  PFTAB:    1
 4376  016254     003     002          .BYTE     3,2
 4377  016256  001226                            TSTNO
 4378
 4379
 4380                                            ;CHECK SWITCH REGISTER ROUTINE. CHECKS FOR ↑G TO ALLOW CHANGING
 4381                                            ;OF LOC.176.
 4382                                            ;LOCATIONS USED:
 4383  016260  000000                            RDSW:   .WORD   0
 4384
 4385
 4386  016262  005737  000042          .CKSWR:   TST     @#42
 4387  016266  001042                            BNE     OUT
 4388  016270  022737  000176  001200            CMP     #SWREG,SWR      ;SOFTWARE SWITCH REGISTER PRESENT
 4389  016276  001036                            BNE     OUT             ;NO, GET OUT
 4390  016300  105777  162700                    TSTB    @TKCSR          ;YES,WAIT FOR
 4391  016304  100033                            BPL     OUT             ;READY, GET CHARACTER
 4392  016306  017737  162674  014720            MOV     @TKDBR,.MSG     ;AND STRIP OFF
 4393  016314  042737  177600  014720            BIC     #177600,.MSG    ;THE GARBAGE
 4394  016322  122737  000007  014720            CMPB    #7,.MSG         ;IS IT A <↑G>
 4395  016330  001021                            BNE     OUT
 4396  016332  104402  016410                    TYPE,$CNTG
 4397  016336  005137  016260          .CNTLU:   COM     @#RDSW
 4398  016342  104402  016414                    TYPE,$MSWR
 4399  016346  104411  016402                    CNVRT,SWREGC
 4400  016352  104403  016423                    INSTR,$MNEW
 4401  016356  104405                            PARAM
 4402  016360  000000                            0
 4403  016362  177777                            177777
 4404  016364  000176                            SWREG
 4405  016366     000     001          .BYTE     0,1
 4406  016370  104402  016440                    TYPE,MCRLF
 4407  016374  005037  016260          OUT:      CLR     @#RDSW
 4408  016400  000002                            RTI
 4409  016402  000001                  SWREGC:   1
 4410  016404     006     002          .BYTE     6,2
 4411  016406  000176                            SWREG
 4412  016410  057377  000107          $CNTG:    .ASCIZ  <377>/↑G/
 4413  016414  051777  051127  020075  $MSWR:    .ASCIZ  <377>/SWR= /
 4414  016422     000
 4415  016423     040  047040  053505  $MNEW:    .ASCIZ  /  NEW= /
 4416  016430  020075     000
 4417          016434                    .EVEN
```

```
 4418  016434  020040  000077          MQM:    .ASCIZ  /  ?/
 4419  016440  000377                  MCRLF:  .ASCIZ  <377>
 4420  016442  050377  051127  043040  MPFAIL: .ASCIZ  <377>/PWR FAILED. RESTART AT TEST /
 4421  016450  044501  042514  027104
 4422  016456  051040  051505  040524
 4423  016464  052122  040440  020124
 4424  016472  042524  052123  000040
 4425  016500  042777  042116  050040  MEPASS: .ASCIZ  <377>/END PASS DZDQA  /
 4426  016506  051501  020123  055104
 4427  016514  050504  020101  000040
 4428  016522  051377     000          MR:     .ASCIZ  <377>/R/
 4429  016525     377  051120  043517  MERR2:  .ASCIZ  <377>/PROGRAM INDICATES NO DEVICES PRESENT./
 4430  016532  040522  020115  047111
 4431  016540  044504  040503  042524
 4432  016546  020123  047516  042040
 4433  016554  053105  041511  051505
 4434  016562  050040  042522  042523
 4435  016570  052116  000056
 4436  016574  044777  051516  043125  MERR3:  .ASCIZ  <377>/INSUFFICIENT DATA!/
 4437  016602  044506  044503  047105
 4438  016610  020124  040504  040524
 4439  016616  000041
 4440  016620  052377  051505  020124  MTSTPC: .ASCIZ  <377>/TEST PC-/
 4441  016626  041520  000055
 4442  016632  046377  041517  020113  MLOCK:  .ASCIZ  <377>/LOCK ON SELECTED TEST/
 4443  016640  047117  051440  046105
 4444  016646  041505  042524  020104
 4445  016654  042524  052123     000
 4446  016661     103  051123  020072  MCSRX:  .ASCIZ   /CSR: /
 4447  016666     000
 4448  016667     126  041505  020072  MVECX:  .ASCIZ  /VEC: /
 4449  016674     000
 4450  016675     120  051501  042523  MPASSX: .ASCIZ  /PASSES: /
 4451  016702  035123  000040
 4452  016706  051105  047522  051522  MERRX:  .ASCIZ  /ERRORS: /
 4453  016714  020072     000
 4454  016717     377  052377  051505  MTSTN:  .ASCIZ  <377><377> /TEST NO: /
 4455  016724  020124  047516  020072
 4456  016732     000
 4457  016733     377  042523  020124  MNEW:   .ASCIZ  <377>/SET SWITCH REG TO DQ11'S DESIRED ACTIVE./
 4458  016740  053523  052111  044103
 4459  016746  051040  043505  052040
 4460  016754  020117  050504  030461
 4461  016762  051447  042040  051505
 4462  016770  051111  042105  040440
 4463  016776  052103  053111  027105
 4464  017004     000
 4465  017005     120  035103  000040  MERRPC: .ASCIZ  /PC: /
 4466  017012  046777  050101  047440  XHEAD:  .ASCIZ  <377>/MAP OF DQ11 STATUS/<377>
 4467  017020  020106  050504  030461
 4468  017026  051440  040524  052524
 4469  017034  177523     000
 4470          017040                  .EVEN
 4471  017040  000002                  XSTATQ: 2
 4472  017042     006     003                  .BYTE   6,3
 4473  017044  001244                          TEMP1
```

```
DZDQA   MACY11 27(732)  24-SEP-76  10:03  PAGE 89
DZDQAB.P11      GENERAL UTILITIES (TYPE OUT.ERROR,SCOPE,ETC.)

