DU11

OFFLINE LOGI TESTS

MD-11-DZDUA-D

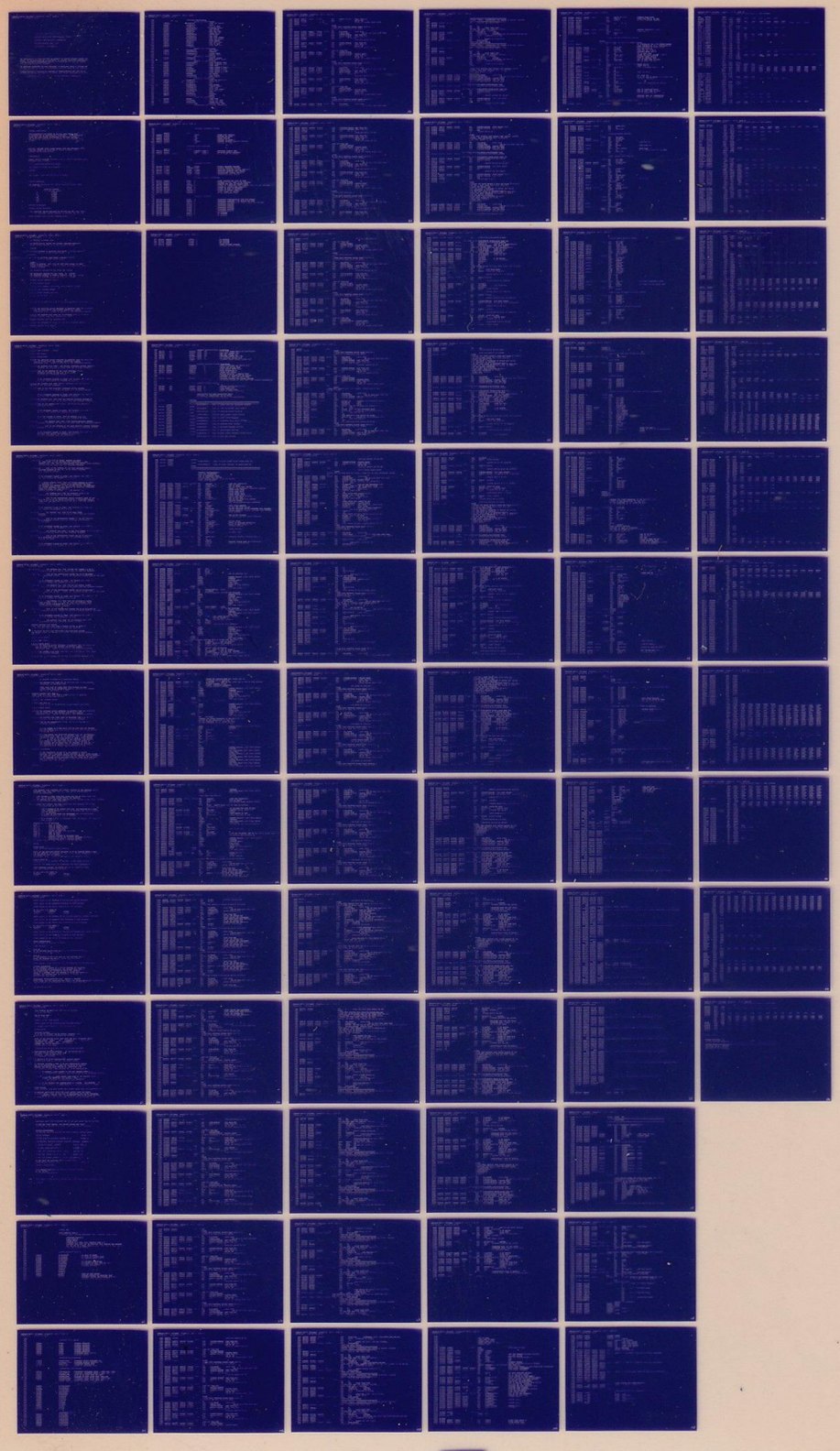
EP DZDUA D DL

JAN 1978

digital

FICHE 1 OF 1

MADE IN USA



I D E N T I F I C A T I O N

PRODUCT NAME: DU11 OFFLINE LOGIC TESTS

PRODUCT CODE:MAINDEC-11-DZDUA-D-D

RELEASE DATE:21 AUG 1976

MAINTAINER :DIAGNOSTICS

GENERAL DESCRIPTION

THIS DIAGNOSTIC CAN CHAIN 16 DU11'S, THIS MEANS THAT
16 DEVICES CAN BE SEQUENTIALLY EXERCISED. THE DIAGNOSTIC
MAKES ONE PASS BEFORE PROCEEDING TO THE NEXT DEVICE,
AND CONTINUES EXERCISING ALL DEVICES IN THIS FASHION UNTIL
HALTED.

1. THE DU11 OFFLINE LOGIC TESTS VERIFY THAT ALL REGISTERS EXIST
,AND ALL RESPECTIVE BITS CAN BE MASTER CLEARED, READ,
WRITTEN AND/OR READ/WRITTEN

2. REQUIREMENTS

PDP-11 FAMILY STANDARD COMPUTER WITH OR WITHOUT HARDWARE SWITCH
REGISTER (LOC. 177570)

DU11 SYNCRONOUS/ISOCRONOUS OPTION

ONE CONSOLE TELETYPE OR EQUIVALENT

2.2 STORAGE

THE PROGRAM LOADS AND RUNS IN 8K OF MEMORY.

3. LOADING PROCEDURE

THE STANDARD PROCEDURE FOR LOADING ABSOLUTE BINARY TAPES
IS TO BE USED.