  4474  017046     006     002                    .BYTE   6,2
  4475  017050  001246                            TEMP2
  4476                                .EVEN
  4477
  4478                                            ;BUFFERS FOR INPUT-OUTPUT
  4479
  4480  017052  000000                INBUF:  0
  4481          017114                .=.+40
  4482  017114  000000                TEMP:   0
  4483          017156                .=.+40
  4484  017156  000000                MDATA:  0
  4485          017220                .=.+40
```

```
                                        .MEMCLR:        RTI
                                        .MSTCLR:        RTI
                                                :TABLE OF ERROR MESSAGES AND ERROR DATA POINTERS
017224  042101  051104  051505  EM0:    .ASCIZ  /ADDRESS SELECT ERROR-TIMEOUT/
017261     120  044522  040515  EM1:    .ASCIZ  /PRIMARY REG ADDRESSING ERROR/
017316  042522  042503  053111  EM2:    .ASCIZ  /RECEIVER CONTROL REG DATA ERROR/
017356  051124  047101  046523  EM3:    .ASCIZ  /TRANSMITTER CONTROL REG DATA ERROR/
017421     105  051122  051117  EM4:    .ASCIZ  /ERROR REG DATA ERROR/
017446  051777  041505  047117  EM5:    .ASCIZ  <377>/SECONDARY REG ADDRESS ERROR/
017503     123  041505  047117  EM6:    .ASCIZ  /SECONDARY REG DATA ERROR/
017534  051377  043505  051511  DH0:    .ASCIZ  <377>/REGISTER ADDRESSED/
017560  042777  050130  041505  DH1:    .ASCIZ  <377>/EXPECTED  RECEIVED  REG ADDRESS/
017621     377  054105  042520  DH2:    .ASCIZ  <377>/EXPECTED  RECEIVED  SEC ADR   SEC REG/
                                        .EVEN

017670  017224                  .ERRTAB:EM0
017672  017534                          DH0
017674  017750                          DT0
017676  017261                          EM1
017700  017560                          DH1
017702  017756                          DT1
017704  017316                          EM2
017706  017560                          DH1
017710  017756                          DT1
017712  017356                          EM3
017714  017560                          DH1
017716  017756                          DT1
017720  017421                          EM4
017722  017560                          DH1
017724  017756                          DT1
017726  000000                          0
017730  000000                          0
017732  000000                          0
017734  017503                          EM6
017736  017621                          DH2
017740  017774                          DT2
017742  017446                          EM5
017744  017621                          DH2
017746  017774                          DT2

017750  000001                  DT0:    1
017752     006  000             .BYTE   6,0
017754  001270                          SAVR5
017756  000003                  DT1:    3
017760     006  004             .BYTE   6,4
017762  001270                          SAVR5
017764     006  004             .BYTE   6,4
017766  001266                          SAVR4
017770     006  000             .BYTE   6,0
017772  001264                          SAVR3
017774  000004                  DT2:    4
017776     006  004             .BYTE   6,4
020000  001270                          SAVR5
020002     006  004             .BYTE   6,4
020004  001266                          SAVR4
020006     006  004             .BYTE   6,4
```

```
 4530  020010  001372                                DQSEC
 4531  020012     002      000          .BYTE   2,0
 4532  020014  001264                                SAVR3
 4533                                               ;DATA TABLE FOR SECONDARY REGISTER ADDRESSING TEST
 4534
 4535  020016  000000                    DATAB:  0
 4536  020020  010421                            10421
 4537  020022  021042                            21042
 4538  020024  031463                            31463
 4539  020026  042104                            42104
 4540  020030  052525                            52525
 4541  020032  063146                            63146
 4542  020034  073567                            73567
 4543  020036  104210                            104210
 4544  020040  114631                            114631
 4545  020042  005212                            5212
 4546  020044  000000                            0
 4547  020046  146314                            146314
 4548  020050  000000                            0
 4549  020052  000000                            0
 4550  020054  177777                            177777
 4551          000001                    .END
```

```
ABBIT = 002000            619*   989   2661   3487
ACTBIT= 004000            620*   997
ADRCNT= 015261           4129*  4168*  4177*
BABIT = 010000            621*   993   1803   1921   2056   2174
BBBIT = 020000            622*   984   1656   2625
BINWRD  015600           4218*  4219   4258*
BIT0  = 000001            614*  1312   2206   2718   3198   3504
BIT1  = 000002            613*  1499   2239   2748   3228   3534
BIT10 = 002000            604*  1725   2081   2534   3018   3408   3804
BIT11 = 004000            603*  1753   2081   2566   3048   3438   3834
BIT12 = 010000            602*  1782   2118   3078   3864
BIT13 = 020000            601*  1816   2118   3108   3894
BIT14 = 040000            600*  1844   3138   3924   4029
BIT15 = 100000            599*  1872   2082   2094   2119   2131   2158   2211   2244   2277   2310   2343   2376
                         2409   2442   3168   3468   3954
BIT2  = 000004            612*  1283   2272   2778   3564
BIT3  = 000010            611*  1527   1902   2305   2808   3258   3594
BIT4  = 000020            610*  1555   1936   2338   2838   3624
BIT5  = 000040            609*  1583   1969   2371   2868   3654
BIT6  = 000100            608*  1611   2001   2404   2898   3288   3684
BIT7  = 000200            607*  1639   2033   2437   2928   3318   3714
BIT8  = 000400            606*  1669   2071   2087   2470   2958   3348   3744
BIT9  = 001000            605*  1697   2112   2124   2502   2988   3378   3774
BRW     014544           1289   4047*
BRX     014546           1290   4048*
CHARDT= 000010            639*
CHAR1   001236           1070*
CHAR2   001240           1071*
CHAR3   001242           1072*
CHKAB1  012434           3464   3487*
CHKBA1  004340           1779   1803*
CHKBA2  005170           2028   2056*
CHKBA3  005626           2058   2150   2174*
CHRCNT  015576           4216*  4220   4236*  4256*  4257
CkBA1   004640           1897   1921*
CKBB0   003774           1636   1656*