	STARTING ADDRESS FOR ABSOLUTE LOADER
4K	017500
8K	037500
12K	057500
16K	077500
20K	117500
24K	137500
28K	157500

4. STARTING PROCEDURE

4.1 CONTROL SWITCH SETTINGS

NOTE: SOFTWARE SWITCH REGISTER IS DEFINED AS LOC. 176, WHILE
THE SOFTWARE DISPLAY REGISTER IS DEFINED AS LOC. 174.

4.1.1 AFTER PROGRAM LOAD (INITIAL PROGRAM START)

ALL CONSOLE SWITCHES DOWN

4.1.2 TO MODIFY DEVICE VECTOR AND CONTROL REGISTER ADDRESSES
AFTER PROGRAM RESTART OR TO RUN MULTIPLE DEVICES

SW00=1

4.1.3 TO START PROGRAM AT SELECTED TEST AFTER A PROGRAM RESTART
(ONLY IN SINGLE DEVICE TESTS)
SW01=1

4.1.4 TO LOCK ON SELECTED TEST AFTER A PROGRAM RESTART
(ONLY IN SINGLE DEVICE TESTS)

SW02=1
NOTE1: IN GENERAL SW01 WILL BE USED WHEN SW02=1 IS USED
NOTE2: WITHOUT SW01=1 "LOCK ON TEST" WILL DEFAULT TO TEST 1

4.2 STARTING ADDRESS

THE STARTING ADDRESS FOR ALL TESTS IS 000200

THE RETARTING ADDRESS FOR ALL TESTS IS 000200
THE STARTING ADDRESS TO ENTER A SELECTED TEST IS 000200
THE STARTING ADDRESS TO LOCK ON TEST IS 000200

4.3 PROGRAM AND/OR OPERATOR ACTION

4.3.1 INITIAL PROGRAM START

4.3.1.1 LOAD PROGRAM INTO MEMORY WITH ABSOLUTE LOADER

4.3.1.2 LOAD ADDRESS 000200

4.3.1.3 CLEAR CONSOLE SWITCHES

4.3.1.4 PRESS START

4.3.1.5 THE PROGRAM WILL TYPE "DU11 DZDUA-D TAPE A" (ONCE ONLY)

NOTE:IF THE SOFTWARE SWITCH REGISTER IS SELECTED THEN THE FOLLOWING
WILL BE TYPED AFTER THE PROGRAM IDENTIFIES ITSELF:
SWR=XXXXXX NEW= (REFER TO SECTION 5. FOR OPERATOR'S OPTION)

4.3.1.7 THE PROGRAM WILL TYPE "P" TO INDICATE THAT IT IS ABOUT
TO START TESTING ,AND THEN TESTING WILL BEGIN

4.3.2 PROGRAM RESTART WITH ALL SWITCHES DOWN

4.3.2.1 THE PROGRAM WILL TYPE "R" AND WILL COMMENCE TESTING

4.3.3 PROGRAM RESTART WITH SW00=1

4.3.3.1 LOAD ADDRESS 000200

4.3.3.2 SET SW00=1

4.3.3.3 PRESS START

NOTE:IF THE SOFTWARE SWITCH REGISTER IS SELECTED THEN THE FOLLOWING
WILL BE TYPED AFTER THE PROGRAM IDENTIFIES ITSELF:
SWR=XXXXXX NEW= (REFER TO SECTION 5, FOR OPERATOR'S OPTION)

4.3.3.4 THE PROGRAM WILL TYPE " 1ST DEVICE: RECEIVER CONTROL REGISTER
ADDRESS" AND WAIT FOR AN INPUT FROM THE TELETYPE KEYBOARD

4.3.3.5 TYPE IN THE ADDRESS OF THE FIRST RECEIVER CONTROL
REGISTER ADDRESS OF THE DU11 TO BE TESTED
FOLLOWED BY A <CARRIAGE RETURN>

IF AN INCORRECT ADDRESS IS TYPED ,THE PROGRAM WILL TYPE "?"
AND WILL THEN REPEAT THE MESSAGE OF 4.3.3.4

4.3.3.6 THE PROGRAM WILL TYPE "VECTOR ADDRESS-" AND WAIT FOR AN
INPUT FROM THE TELETYPE KEYBOARD

4.3.3.7 TYPE IN THE BASE RECEIVER INTERRUPT VECTOR ADDRESS
FOR THE DU11 TO BE TESTED FOLLOWED BY A <CARRIAGE RETURN>

IF AN INCORRECT ADDRESS IS TYPED ,THE PROGRAM WILL TYPE "?"
AND WILL THEN REPEAT THE MESSAGE OF 4.3.3.6

4.3.3.8 THE PROGRAM WILL TYPE "ARE YOU RUNNING MULTIPLE DEVICES ?"
(Y OR N)-" AND WAIT FOR AN INPUT FROM THE TELETYPE KEYBOARD

4.3.3.9 TYPE IN THE APPROPRIATE ANSWER YES OR NO FOLLOWED BY A
<CARRIAGE RETURN>

IF AN INCORRECT ANSWER IS GIVEN, THE PROGRAM WILL TYPE "?"
AND WILL THEN REPEAT THE MESSAGE OF 4.3.3.8

IF A "NO" ANSWER IS GIVEN: JUMP TO SECTION 4.3.3.12
IF A "YES" ANSWER IS GIVEN:THE NEXT QUESTION IS ASKED

4.3.3.10 THE PROGRAM WILL TYPE "LAST DEVICE:RECEIVER CONTROL
REGISTER ADDRESS-" AND WAIT FOR AN INPUT FROM THE TELETYPE KEYBOARD

4.3.3.11 TYPE IN THE ADDRESS OF THE LAST RECEIVER CONTROL REGISTER
ADDRESS OF THE DU11 TO BE TESTED FOLLOWED BY A <CARRIAGE RETURN>