CKSWR = 104414           1131*  1257   1267   1282   4010   4028   4052   4275   4334
CNTLU = 104415           1133*  1239
CNVRT = 104411           1125*  3984   3988   3992   3996   4305   4309   4368   4399
CONT.0  004264           1657   1770*
CONT.1  004734           1922   1955*
CONVRT= 104410           1123*  1247   4325
CREAM   001300           1087*  1211*  1321*  1325*  1334   1335*  1336   1337*
CSRMAP  000220            964*  1242
DATAA = 114631           4536*  4537*  4538*  4539*  4540*  4541*  4542*  4543*  4544*
DATAB   020016           2598   2607   2638   2647   2679   2688   4535*
DATABP  016056           4298*  4301   4323   4326*
DATAHD  016044           4297*  4319   4322*
DATT  = 125252           4536*  4537*  4538*  4539*  4540*  4541*  4542*  4543*  4544*  4545*
DELAY   005524           2077   2092   2114   2129   2137*
DEVADR  015256           4127*  4165   4175*
DH0     017534           4488*  4490
DH1     017560           4488*  4493   4496   4499   4502
DH2     017621           4488*  4508   4511
DISPRE  000174            955*  1232
DLIGHT= 177570            584*  1223
```

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DZDQA   MACY11 27(732)   24-SEP-76  13:03  PAGE 94
DZDQAB.P11       CROSS REFERENCE TABLE -- USER SYMBOLS

DQACTV  001500        935    1009*  1015*  1016*  1020   1190#  1264*  1265   1315   1317
DQCR00  001400        1158#
DQCR01  001404        1160#
DQCR02  001410        1162#
DQCR03  001414        1164#
DQCR04  001420        1166#
DQCR05  001424        1168#
DQCR06  001430        1170#
DQCR07  001434        1172#
DQCR10  001440        1174#
DQCR11  001444        1176#
DQCR12  001450        1178#
DQCR13  001454        1180#
DQCR14  001460        1182#
DQCR15  001464        1184#
DQCR16  001470        1186#
DQCR17  001474        1188#
DQCSR   001506        1193#  1334*  1338
DQERR   001366        1148#  1351*  1352*  1353   1410   1411   1453*  1471   1485*  2202   2235   2268   2301
                      2334   2367   2400   2433   2466   2499   2530   2562
DQNUM   001504        969*   1005*  1010   1012   1192#  1206   4001
DQRCSH  001362        1146#  1347*  1348*
DQRCSR  001360        1145#  1338*  1347   1349   1370   1371   1449*  1458   1459   1483*  1497   1525   1553
                      1581   1609   1637   1667   1695   1723   1751   1780   1814   1842   1870   1898   4015
DQREG   001370        1149#  1353*  1354*  1355   2073*  2088*  2125*  2601*  2609*  2641*  2649*  2682*  2690*
                      2717*  2747*  2777*  2807*  2837*  2867*  2897*  2927*  2957*  2987*  3017*  3047*  3077*
                      3107*  3137*  3167*  3197*  3227*  3257*  3287*  3317*  3347*  3377*  3407*  3437*  3467*
                      3503*  3533*  3563*  3593*  3623*  3653*  3683*  3713*  3743*  3773*  3803*  3833*  3863*
                      3893*  3923*  3953*
DQRLVL  001352        1142#  1341*  1342*  1343
DQRVEC  001350        1141#  1339*  1340*  1341   4018
DQSEC   001372        1150#  1355*  1356*  1357   1430   1431   1455*  1478   1486*  2074*  2075*  2076*  2089*
                      2090*  2091*  2126*  2127*  2128*  2602*  2610   2642*  2650   2683*  2691   2719*  2721
                      2726*  2727   2749*  2751   2756*  2757   2779*  2791   2796*  2797   2809*  2811   2816*
                      2817   2839*  2841   2846*  2847   2869*  2871   2876*  2877   2899*  2901   2906*  2907
                      2929*  2931   2936*  2937   2959*  2961   2966*  2967   2989*  2991   2996*  2997   3019*
                      3021   3026*  3027   3049*  3051   3056*  3057   3079*  3081   3086*  3087   3109*  3111
                      3116*  3117   3139*  3141   3146*  3147   3169*  3171   3176*  3177   3199*  3201   3206*
                      3207   3229*  3231   3236*  3237   3259*  3261   3266*  3267   3289*  3291   3296*  3297
                      3319*  3321   3326*  3327   3349*  3351   3356*  3357   3379*  3381   3386*  3387   3409*
                      3411   3416*  3417   3439*  3441   3446*  3447   3469*  3471   3476*  3477   3505*  3507
                      3512*  3513   3535*  3537   3542*  3543   3565*  3567   3572*  3573   3595*  3597   3602*
                      3603   3625*  3627   3632*  3633   3655*  3657   3662*  3663   3685*  3687   3692*  3693
                      3715*  3717   3722*  3723   3745*  3747   3752*  3753   3775*  3777   3782*  3783   3805*
                      3807   3812*  3813   3835*  3837   3842*  3843   3865*  3867   3872*  3873   3895*  3897
                      3902*  3903   3925*  3927   3932*  3933   3955*  3957   3962*  3963   4530
DQSECH  001374        1151#  1357*  1358*
DQSTAT  001510        1194#  1336*  1339   1656   1803   1921   2056   2079   2116   2174   2625   2661   3487
DQST00  001402        1159#
DQST01  001406        1161#
DQST02  001412        1163#
DQST03  001416        1165#
DQST04  001422        1167#
DQST05  001426        1169#
DQST06  001432        1171#
DQST07  001436        1173#
```

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DOST10  001442          1175*
DOST11  001446          1177*
DOST12  001452          1179*
DOST13  001456          1181*
DOST14  001462          1183*
DOST15  001466          1185*
DOST16  001472          1187*
DOST17  001476          1189*
DZTCSR  001364          1147*   1349*   1350*   1351    1390    1391    1451*   1464    1484*   1932    1965    1997    2029
                        2070    2111    2151    2185
DZTLVL  001356          1144*   1345*   1346*
DZTVEC  001354          1143*   1343*   1344*   1345
DSWR    = 177570         583*   1222
        017750          4491    4514*
        017756          4494    4497    4500    4503    4517*
        017774          4509    4512    4524*
        017224          4488*   4489
        017261          4488*   4492
        017316          4488*   4495
        017356          4488*   4498
        017421          4488*   4501
        017446          4488*   4510
        017503          4488*   4507
        007406          2635    2661*
ERRCNT  001232          1065*   1212*   4024    4335*
        001312          1096*   1209*   3978*   4041*   4286*   4299    4313*   4370*
        016032          4296*   4314    4317*
        016150          4310    4344*
EXITER  016102          4329    4334*
HALTS   016062          4282    4329*
HILIM   015254          4126*   4156    4174*
ICOUNT  001222          1061*   4039    4043*
INBUF   017052          4090    4132    4480*
INIFLG  001310          1094*   1217    1220*
INSTER= 104404          1115*   4151
INSTR   = 104403        1113*   1293    4400
INSTR2  015040          4101    4116*
JUMBIT= 040000           623*    996    2079    2116
LIGHTS  001202          1050*   1223*   1232*   3998*
LIMITS  015202          4142    4156*
LOBITS  015260          4128*   4160    4176*   4177
LOCK    001220          1060*   2596*   2636*   2677*   4055
LOGICA  014362           917    4005*
LOKFLG  001313          1097*
LOLIM   015252          4125*   4158    4173*
LPCNT   001224          1062*   4038*   4039    4042*
LSTERR  001234          1066*   1213*   3977*   4283    4285*   4371*
MCRLF   016440          4098    4114    4206    4312    4406    4419*
MCSRX   016661          3983    4446*
MDATA   017156          4234    4245    4484*
MEMCLR= 104413          1129*   4373
MEPASS  016500          3981    4425*
MERRPC  017005          4308    4465*
MERRX   016706          3995    4452*
MERR2   016525          1027    1329    4429*
MERR3   016574          1261    4436*
```

```
MISC. = 000012            641#
MLOCK   016632           1285    4442#
MNEW    016733           1254    4457#
MPASSX  016665           3991    4450#
MPFAIL  016442           4367    4420#
MSGM    016434           4111    4418#
MSR     016522           1303    4428#
MSTCLR= 104412           1127#   4372
MTITLE  001000           1336#   1219
MTSTN   016717           4304    4454#
MTSTPC  016620           1294    4440#
MVECX   016667           3987    4448#
NEXT    001216           1059#   1309*   1367*   1387*   1407*   1427*   1448*   1496*   1524*   1552*   1580*   1608*   1636*
                         1666*   1694*   1722*   1750*   1778*   1813*   1841*   1869*   1897*   1931*   1964*   1996*   2028*
                         2069*   2110*   2150*   2184*   2201*   2234*   2266*   2300*   2333*   2366*   2399*   2432*   2465*
                         2497*   2529*   2561*   2595*   2635*   2676*   2714*   2744*   2774*   2804*   2834*   2864*   2894*
                         2924*   2954*   2984*   3014*   3044*   3074*   3104*   3134*   3164*   3194*   3224*   3254*   3284*
                         3314*   3344*   3374*   3404*   3434*   3464*   3500*   3530*   3560*   3590*   3620*   3650*   3680*
                         3710*   3740*   3770*   3800*   3830*   3860*   3890*   3920*   3950*   4044    4342
NODBIT= 001000            624#    998
OPT1    007240           2595    2625#
OPT2X   007554           2627    2663    2703#
OUT     016374           4387    4389    4391    4395    4407#
PARAM = 104405           1117#   1295    4401
PARAM1  015106           4131#   4152
PARERR  015162           4134    4136    4138    4147#   4157    4159    4161
PARTI   015244           4150    4170#
PASCNT  001230           1064#   1208*   3979*   3998    4021
PC    =%000007            579#    951*   1242*   2077*   2092*   2114*   2129*   2142*   4006*
PFTAB   016252           4369    4375#
POLY. = 000017            646#
POPRO = 012600            593#   4333
POP1SP= 005726            591#
POP2SP= 022626            595#
PS    = 177776            585#    938*   1203*   1278*
PUSHRO= 010046            592#   4330
PUSH1S= 005746            590#
PUSH2S= 024646            594#
RDSW    016260           4063    4112    4149    4383#   4397*   4407*
RESREG  016060           4324    4327#
RESTAR  016176           4354    4360#
RESTRT  014372           4000    4003    4010#
RESOS = 104407           1121#   4327
RETURN  001214           1058#   1215*   1302*   1304    1308*   2627*   2628    2663*   2664    4011*   4044*   4045    4340*
                         4342    4374
RUN     001304           1089#   1312*   1315    1320*   1326*   1333*
RUNCNT  001306           1090#   1313*   1322*   1324*
RUNFLG  001302           1088#   1210*   1310    1314*
RXBA.P= 000000            630#
RXBA.S= 000004            634#
RXWC.P= 000001            631#
RXWC.S= 000005            635#
RX.BCC= 000015            644#
R0    =%000000            572#    929*    931     941*   1023*   1028*   1255*   1265*   1268*   1270*   1272    1273    2137
                         2138*   2139*   2141*   2597*   2604*   2606*   2618*   2637*   2644*   2646*   2658*   2678*   2685*
                         2687*   2699*   4034*   4190    4195*   4207    4221*   4225*   4235    4253*   4331*
```

R1 =.000001
573# 929 930* 931 932 970* 972* 973* 974* 975 977 979* 980*
981* 982 985* 986* 98[illegible] 990* 991 994 1000* 1001* 1002* 1003* 1004*
1006* 1007 1012* 1013 1017* 1024* 1269* 1270 1271* 1272 2598* 2600 2627*
2611 2617* 2638* 2640 2647* 2651 2657* 2679* 2681 2688* 2692 2698* 4002*
4006 4189 4196* 4208 4212* 4215 4216 4217 4218 4252*

R2 =.000002
574# 939 940* 943* 944 946* 947* 964* 965* 966 969* 977* 979*
984* 989* 993* 996* 997* 998* 999 1022* 1900* 1907 1914 1934* 1941
1948 1967* 1974 1981 1999* 2006 2013 2031* 2038 2045 2204* 2212 2219
2237* 2245 2252 2270* 2278 2285 2303* 2311 2318 2336* 2344 2351 2369*
2377 2384 2402* 2410 2417 2435* 2443 2450 2468* 2475 2482 2500* 2507
2514 2532* 2539 2546 2564* 2571 2578 4188 4197*

R3 =.000003
575# 1459* 1466* 1473* 1479* 1497* 1501* 1502 1507* 1509 1525* 1523* 1530
1535* 1537 1553* 1557* 1558 1563* 1565 1581* 1585* 1586 1591* 1593 1609*
1613* 1614 1619* 1621 1637* 1641* 1642 1647* 1649 1667* 1671* 1672 1677*
1679 1695* 1699* 1700 1705* 1707 1723* 1727* 1728 1733* 1735 1751* 1755*
1756 1761* 1763 1780* 1784* 1785 1790* 1792 1814* 1918* 1819 1824* 1826
1842* 1846* 1847 1852* 1854 1870* 1874* 1875 1880* 1882 1998* 1904* 1905
1911* 1913 1932* 1938* 1939 1945* 1947 1965* 1971* 1972 1978* 1980 1997*
2003* 2004 2010* 2012 2029* 2035* 2036 2042* 2044 2070* 2072* 2079 2087*
2093 2111* 2113* 2115 2124* 2130 2151* 2153* 2154* 2155 2159* 2160 2165*
2166 2185* 2187* 2189 2202* 2208* 2209 2216* 2218 2235* 2241* 2242 2249*
2251 2268* 2274* 2275 2282* 2284 2301* 2307* 2308 2315* 2317 2334* 2340*
2341 2348* 2350 2367* 2373* 2374 2381* 2383 2400* 2406* 2407 2414* 2416
2433* 2439* 2440 2447* 2449 2466* 2472* 2473 2479* 2481 2498* 2504* 2505
2511* 2513 2530* 2536* 2537 2543* 2545 2562* 2568* 2569 2575* 2577 2593*
2601 2603* 2608* 2609 2616* 2639* 2641 2643* 2648* 2649 2656* 2690* 2692
2684* 2689* 2690 2697* 2715* 2717 2745* 2747 2775* 2777 2805* 2907 2935*
2837 2865* 2867 2895* 2997 2925* 2927 2955* 2957 2985* 2937 3015* 3017
3045* 3047 3075* 3077 3105* 3107 3135* 3137 3165* 3167 3195* 3197 3225*
3227 3255* 3257 3285* 3287 3315* 3317 3345* 3347 3375* 3377 3405* 3407
3435* 3437 3465* 3467 3501* 3503 3531* 3533 3561* 3563 3591* 3593 3621*
3623 3651* 3653 3681* 3683 3711* 3713 3741* 3743 3771* 3773 3801* 3803