IF AN INCORRECT ANSWER IS TYPED ,THE PROGRAM WILL TYPE "?"
AND WILL THEN REPEAT THE MESSAGE OF 4.3.3.10
NOTE:ALL ADDRESSES SHALL BE CONTIGUOUS

4.3.3.11.1 IF AN "OUT OF RANGE" ADDRESS IS TYPED
IE, MORE THAN 16 (10) DEVICES AWAY (UPWARDS).....THE
PROGRAM WILL TYPE "OUT OF RANGE;RETYPE LAST DEVICE RXCSR ADDRESS-"
AND WAIT FOR AN INPUT FROM THE TELETYPE KEYBOARD

4.3.3.11.2 TYPE IN THE ADDRESS OF THE LAST RECEIVER CONTROL
REGISTER ADDRESS OF THE DU11 TO BE TESTED FOLLOWED
BY A <CARRIAGE RETURN>

IF AN INCORRECT ANSWER IS TYPED ,THE PROGRAM WILL TYPE "?"
AND WILL REPEAT THE MESSAGE OF 4.3.3.11.1

IF A DEVICE ADDRESS LOWER THAN 1ST DEVICE ADDRESS IS TYPED.....
....SCHOOLS OUT.....THERE IS NO PROTECTION FOR THIS,
THE PROGRAM WILL DEFAULT TO TWO DEVICES ACTIVE (UPWARDS FROM
1ST DEVICE ADDRESS).THE SAME APPLIES TO IDENTICAL ADDRESSES
TYPED FOR FIRST AND LAST DEVICE.
OBSERVE LOCATION 0 ACTREG: SEE SECTION 7.2

4.3.3.12 THE PROGRAM WILL TYPE "DU PRIORITY LEVEL-" AND
WAIT FOR AN INPUT FROM THE TELETYPE KEYBOARD

4.3.3.13 TYPE IN THE APPROPRIATE DEVICE PRIORITY LEVEL OF THE
DU11 OR DU11'S TO BE TESTED FOLLOWED BY A <CARRIAGE RETURN>
(NOTE THAT ALL MULTIPLE DEVICES MUST BE AT THE SAME PRIORITY
LEVEL). IE "5"

IF AN INCORRECT LEVEL IS TYPED ,THE PROGRAM WILL TYPE "?"
AND REPEAT THE MESSAGE OF 4.3.3.12

4.3.3.14 THE PROGRAM WILL TYPE "# OF SYNC CHARS
SELECTED (1 OR 2)-" AND WAIT FOR AN INPUT FROM THE TELETYPE
KEYBOARD

4.3.3.15 TYPE IN THE APPROPRIATE ANSWER "1" OR "2" FOLLOWED
BY A <CARRIAGE RETURN>.(NOTE;ALL MULTIPLE DEVICES MUST
BE THE SAME)

IF AN INCORRECT ANSWER IS TYPED ,THE PROGRAM WILL TYPE "?"
AND WILL REPEAT THE MESSAGE OF 4.3.3.14

4.3.3.16 THE PROGRAM WILL TYPE " IS SEC XMIT JUMPER #6 IN ? (Y OR N)-"
AND WAIT FOR AN INPUT FROM THE TELETYPE KEYBOARD

4.3.3.17 TYPE IN THE APPROPRIATE ANSWER YES OR NO FOLLOWED
BY A <CARRIAGE RETURN>.(NOTE THAT ALL MULTIPLE DEVICES
MUST BE THE SAME)

IF AN INCORRECT ANSWER IS TYPED ,THE PROGRAM WILL TYPE "?"
AND WILL REPEAT THE MESSAGE OF 4.3.3.16

4.3.3.18 THE PROGRAM WILL TYPE "IS SEC RFC JUMPER # 5 IN ?
(Y OR N)-" AND WAIT FOR AN INPUT FROM THE TELETYPE KEYBOARD

4.3.3.19 TYPE IN THE APPROPRIATE ANSWER YES OR NO FOLLOWED
BY A <CARRIAGE RETURN>. (NOTE: ALL MULTIPLE DEVICES MUST BE THE SAME)

IF AN INCORRECT ANSWER IS TYPED ,THE PROGRAM WILL TYPE "?"
AND WILL REPEAT THE MESSAGE OF 4.3.3.18

4.3.3.20 THE PROGRAM WILL TYPE "IS OPT CLR ENABLE JUMPER
4 IN ? (Y OR N)-" AND WAIT FOR AN INPUT FROM THE TELETYPE KEYBOARD

4.3.3.21 TYPE IN THE APPROPRIATE ANSWER YES OR NO FOLLOWED
BY A <CARRIAGE RETURN>. (NOTE: ALL MULTIPLE DEVICES MUST BE THE SAME)

IF AN INCORRECT ANSWER IS TYPED ,THE PROGRAM WILL TYPE "?"
AND WILL REPEAT THE MESSAGE OF 4.3.3.20

4.3.3.22 THE PROGRAM WILL TYPE "ARE YOU RUNNING IN MAINT.
MODE EXTERNAL ? AND .....DO YOU HAVE THE EXTERNAL MODEM
BYPASS JUMPER CONNECTOR ON ? (Y OR N)-" AND WAIT FOR AN
INPUT FROM THE TELETYPE KEYBOARD

4.3.3.23 TYPE IN THE APPROPRIATE ANSWER YES OR NO FOLLOWED BY
A <CARRIAGE RETURN>. (NOTE: ALL MULTIPLE DEVICES MUST BE THE SAME)