3831* 3833 3861* 3863 3891* 3893 3921* 3923 3951* 3953 4094 4091* 4105*
4108 4117* 4187 4199* 4209 4222* 4223* 4224* 4225 4234* 4235* 4240* 4243*
4251*

R4 =.000004
576# 1458* 1460 1464* 1465* 1467 1471* 1472* 1474 1478* 1430 1502* 1504
1509* 1512 1530* 1532 1537* 1540 1558* 1560 1565* 1568 1596* 1599 1593*
1596 1614* 1616 1621* 1624 1642* 1644 1649* 1652 1672* 1674 1679* 1682
1700* 1702 1707* 1710 1728* 1730 1735* 1738 1756* 1759 1763* 1766 1735*
1787 1792* 1795 1819* 1821 1826* 1829 1847* 1849 1854* 1857 1875* 1877
1882* 1895 1905* 1907* 1908 1913* 1914* 1917 1939* 1941* 1942 1947* 1949*
1951 1972* 1974* 1975 1980* 1981* 1984 2004* 2006* 2007 2012* 2013* 2015
2036* 2038* 2039 2044* 2045* 2048 2078* 2084 2093* 2094* 2096 2115* 2131
2130* 2131* 2133 2155* 2160* 2161 2166* 2189* 2209* 2212* 2213 2219* 2219*
2222 2242* 2245* 2246 2251* 2252* 2255 2275* 2278* 2279 2284* 2295* 2299
2308* 2311* 2312 2317* 2318* 2321 2341* 2344* 2345 2350* 2351* 2354 2374*
2377* 2378 2383* 2384* 2387 2407* 2410* 2411 2416* 2417* 2420 2440* 2443*
2444 2449* 2450* 2453 2473* 2475* 2476 2481* 2482* 2485 2505* 2507* 2508
2513* 2514* 2517 2537* 2539* 2540 2545* 2546* 2549 2569* 2571* 2572 2577*
2578* 2581 2610* 2612 2650* 2652 2691* 2693 2721* 2723 2727* 2730 2775*
2753 2757* 2760 2781* 2783 2787* 2790 2811* 2813 2817* 2820 2841* 2843
2847* 2850 2871* 2873 2877* 2880 2901* 2903 2907* 2910 2931* 2933 2937*
2940 2961* 2963 2967* 2970 2991* 2993 2997* 3000 3021* 3023 3027* 3030
3051* 3053 3057* 3060 3081* 3083 3087* 3090 3111* 3113 3117* 3120 3141*
3143 3147* 3150 3171* 3173 3177* 3180 3201* 3203 3207* 3210 3231* 3233
3237* 3240 3261* 3263 3267* 3270 3291* 3293 3297* 3300 3321* 3323 3327*

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DZDQA   MACY11 27(732)  24-SEP-76  10:03  PAGE 98
DZDQAB.P11      CROSS REFERENCE TABLE -- USER SYMBOLS

                      3330    3351*   3353    3357*   3360    3381*   3383    3387*   3390    3411*   3413    3417*   3420
                      3441*   3443    3447*   3450    3471*   3473    3477*   3480    3507*   3509    3513*   3516    3537*
                      3539    3543*   3546    3567*   3569    3573*   3576    3597*   3599    3603*   3606    3627*   3629
                      3633*   3636    3657*   3659    3663*   3666    3687*   3689    3693*   3696    3717*   3719    3723*
                      3726    3747*   3749    3753*   3756    3777*   3779    3783*   3786    3807*   3809    3813*   3816
                      3837*   3839    3843*   3846    3867*   3869    3873*   3876    3897*   3899    3903*   3906    3927*
                      3929    3933*   3936    3957*   3959    3963*   3966    4085    4090*   4094*   4095*   4096    4100
                      4109    4116*   4123    4132*   4133    4135    4137    4139*   4140    4141    4147    4165*   4165*
                      4170*   4186    4199*   4210    4219*   4222    4227*   4229*   4231*   4250*   4290*   4291*   4292*
                      4293*   4294*   4295*   4296    4297    4298
R5      =.000005       577#   1370*   1390*   1410*   1430*   1457*   1460    1463*   1467    1470*   1474    1477*   1480
                      1499*   1501    1504    1507    1510*   1512    1527*   1529    1532    1535    1538*   1540    1555*
                      1557    1560    1563    1566*   1568    1583*   1585    1588    1591    1594*   1596    1611*   1613
                      1616    1619    1622*   1624    1639*   1641    1644    1647    1650*   1652    1669*   1671    1674
                      1677    1680*   1682    1697*   1699    1702    1705    1708*   1710    1725*   1727    1730    1733
                      1736*   1738    1753*   1755    1758    1761    1764*   1766    1792*   1794    1787    1790    1793*
                      1795    1816*   1819    1821    1924    1827*   1829    1844*   1846    1849    1952    1855*   1857
                      1872*   1874    1877    1890    1883*   1885    1902*   1904    1909    1911    1915*   1917    1936*
                      1938    1942    1945    1949*   1951    1969*   1971    1975    1978    1982*   1984    2001*   2003
                      2007    2010    2014*   2016    2033*   2035    2039    2042    2046*   2048    2071*   2072    2091*
                      2092*   2084    2095*   2096    2112*   2113    2118*   2119*   2121    2132*   2133    2152*   2158*
                      2159    2161    2164*   2165    2186*   2206*   2208    2211*   2213    2216    2220*   2222    2239*
                      2241    2244*   2246    2249    2253*   2255    2272*   2274    2277*   2279    2282    2285*   2288
                      2305*   2307    2310*   2312    2315    2319*   2321    2338*   2340    2343*   2345    2348    2352*
                      2354    2371*   2373    2376*   2378    2381    2385*   2387    2404*   2406    2409*   2411    2414
                      2418*   2420    2437*   2439    2442*   2444    2447    2451*   2453    2470*   2472    2476    2479
                      2483*   2485    2502*   2504    2508    2511    2515*   2517    2534*   2536    2540    2543    2547*
                      2549    2566*   2568    2572    2575    2579*   2581    2600*   2602    2611*   2612    2640*   2642
                      2651*   2652    2681*   2683    2692*   2693    2719*   2719    2723    2726    2729*   2730    2748*
                      2749    2753    2756    2758*   2760    2778*   2779    2783    2786    2788*   2790    2809*   2809
                      2813    2816    2818*   2820    2838*   2839    2843    2846    2848*   2850    2868*   2869    2873
                      2876    2878*   2880    2898*   2899    2903    2906    2908*   2910    2928*   2929    2933    2936
                      2938*   2940    2958*   2959    2963    2966    2968*   2970    2988*   2989    2993    2996    2998*
                      3000    3018*   3019    3023    3026    3028*   3030    3048*   3049    3053    3056    3058*   3060
                      3078*   3079    3083    3086    3088*   3090    3108*   3109    3113    3116    3118*   3120    3138*
                      3139    3143    3146    3148*   3150    3166*   3169    3173    3176    3179*   3180    3198*   3199
                      3203    3206    3208*   3210    3228*   3229    3233    3236    3238*   3240    3258*   3259    3263
                      3266    3268*   3270    3288*   3289    3293    3296    3298*   3300    3318*   3319    3323    3326
                      3328*   3330    3348*   3349    3353    3356    3358*   3360    3378*   3379    3383    3386    3388*
                      3390    3408*   3409    3413    3416    3418*   3420    3438*   3439    3443    3446    3448*   3450
                      3468*   3469    3473    3476    3478*   3480    3504*   3505    3509    3512    3514*   3516    3534*
                      3535    3539    3542    3544*   3546    3564*   3565    3569    3572    3574*   3576    3594*   3595
                      3599    3602    3604*   3606    3624*   3625    3629    3632    3634*   3636    3654*   3655    3659
                      3662    3664*   3666    3684*   3685    3689    3692    3694*   3696    3714*   3715    3719    3722
                      3724*   3726    3744*   3745    3749    3752    3754*   3756    3774*   3775    3779    3782    3794*
                      3796    3804*   3805    3809    3812    3814*   3816    3834*   3835    3839    3842    3844*   3846
                      3864*   3865    3869    3872    3874*   3876    3894*   3895    3899    3902    3904*   3906    3924*
                      3925    3929    3932    3934*   3936    3954*   3955    3959    3962    3964*   3966    4060    4061*
                      4067    4077    4079*   4122    4124*   4125    4126    4127    4128    4129    4130    4131*   4140*
                      4143*   4144*   4145*   4156    4158    4160    4166    4167*   4171*   4185    4200*   4211    4220*
                      4232*   4249*   4288*   4289*   4290    4292
SAVACT  001502        1020*   1191#   1258
SAVNUM  001276        1013*   1086#   1206*   3999*   4001*
SAVPC   001274        1085#   4181*   4346
SAVR0   001256        1078#   4190*   4195
SAVR1   001260        1079#   4189*   4196
```

```
SAVR2   001262          1080*   4188*   4197
SAVR3   001264          1081*   4187*   4198    4523    4532
SAVR4   001266          1082*   4186*   4199    4521    4528
SAVR5   001270          1083*   4185*   4200    4516    4519    4526
SAVSP   001272          1084*
SAVDS = 104406          1119*   4287
SCOPE = 104400          1107*   1378    1398    1418    1438    1487    1515    1543    1571    1539    1627    1655    1685
                        1713    1741    1769    1798    1832    1860    1888    1920    1954    1987    2019    2051    2099
                        2136    2169    2191    2225    2259    2291    2324    2357    2390    2422    2456    2488    2520
                        2552    2584    2620    2660    2701    2733    2763    2793    2823    2853    2883    2913    2943
                        2973    3003    3033    3063    3093    3123    3153    3183    3213    3243    3273    3303    3333
                        3363    3393    3423    3453    3483    3519    3549    3579    3609    3639    3669    3699    3729
                        3759    3789    3819    3849    3879    3909    3939    3969
SCOP1 = 104401          1109*   2615    2655    2696
SEQ.  = 000014           643*
SP    =%000006           578*    946     948     949*    1031*   1204*   1224*   1225*   1230    1233    1234    1279*   1375*
                        1395*   1415*   1435*   2137*   2141    4045*   4055*   4060*   4061    4062*   4079    4094*   4095*
                        4086    4087*   4108*   4109*   4116    4117    4122*   4123*   4124    4130*   4170    4171    4181
                        4207*   4208*   4209*   4210*   4211*   4212    4214*   4249    4250    4251    4252    4253    4264*
                        4265*   4266*   4267*   4268*   4269*   4270*   4271    4283    4285    4288    4331    4341*   4362*
SPACNT= 015577          4217*   4238    4241*   4257*
STACK = 001200           586*   1204    1279    1375    1395    1415    1435    4341    4362
STFLG   001311          1095*   1207*
SVDS    015270          4185*
SWR     001200          1049*   1222*   1227    1231*   1237    1240    1251    1258    1264    1283    1291    4029    4036
                        4053    4065    4276    4281    4328    4336    4338    4388
SWREG   000176           956*   1231    1237    4388    4404    4411
SWREGC  016402          4399    4409*
SW00  = 000001           566*   1251
SW01  = 000002           565*   1291
SW02  = 000004           564*
SW03  = 000010           563*
SW04  = 000020           562*
SW05  = 000040           561*
SW06  = 000100           560*
SW08  = 000400           559*   4336
SW09  = 001000           558*   4053
SW10  = 002000           557*   4338
SW11  = 004000           556*   4036
SW12  = 010000           555*   4065    4276
SW13  = 020000           554*   4281
SW14  = 040000           553*
SW15  = 100000           552*
SYNBIT= 100000           625*    978
SYNC. = 000011           640*
TEMP    017114          4213    4221    4248*   4363*   4364*   4482*
TEMP1   001244           935*    936*   1073*   1244*   1245    1249*   4473
TEMP2   001246          1074*   1245*   4475
TEMP3   001250          1075*   4213*   4248
TEMP4   001252          1076*
TEMP5   001254          1077*
TKCSR   001204          1051*   4032    4092    4390
TKDBR   001206          1052*   4034    4094    4102    4392
TLAST = 014160          1297    3971*
TPCSR   001210          1053*   4069    4072    4075    4103    4278
TPDBR   001212          1054*   4071*   4074*   4077*   4102*   4280*
```

```
TRPOK   015614          4267#
TSTNO   001226          1063#   1214*   1307*   1366*   1386*   1406*   1426*   1447*   1495*   1523*   1551*   1579*   1607*
                        1635*   1665*   1693*   1721*   1749*   1778*   1812*   1840*   1868*   1896*   1930*   1963*   1995*
                        2027*   2068*   2109*   2149*   2183*   2200*   2233*   2266*   2299*   2332*   2365*   2398*   2431*
                        2464*   2496*   2528*   2560*   2594*   2634*   2675*   2713*   2743*   2773*   2803*   2833*   2863*
                        2893*   2923*   2953*   2983*   3013*   3043*   3073*   3103*   3133*   3163*   3193*   3223*   3253*
                        3283*   3313*   3343*   3373*   3403*   3433*   3463*   3499*   3529*   3559*   3589*   3619*   3649*
                        3679*   3709*   3739*   3769*   3799*   3829*   3859*   3889*   3919*   3949*   4349    4377
TST!    002254          1296    1302    1307*   4011    4012
TST10   003440          1498    1523#
TST100  011624          3254    3283#
TST101  011714          3284    3313#
TST102  012004          3314    3343#
TST103  012074          3344    3373#
TST104  012164          3374    3403#
TST105  012254          3404    3433#
TST106  012344          3434    3463#
TST107  012450          3488    3499#