IF AN INCORRECT ANSWER IS TYPED ,THE PROGRAM WILL TYPE "?"
AND WILL REPEAT THE MESSAGE OF 4.3.3.22

4.3.3.24 THE PROGRAM WILL TYPE "R" TO INDICATE THAT IT
HAS STARTED AND WILL COMMENCE TESTING AT TEST 1

4.3.4 PROGRAM RESTART WITH SW01=1
NOTE: THIS WILL ONLY WORK WHEN A SINGLE DEVICE IS SELECTED
...IT WILL NOT WORK IF MULTIPLE DEVICES ARE SELECTED

IF MULTIPLE DEVICES WERE PREVIOUSLY SELECTED,LOAD 000200,
AND SELECT SW00=1 AND ANSWER "NO" TO THE MULTIPLE DEVICE QUESTION
SEE 4.3.3

4.3.4.1 LOAD 000200

4.3.4.2 SET SW01=1

4.3.4.3 PRESS START
NOTE:IF THE SOFTWARE SWITCH REGISTER IS SELECTED THEN THE FOLLOWING
WILL BE TYPED AFTER THE PROGRAM IDENTIFIES ITSELF:
SWR=XXXXXX NEW= (REFER TO SECTION 5. FOR OPERATOR'S OPTION)

4.3.4.4 THE PROGRAM WILL TYPE "TEST PC-" AND WAIT FOR AN INPUT FROM
THE TELETYPE KEYBOARD

4.3.4.5 TYPE IN THE ADDRESS OF THE TEST AT WHICH THE PROGRAM IS TO

BE STARTED FOLLOWED BY A <CARRIAGE PETURN>

4.3.4.6 THE PROGRAM WILL TYPE "R" TO INDICATE THAT IT HAS STARTED
TESTING AT THE SELECTED TEST

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

4.3.5 PROGRAM RESTART WITH SW02 =1
NOTE: THIS WILL ONLY WORK WHEN A SINGLE DEVICE IS SELECTED
SEE NOTE IN 4.3.4 FOR MORE DETAILS

4.3.5.1 LOAD ADDRESS 000200

4.3.5.2 SET SW02 =1
NOTE: IT MAY BE ADVANTAGEOUS TO SET SW01=1 (OPTIONAL)

4.3.5.3 PRESS START

NOTE:IF THE SOFTWARE SWITCH REGISTER IS SELECTED THEN THE FOLLOWING
WILL BE TYPED AFTER THE PROGRAM IDENTIFIES ITSELF:
SWR=XXXXXX NEW= (REFER TO SECTION 5. FOR OPERATOR'S OPTION)

4.3.5.4 THE PROGRAM WILL TYPE "LOCK ON SELECTED TEST ? (Y OR N)-"
AND WAIT FOR AN INPUT FROM THE TELETYPE KEYBOARD

4.3.5.5 TYPE IN THE APPROPRIATE ANSWER YES OR NO FOLLOWED BY A
<CARRIAGE RETURN>

IF A NO ANSWER IS GIVEN: THIS LOCK ON TEST WILL BE IGNORED
AND THE PROGRAM WILL TYPE "R" TO INDICATE THAT IT HAS STARTED
TESTING AT TEST 1

4.3.5.6 IF A YES ANSWER WAS GIVEN:THE PROGRAM WILL ACT AS FOLLOWS...
THE PROGRAM WILL TYPE "R" TO INDICATE THAT IT HAS STARTED
TESTING AT TEST 1 AND WILL REMAIN IN TEST 1 UNTIL HALTED
OR IF ANY KEY IS STRUCK ON THE TELETYPE ,THE PROGRAM
WILL FREEZE ON THE NEXT TEST UNTIL A KEY IS STRUCK ON
THE TELETYPE AND SO FORTH THRU THE PROGRAM. IF SW01 =1 IT
WILL PERFORM AS IN SECTION 4.3.4 ALLOWING ONE TO FREEZE
ON A SELECTED TEST RATHER THAN DEFAULTING TO TEST 1

5. OPERATING PROCEDURE

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.

5.1 OPERATIONAL SWITCH SETTINGS

```
SW15 =1          HALT ON ERROR
SW14 =1          LOOP ON CURRENT TEST
SW13 =1          INHIBIT ERROR TYPEOUT
SW11 =1          INHIBIT ITERATIONS
SW10 =1          ESCAPE TO NEXT TEST ON ERROR
SW09 =1          LOOP ON ERROR
SW02 =1          LOCK ON TEST
SW01 =1          RESTART PROGRAM AT SELECTED TEST
SW00 =1          RESELECT VECTOR AND CONTROL REGISTER ADRESSES
                 &PARAMETERS AFTER A PROGRAM RESTART
TO INHIBIT "END OF PASS" TYPEOUT - TURN TELETYPE OFF
```

6. ERRORS

6.1 ERROR HALTS

THERE ARE FOUR DISTINCT ERROR TYPEOUTS

NOTE: 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 TO SECTION 5. FOR OPERATOR OPTION)

6.1.1 PC+2 = ERROR PC

WHERE PC +2 IS THE ADDRESS OF THE CALL TO THE ERROR HANDLER +2

REFER TO THE ABOVE "HLT" IN DIAGNOSTIC FOR ERROR DESCRIPTION

CHECK ADDRESS @ RXCSR: TO LOCATE THE DEVICE PRESENTLY UNDER
TEST WHEN RUNNING MULTIPLE DEVICES

6.1.2 PC +2 = REGISTER ERROR PC

REGISTER	EXPECTED	ACTUAL
16XXXX	YYYYYY	ZZZZZZ

WHERE 16XXXX IS THE ADDRESS OF THE FAILING DEVICE REGISTER

WHERE YYYYYY IS THE EXPECTED CONTENTS OF THAT REGISTER

WHERE ZZZZZZ IS THE ACTUAL CONTENTS OF THAT REGISTER

6.1.3 PC +2 = RECFIVER ERROR PC

REGISTER	EXPECTED	ACTUAL
16XXXX	YYYYYY	ZZZZZZ

WHERE 16XXXX IS THE ADDRESS OF THE FAILING RECEIVER (RXDBUF) REGISTER

WHERE YYYYYY IS THE EXPECTED DATA CONTENTS OF THAT REGISTER

WHERE ZZZZZZ IS THE ACTUAL DATA CONTENTS OF THAT REGISTER

6.1.4 PC +2 = TRANSMITTER ERROR PC

REGISTER	EXPECTED	ACTUAL
16XXXX	YYYYYY	ZZZZZZ

WHERE 16XXXX IS THE ADDRESS OF THE FAILING TRANSMITTER (TXCSR) REGISTER

WHERE YYYYYY IS THE EXPECTED CONTENTS OF THAT REGISTER

WHERE ZZZZZZ IS THE ACTUAL CONTENTS OF THAT REGISTER

6.1.5 ERROR DESCRIPTIONS
SEE LISTINGS FOR DETAILS OF ERRORS

6.2 ERROR RECOVERY

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

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

NOTE: THE PC + 2 OF THE "HLT" WILL BE DISPLAYED IN THE DATA LIGHTS

6.2.3 ILLEGAL INTERRUPTS
IF AN INTERRUPT OCCURS TO A VECTOR ADDRESS NOT SELECTED
DURING PROGRAM INITIALIZATION, THE PROGRAM WILL HALT IN
THE TRAPCATCHER. THE ADDRESS AT WHICH THE PROGRAM
HALTS IS 2 GREATER THAN THE ADDRESS TO WHICH THE INTERRUPT
OCCURED. THE PROGRAM MUST BE RESTARTED AT 000200 TO
RECOVER FROM THIS ERROR.

6.2.4 ADDITIONAL TROUBLESHOOTING AIDS ERRCNT: & PASCNT:
CHECK THESE TWO TAG LOCATIONS FOR TOTAL # OF ERRORS AND PASSES RESPECTIVELY.
LOADING 000200 AND RESTARTING WILL CLEAR THESE LOCATIONS.

6.3 END OF PASS ROUTINE

THIS TYPEOUT IS MENTIONED HERE FOR CONVENIENCE
IT IS IN THE FORM:

END OF PASS TAPE Y
16XXXX = DEVICE

WHERE Y IS THE TAPE LOADED

WHERE 16XXXX IS THE DEVICE'S BASE REGISTER ADDRESS

TO INHIBIT THIS TYPEOUT - TURN TELETYPE OFF

7. RESTRICTIONS

7.1 MULTIPLE DEVICES

UP TO 16(10) DEVICES MAY BE TESTED, HOWEVER, THEY
MUST HAVE CONTIGUOUS ADDRESSES AND VECTORS

NOTE: IF ALL DEVICES UNDER TEST HAVE THE SAME INTERRUPT VECTOR
YOU CAN CHANGE "ZERO: ADD #10,BASEIV ;NEXT BLOCK
(VECTORS)" TO "ZERO: ADD #0,BASEIV";
THEREBY THE VECTOR ADDRESSES WILL NOT BE
UPDATED AFTER EACH PASS.

7.2 DISQUALIFYING DEVICES WHEN RUNNING MULTIPLE DEVICES

WHEN RUNNING MULTIPLE DEVICES AN ACTIVE BIT IS SET
FOR EACH DEVICE RUNNING UNDER TEST IE, BIT 0 FOR
DEVICE 0 ,BIT 15 FOR DEVICE 15
TO DISQUALIFY DEVICES:

7.2.1

IF DEVICE 0 IS TO BE DISQUALIFIED ,SIMPLY RESTART
PROGRAM WITH SW00 =1 AND OMIT THE FIRST DEVICE.

7.2.2

IF HOWEVER, DEVICES 1 THRU 15 OR ANY COMBINATION THEREOF
ARE TO BE DISQUALIFIED....LOAD THE LOCATION OF ACTREG:
OBSERVE THE ACTIVE BITS (ACTIVE =1, NONACTIVE = 0)
AND DEPOSIT 0 WHERE THOSE DEVICES ARE TO BE DISQUALIFIED

7.2.2.1 TO RESTART...LOAD 000200 IN SWR AND DEPRESS START....
THE PROGRAM WILL CONTINUE WITH THE DEVICE IT WAS IN BEFORE HALTING.

7.2.2.2 .....OR .....LOAD 000200 WITH SW00 =1 AND DEPRESS START....
ANSWER THE QUESTION :1ST DEVICE : ETC.....
....THE PROGRAM WILL CONTINUE WITH DEVICE 0

7.2.2.3 IF ALL DEVICES ARE DISQUALIFIED BY MISTAKE THE PROGRAM
WILL TYPEOUT AN ERROR MESSAGE.....LOAD & START AT 000200

7.3 CABLE DELAYS

NOTE: EXTERNAL LOOP BACK TESTS ONLY (MODEM CABLE WITH H315 CONNECTOR ON)

7.3.1

TO PROVIDE SUFFICIENT DELAY FOR CLOCK SIGNAL OVER THE CABLE,
LOCATION "HOLD:" MUST BE MODIFIED TO ACCOMODATE FOR FASTER MACHINES.
PRESENTLY "HOLD:" =20 IS SUFFICIENT TIME ON AN 11/20 MACHINE.
IF RUNNING ON AN 11/40 OR AN 11/45 "HOLD:" MUST BE PATCHED TO 40