TST11   003514          1524    1551#
TST110  012540          3500    3529#
TST111  012630          3530    3559#
TST112  012720          3560    3589#
TST113  013010          3590    3619#
TST114  013100          3620    3649#
TST115  013170          3650    3679#
TST116  013260          3680    3709#
TST117  013350          3710    3739#
TST12   003570          1552    1579#
TST120  013440          3740    3769#
TST121  013530          3770    3799#
TST122  013620          3800    3829#
TST123  013710          3830    3859#
TST124  014000          3860    3889#
TST125  014070          3890    3919#
TST126  014160          3320    3949#   3971
TST127= ****** U        3489    3950
TST13   003644          1580    1607#
TST14   003720          1608    1635#
TST15   004004          1665#
TST16   004060          1666    1693#
TST17   004134          1694    1721#
TST2    002644          1308    1309    1366#
TST20   004210          1722    1749#
TST21   004264          1750    1778#
TST22   004350          1812#
TST23   004424          1813    1840#
TST24   004500          1804    1841    1868#
TST25   004554          1869    1896#
TST26   004650          1930#
TST27   004734          1931    1963#
TST3    002730          1367    1386#
TST30   005020          1964    1995#
TST31   005104          1996    2027#
TST32   005204          2068#
TST33   005366          2069    2109#
TST34   005540          2110    2149#
```

```
TST35   005636          2183*
TST36   005674          2175    2184    2200*
TST37   005764          2201    2233*
TST4    003014          1387    1406*
TST40   006054          2234    2266*
TST41   006134          2267    2299*
TST42   006214          2300    2332*
TST43   006324          2333    2365*
TST44   006414          2366    2398*
TST45   006504          2399    2431*
TST46   006574          2432    2464*
TST47   006660          2465    2496*
TST5    003100          1407    1426*
TST50   006744          2497    2528*
TST51   007030          2529    2560*
TST52   007114          2561    2594*
TST53   007262          2634*
TST54   007430          2675*
TST55   007554          2676    2713*
TST56   007644          2714    2743*
TST57   007734          2744    2773*
TST6    003164          1427    1447*
TST60   010024          2774    2803*
TST61   010114          2804    2833*
TST62   010204          2834    2863*
TST63   010274          2864    2893*
TST64   010364          2894    2923*
TST65   010454          2924    2953*
TST66   010544          2954    2983*
TST67   010634          2984    3013*
TST7    003364          1448    1495*
TST70   010724          3014    3043*
TST71   011014          3044    3073*
TST72   011104          3074    3103*
TST73   011174          3104    3133*
TST74   011264          3134    3163*
TST75   011354          3164    3193*
TST76   011444          3194    3223*
TST77   011534          3224    3253*
TTST    014446          1286*   1287*   1289*   1290*   4030*
TXBA.P= 000002           632*
TXBA.S= 000006           636*
TXWC.P= 000003           633*
TXWC.S= 000007           637*
TX.BCC= 000016           645*
TX.MUX= 000013           642*
TYPDAT  016046          4302    4320    4323*
TYPE  = 104402          1026    1111*   1219    1243    1253    1260    1285    1303    1328    3980    3982    3986    3990
                        3994    4088    4098    4110    4114    4205    4244    4303    4307    4311    4316    4321    4356
                        4396    4398    4406
TYPMSG  015770          4300    4303*
VECMAP  000056           928*   1025
WRDCNT  015574          4215*   4246*   4255*
WRKO.F  016034          4315    4318*
XBX     015662          4277    4279    4281*
XB1   = 000020          2193*   2194    2226*   2227    2259*   2260    2292*   2293    2325*   2326    2359*   2359    2391*
```

```
                    2392    2424#   2425    2457#   2458    2489#   2490    2521#   2522    2553#   2703#   2706    2734#
                    2736    2764#   2766    2794#   2796    2824#   2826    2954#   2856    2384#   2886    2914#   2916
                    2944#   2946    2974#   2976    3004#   3006    3034#   3036    3064#   3066    3094#   3096    3124#
                    3126    3154#   3156    3184#   3136    3214#   3216    3244#   3246    3274#   3276    3304#   3306
                    3334#   3336    3364#   3366    3394#   3396    3424#   3490#   3492    3520#   3522    3550#   3552
                    3580#   3582    3610#   3612    3640#   3642    3670#   3672    3700#   3702    3730#   3732    3760#
                    3762    3790#   3792    3820#   3822    3850#   3852    3880#   3882    3910#   3912    3940#   3942
                    3970#
XCSR    014406      3985    4013#
XERR    014430      3997    4022#
XHEAD   017012      1243    4466#
XPASS   014422      3993    4019#
XSTATQ  017040      1248    4471#
XTSTN   016156      4306    4347#
XVEC    014414      3989    4016#
$CNTG   016410      4396    4412#
$E    = 000130        1#    1309    1310#   1367    1368#   1387    1388#   1407    1408#   1427    1428#   1448    1449#
                    1496    1497#   1524    1525#   1552    1553#   1580    1581#   1608    1609#   1637#   1666    1667#
                    1694    1695#   1722    1723#   1750    1751#   1780#   1813    1814#   1841    1842#   1869    1875#
                    1898#   1931    1932#   1964    1965#   1996    1997#   2029#   2069    2070#   2110    2111#   2151#
                    2184    2185#   2201    2202#   2234    2235#   2267    2268#   2300    2301#   2333    2334#   2366
                    2367#   2399    2400#   2432    2433#   2465    2466#   2497    2498#   2529    2530#   2561    2562#
                    2597#   2637#   2676    2678#   2714    2715#   2744    2745#   2774    2775#   2804    2805#   2834
                    2835#   2864    2865#   2894    2895#   2924    2925#   2954    2955#   2984    2985#   3014    3015#
                    3044    3045#   3074    3075#   3104    3105#   3134    3135#   3164    3165#   3194    3195#   3224
                    3225#   3254    3255#   3284    3285#   3314    3315#   3344    3345#   3374    3375#   3404    3405#
                    3434    3435#   3465#   3500    3501#   3530    3531#   3560    3561#   3590    3591#   3620    3621#
                    3650    3651#   3680    3681#   3710    3711#   3740    3741#   3770    3771#   3800    3801#   3830
                    3831#   3860    3861#   3890    3891#   3920    3921#   3950    3951#