BASICALLY DON'T TRY TO EXCEED 10K TO 12K RATE USING THE EIA DRIVERS

7.4 TO USE THE "XOR" TESTER ,THE BRANCH AROUND THE "XOR"
CODE MUST BE PATCHED TO A "NOP". (SEE LISTINGS FOR DETAILS)

8. DEFAULT PARAMETERS:
1ST DEVICE: RECEIVER CONTROL REGISTER ADDRESS- RXCSR: 160040

VECTOR ADDRESS- DURIV: 770

ARE YOU RUNNING MULTIPLE DEVICES ?- NO MULTD: 0

LAST DEVICE: RECEIVER CONTROL REGISTER ADDRESS- LASTADD: 0

DU PRIORITY LEVEL- LEVEL 5 DUPRT: LEVEL 5

OF SYNC CHARS SELECTED - 2 SYNCNO: 377

IS SEC XMIT JUMPER # 6 IN ?- YES SEXMIT: 377

IS SEC REC JUMPER # 5 IN ?- YES SEREC: 377

IS OPT CLR ENABLE JUMPER # 4 IN ?- YES OPTCLR: 377

DO YOU HAVE THE EXTERNAL MODEM BYPASS JUMPER
CONNECTOR ON (M315)- YES JMRBY: 377

9. PROGRAM DESCRIPTION

9.1 THIS PROGRAM PERFORMS THE OFFLINE LOGIC BIT BANGING
OF THE DEVICE
SEE LISTING FOR DETAILS

10. FLOW CHARTS: RECEIVER FLOW,TRANSMITTER FLOW,TRANSMITTER & RECFIVER FLOW

11. LISTINGS

```
                                .ENABLE ABS
                                ;DU11 DZDUA-D TAPE A
                                ;COPYRIGHT 1973, DIGITAL EQUIPMENT CORP., MAYNARD, MASS. 01754

                                        ;STARTING PROCEDURE
                                        ;LOAD PROGRAM
                                        ;PRESS START
                                        ;PROGRAM WILL TYPE "DU11 DZDUA-D TAPE A "
                                        ;PROGRAM WILL TYPE "R" TO INDICATE THAT TESTING HAS STARTED
                                        ;AT THE END OF A PASS, PROGRAM WILL TYPE "END OF PASS TAPE A"
                                        ;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
  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
  000200                        SW06=200
  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                  ;PRESELECT VECTOR AND CONTROL REGISTER
                                ;ADDRESS AFTER PROGRAM RESTART

```

```
                                ;REGISTER DEFINITIONS

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

                                ;LOCATION EQUIVALENCIES

177570                          DSWR=177570     ;HARDWARE SWITCH REGISTER LOC.
177570                          DLIGHTS=177570  ;HARDWARE DISPLAY REGISTER LOC.
177776                          PS=177776       ;PROCESSOR STATUS WORD
001100                          STACK=1100      ;START OF PROCESSOR STACK

                                ;INSTRUCTION DEFINITIONS

005746                          PUSH1SP=5746    ;DECREMENT PROCESSOR STACK 1 WORD =TST -(SP)
005726                          POP1SP=5726     ;INCREMENT PROCESSOR STACK 1 WORD =TST (SP)+
010046                          PUSHR0=10046    ;SAVE R0 ON STACK =MOV R0,-(SP)
012600                          POPR0=12600     ;RESTORE R0 FROM STACK =MOV (SP)+,R0
024646                          PUSH2SP=24646   ;DECREMENT STACK TWICE =CMP -(SP),-(SP)
022626                          POP2SP=22626    ;INCREMENT STACK TWICE =CMP (SP)+,(SP)+
                                .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

                                ;PROCESSER LEVELS
000340                          LEVEL7=340
000300                          LEVEL6=300
000240                          LEVEL5=240
000200                          LEVEL4=200
000140                          LEVEL3=140
000100                          LEVEL2=100
000040                          LEVEL1=040
000000                          LEVEL0=000
```

m1

```
                                ;REGISTER DEFINITIONS
                                        ;RXCSR BIT DEFINITIONS
100000                          DSC=BIT15               ;DATA SET CHANGE
040000                          RING=BIT14              ;RING
020000                          CTS=BIT13               ;CLR TO SEND
010000                          CARDET=BIT12            ;CARRIER DETECT
004000                          RECACT=BIT11            ;REC ACTIVE
002000                          SRD=BIT10               ;SEC REC DATA
001000                          DSR=BIT9                ;DATA SET RDY
000400                          STPSYN=BIT8             ;STRIP SYNC
000200                          RXDONE=BIT7             ;REC DONE
000100                          RINTEN=BIT6             ;REC INTR ENABLE
000040                          DSINTE=BIT5             ;DSC INTR ENABLE
000020                          SYNSCH=BIT4             ;SYNC SEARCH
000010                          STD=BIT3                ;SEC XMIT DATA
000004                          RTS=BIT2                ;REQ TO SEND
000002                          DTR=BIT1                ;DATA TERM RDY
000001                          VOID=BIT0
                                        ;RXDBUF BIT DEFINITIONS
100000                          RXERR=BIT15             ;REC ERROR
040000                          OVRUN=BIT14             ;OVERRUN
020000                          FRMERR=BIT13            ;FRAME ERROR
010000                          PARER=BIT12             ;PARITY ERROR
                                        ;PARCSR BIT DEFINITIONS
001000                          PAREN=BIT9              ;PARITY ENABLE
000400                          EVPAR=BIT8              ;EVEN PARITY SENSE
                                        ;PARCSR WRD DEFINITIONS
030000                          SYNINT=30000            ;SYNC EXTERNAL MODE
020000                          SYNEXT=20000            ;SYNC INTERNAL MODE
000000                          ISYMOD=0                ;ISOC MODE
000000                          FIVE=0                  ;WORD LENGTH 5 BITS
002000                          SIX=2000                ;WORD LENGTH 6 BITS
004000                          SEVEN=4000              ;WORD LENGTH 7 BITS
006000                          EIGHT=6000              ;WORD LENGTH 8 BITS
000000                          NOPAR=0                 ;NO PARITY
001000                          ODDPAR=1000             ;ODD PARITY
001400                          EVLPAR=1400             ;EVEN PARITY
                                        ;TXCSR BIT DEFINITIONS
100000                          DNA=BIT15               ;DATA NOT AVAILABLE
040000                          MTDATA=BIT14            ;MAINT DATA
020000                          CLK=BIT13               ;CLK
002000                          BITW=BIT10              ;BIT WINDOW
000400                          MRESET=BIT8             ;MASTER RESET
000200                          TXDONE=BIT7             ;XMIT DONE
000100                          TXINTE=BIT6             ;XMIT INTR ENABLE
000040                          DNAINTE=BIT5            ;DNA INTR ENAB
000020                          SEND=BIT4               ;SEND
000010                          HDXFN=BIT3              ;HDX/FDX
000001                          BPEAK=BIT0              ;BREAK
                                        ;TXCSR WRD DEFINITIONS
000000                          USER=0                  ;USER MODE
004000                          MINT=4000               ;MAINT INT MODE
010000                          MEXT=10000              ;MAINT EXT MODE
014000                          SYSTST=14000            ;SYSTEM TEST MODE
                                ;TRAPCATCHER FOR ILLEGAL INTERRUPTS
```

A2

```
                                        ;STANDARD INTERRUPT VECTORS
                                        
                000024                  .=24
000024  015152                          .PFAIL                  ;POWER FAIL HANDLER
000026  000340                          340                     ;SERVICE AT LEVEL 7
000030  014702                          .HLT                    ;ERROR HANDLER
000032  000340                          340                     ;SERVICE AT LEVEL 7
000034  014650                          .TRPSRV                 ;GENERAL HANDLER DISPATCH SERVICE
000036  000340                          340                     ;SERVICE AT LEVEL 7
                                        
                                        ;SOFTWARE SWITCH REGISTER
                                        
                000174                  .=174
000174  000000                  DISPREG:.WORD 0                 ;SOFTWARE DISPLAY REG.
000176  000000                  SWREG:  .WORD 0                 ;SOFTWARE SWITCH REGISTER
000200  000167  001054                  JMP     .START          ;GO TO START OF PROGRAM
                                        
                                        
                001100                  .=1100
                                        
                                        ;INDIRECT POINTERS
                                        
001100  177570                  SWR:    177570                  ;SWITCH REGISTER POINTER
001102  177570                  LIGHTS:177570                   ;DISPLAY REGISTER POINTER
001104  177560                  TKCSP:  177560                  ;TELETYPE KEYBOARD CONTROL REGISTER
001106  177562                  TKDBR:  177562                  ;TELETYPE KEYBOARD DATA BUFFER
001110  177564                  TPCSR:  177564                  ;TELEPRINTER CONTROL REGISTER
001112  177566                  TPDBR:  177566                  ;TELEPRINTER DATA BUFFER
                                        
                                        ;PROGRAM CONTROL PARAMETERS
                                        
001114  000000                  RTRN:   0                       ;SCOPE ADDRESS FOR LOOP ON TEST
001116  000000                  NEXT:   0                       ;ADDRESS OF NEXT TEST TO BE EXECUTED
001120  000000                  LOCK:   0                       ;ADDRESS FOR LOCK ON CURRENT DATA
001122  000000                  ICOUNT: 0                       ;NUMBER OF ITERATIONS THAT CURRENT TEST WILL BE EXECUTED
001124  000000                  LPCNT:  0                       ;NUMBER OF ITEREATIONS COMPLETED
001126  000000                  TSTNO:  0                       ;NUMBER OF TEST IN PROGRESS
001130  000000                  PASCNT: 0                       ;NUMBER OF PASSES COMPLETED
001132  000000                  ERRCNT: 0                       ;TOTAL NUMBER OF ERRORS
001134  000000                  LSTERR: 0                       ;PC OF LAST ERROR CALL
                                        
                                        ;PROGRAM VARIABLES
                                        
001136  000020                  HOLD:   20                      ;TEMPORARY STORAGE=DELAY TIME FOR CABLES
001140  000000                  SHIFT:  0                       ;TEMPORARY STORAGE= # OF SHIFTS PER CHAR
001142  000000                  COUNT:  0                       ;TEMPORARY STORAGE= # OF TIMES A CHAR WILL BE SENT
001144  000000                  TEMP1:  0                       ;TEMPORARY STORAGE
001146  000000                  TEMP2:  0                       ;TEMPORARY STORAGE
001150  000000                  TEMP3:  0                       ;TEMPORARY STORAGE
001152  000000                  TEMP4:  0                       ;TEMPORARY STORAGE
001154  000000                  TEMP5:  0                       ;TEMPORARY STORAGE
001156  000000                  SAVR0:  0                       ;R0 STORAGE
001160  000000                  SAVR1:  0                       ;R1 STORAGE
001162  000000                  SAVR2:  0                       ;R2 STORAGE
```

```
   787  001164  000000          SAVR3:  0       ;R3 STORAGE
   788  001166  000000          SAVR4:  0       ;R4 STORAGE
   789  001170  000000          SAVR5:  0       ;R5 STORAGE
   790  001172  000000          SAVSP:  0       ;STACK POINTER STORAGE
   791  001174  000000          SAVPC:  0       ;PROGRAM COUNTER STORAGE
```

```
                                        ;PROGRAM CONVERSATIONAL PARAMETERS
001176      377         SYNCNO: .BYTE   377             ;# OF SYNC CHARS REQ'D FOR SYNC'ZATION
001177      377         SEXMIT: .BYTE   377             ;SEC XMIT JUMPER "IN"
001200      377         SEREC:  .BYTE   377             ;SEC REC JUMPER "IN"
001201      377         OPTCLR: .BYTE   377             ;OPTIONAL JUMPER CLR "IN"
001202      000         MULTD:  .BYTE   0               ;NO MULTIPLE DEVICE FLAG
001203      377         JMRBY:  .BYTE   377             ;EXTERNAL MODEM BYPASS JUMPER "IN"
                        .EVEN

                                        ;PROGRAM MULTIPLE DEVICE PARAMETERS