$MNEW   016423      4400    4415#
$MSWR   016414      4398    4413#
$N    = 000126        1#    1305    1310#   1364    1368#   1384    1388#   1404    1408#   1424    1428#   1445    1449#
                    1493    1497#   1521    1525#   1549    1553#   1577    1581#   1605    1609#   1633    1637#   1663
                    1667#   1691    1695#   1719    1723#   1747    1751#   1776    1780#   1799    1810    1814#   1838
                    1842#   1866    1870#   1894    1898#   1928    1932#   1961    1965#   1993    1997#   2025    2029#
                    2052    2066    2070#   2107    2111#   2147    2151#   2170    2181    2185#   2198    2202#   2231
                    2235#   2264    2268#   2297    2301#   2330    2334#   2363    2367#   2396    2400#   2429    2433#
                    2462    2466#   2494    2498#   2526    2530#   2558    2562#   2585    2592    2597#   2621    2632
                    2637#   2661    2673    2678#   2711    2715#   2741    2745#   2771    2775#   2801    2805#   2831
                    2835#   2861    2865#   2891    2895#   2921    2925#   2951    2955#   2981    2985#   3011    3015#
                    3041    3045#   3071    3075#   3101    3105#   3131    3135#   3161    3165#   3191    3195#   3221
                    3225#   3251    3255#   3281    3285#   3311    3315#   3341    3345#   3371    3375#   3401    3405#
                    3431    3435#   3461    3465#   3484    3497    3501#   3527    3531#   3557    3561#   3587    3591#
                    3617    3621#   3647    3651#   3677    3681#   3707    3711#   3737    3741#   3767    3771#   3797
                    3801#   3827    3831#   3857    3861#   3887    3891#   3917    3921#   3947    3951#   3971#
$N1   = 000107      1799#   2052#   2170#   2621#   2661#   3484#
$N2   = 000126      1799#   2052#   2170#   2621#   2661#   3484#
$N3   = 000127      1799#   2052#   2170#   2621#   3484#
$V    = 000016        1#    1098#   1107    1109#   1111#   1113#   1115#   1117#   1119#   1121#   1123#   1125#   1127#
                    1129#   1131#   1133#   1135#
.     = 020056       650#    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
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                        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     861     863     865     867     869     871     873     875     877     879     881
                        883     885     887     889     891     893     895     897     899     901     903     905     909*
                        916*    918*    926*    942     954*    960*    963*    967     983     988     992     995     1030
                       1035*   1046*   1087*   1157*   1158*   1159*   1160*   1161*   1162*   1163*   1164*   1165*   1166*
                       1167*   1168*   1169*   1170*   1171*   1172*   1173*   1174*   1175*   1176*   1177*   1178*   1179*
                       1180*   1181*   1182*   1183*   1184*   1185*   1186*   1187*   1188*   1189*   1190*   1191*   1192*
                       1193*   1194*   1241    1246    1250    1263    1331    2057    2080    2117    2140    2167    2189
                       2626    2662    4070    4073    4356    4365    4417*   4470*   4481*   4483*   4485*
.BEGIN  002116         1278*
.CKSWR  016262         1132    4386*
.CNTLU  016336         1134    4397*
.CNVRT  015360         1126    4207*
.CONVR  015354         1124    4205*
.EOP    014250         3489    3950    3977*
.ERRTA  017670         4295    4499*
.HLT    015634          912    4275*
.INSTE  015014         1116    4108*
.INSTG  015020         4107    4110*
.INSTR  014676         1114    4084*
.INST1  014716         4088*   4099    4115
.MEMCL  017220         1130    4486*
.MSG    014720         4086*   4089*   4392*   4393*   4394
.MSTCL  017222         1129    4487*
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.RESOS  015322         1122    4195*
.SAVOS  015262         1120    4181*
.SCOPE  014436         1108    4028*
.SCOP1  014550         1110    4052*
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.TRPSR  015602          914    4264*
.TRPTA  001314         1106*   4269
.TYPE   014570         1112    4060*
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ADRTS2   1359*  2589  2629  2670
COMMEN   1799*  2052  2170* 2621* 2661* 3484*
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DQFRNT      1*   532
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IDENT       1*
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REGTS3   1359*  2704  2734  2764  2794  2824  2854  2884  2914  2944  2974  3004  3034  3064  3094
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TESTB1      1*
TESTC1      1*
TESTD1      1*
TESTE1      1*
TESTF1      1*
TESTH1      1*
TESTH2      1*
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$BUFFE      1*  4477
$CATCH      1*   649
$CLRVE      1*  1240
$CONVR      1*  4202
$EOP        1*  3970
$GETFL      1*
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$HEADE      1*   532
$HLT        1*  4272
$INSTR      1*  4081
$INTNP      1*
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$MSG        1*  4418
$PARAM      1*  4119
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$SETFL      1*
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          3161   3191  3221  3251  3281  3311  3341  3371  3401  3431  3461  3497  3527  3557  3587
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$VARIA      1#   1034
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ASL     1463  1470  1477  4143  4144  4145  4267  4291  4293
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BIS      946   978   984   989   993   996   997   998  2081  2092  2118  2119  2159  2211  2244
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BLT     4136
BMI     1241
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BPL     2140  4033  4068  4070  4073  4076  4093  4104  4279  4329  4391
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CCC     1319  1332
CLC     1014  4226  4228  4230
CLR      938   965   968   973   979  1000  1001  1002  1003  1004  1009  1028  1208  1210  1212
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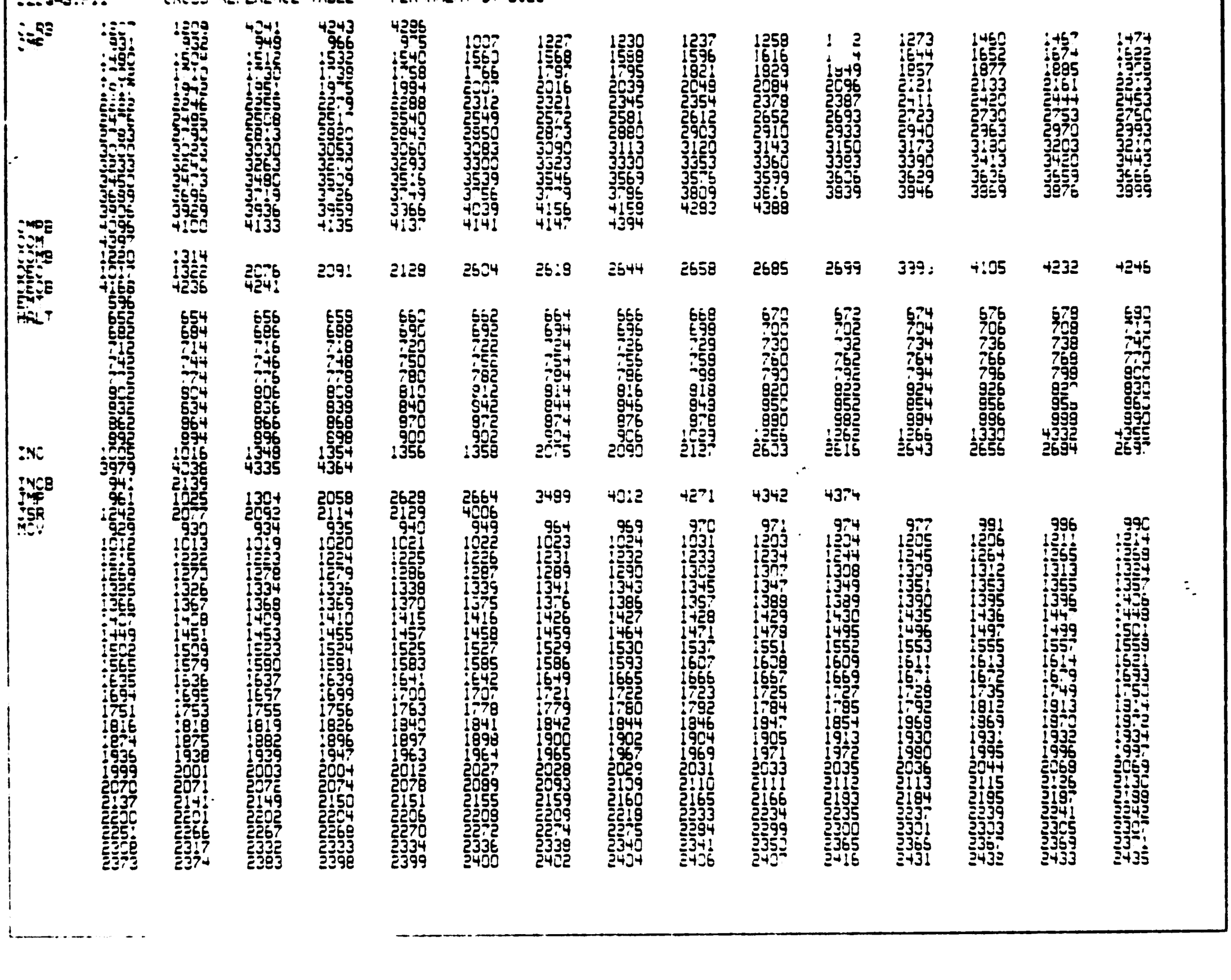
CROSS REFERENCE TABLE -- PERMANENT SYMBOLS



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RESET           4004
RETURN          1298
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RTS              951    2142
SUB             4265    4289
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