001204  000000          BASEADD:        0               ;PROG CONTROLLED 1ST DEVICE ADDR
001206  000000          KEEPADD:        0               ;SAVED 1ST DEVICE ADDR
001210  000000          LASTADD:        0               ;LAST DEVICE RXCSR ADDR
001212  000000          BASEIV:         0               ;PROG CONTROLLED IV
001214  000000          KEEPIV:         0               ;SAVED INTR VECTOR
001216  000000          ACTREG:         0               ;ACTIVE REGISTER ,,,MODIFY THIS
                                                        ;LOCATION TO DISQUALIFY OR QUALIFY
                                                        ;DEVICES (1= RUN,,,0= DON'T RUN)
001220  000000          ROTADD:         0               ;ROTATING POINTER FOR ACTREG,,POINTS
                                                        ;TO DEVICE PRESENTLY UNDER TEST WHEN RUNNING MULTIPLE DE

                                        ;PROGRAM CONTROL FLAGS

001222      000         INIFLG: .BYTE   0               ;PROGRAM INITIALIZATION FLAG
001223      000         STFLG:  .BYTE   0               ;TEST START FLAG
001224      000         ERRFLG: .BYTE   0               ;ERROR OCCURED FLAG
001225      000         LOKFLG: .BYTE   0               ;LOCK ON CURRENT TEST FLAG

                                        ;DEFINITIONS FOR TRAP SUBROUTINE CALLS
                                        ;POINTERS TO SUBROUTINES CAN BE FOUND
                                        ;IN THE TABLE IMMEDIATLY FOLLOWING THE DEFINITIONS

001226                  .TRPTAB:
                        ;*****************************************************************************
                        ;*****************************************************************************
        104400          SCOPE=TRAP+0    ;CALL TO SCOPE LOOP AND ITERATION HANDLER
001226  013434  .SCOPE
        104401          SCOP1=TRAP+1    ;CALL TO LOOP ON CURRENT DATA HANDLER
001230  013620  .SCOP1
        104402          TYPE=TRAP+2     ;CALL TO TELETYPE OUTPUT ROUTINE
001232  013640  .TYPE
        104403          INSTR=TRAP+3    ;CALL TO ASCII STRING INPUT ROUTINE
001234  013700  .INSTR
        104404          INSTER=TRAP+4   ;CALL TO INPUT ERROR HANDLER
001236  014016  .INSTER
        104405          PARAM=TRAP+5    ;CALL TO NUMERICAL DATA INPUT ROUTINE
001240  014050  .PARAM
        104406          SAV05=TRAP+6    ;CALL TO REGISTER SAVE ROUTINE
001242  014264  .SAV05
        104407          RES05=TRAP+7    ;CALL TO REGISTER RESTORE ROUTINE
001244  014324  .RES05
        104410          CONVRT=TRAP+10  ;CALL TO DATA OUTPUT ROUTINE
001246  014356  .CONVRT
        104411          CNVRT=TRAP+11   ;CALL TO DATA OUTPUT ROUTINE WITHOUT CR/LF
001250  014362  .CNVRT
        104412          SETFLG=TRAP+12  ;CALL TO FLAG SET ROUTINE
```

```
                                .SETFLG
                                        CKSWR=TRAP+13   ;CALL TO ALLOW SWREG TO BE LOADED FROM TTY
                                .CKSWP
                                        CNTLU=TRAP+14   ;CALL TO ALLOW LOADING  OF SWREG FROM TTY
                                .CNTLU
                                ;*****************************************************************************
                                ;*****************************************************************************

                                        ;PROGRAM INITIALIZATION
                                        ;LOCK OUT INTERRUPTS
                                        ;SET UP PROCESSOR STACK
                                        ;SET UP POWER FAIL VECTOR
                                        ;CLEAR PROGRAM CONTROL FLAGS AND COUNTS
                                        ;TYPE TITLE MESSAGE

001260  012767  000340  176510  .START: MOV     #340,PS                 ;LOCK OUT INTERRUPTS
001266  012706  001100                  MOV     #STACK,SP               ;SET UP STACK
001272  012737  015152  000024          MOV     #.PFAIL,@#24            ;SET UP POWER FAIL VECTOR
001300  005067  177620                  CLR     LPCNT                   ;CLEAR # OF ITERATION COMPLETED LOCATION
001304  105067  177713                  CLRB    STFLG                   ;CLEAR START FLAG
001310  005067  177614                  CLR     PASCNT                  ;CLEAR PASS COUNT
001314  105067  177704                  CLRB    ERRFLG                  ;CLEAR ERROR FLAG
001320  005067  177606                  CLR     ERRCNT                  ;CLEAR ERROR COUNT
001324  005067  177604                  CLR     LSTERR                  ;CLEAR LAST ERROR POINTER
001330  012767  000001  177570          MOV     #1,TSTNO                ;SET UP FOR TEST 1
001336  012767  001260  177550          MOV     #.START,RTRN            ;SET UP FOR POWER FAIL BEFORE
                                                                        ;TESTING STARTS
001344  105767  177652                  TSTB    INIFLG                  ;HAS INITIALIZATION BEEN PERFORMED
001350  001004                          BNE     ONCE
001352  104402  015472                  TYPE    ,MTITLE                 ;TYPE TITLE MESSAGE
001356  105167  177640                  COMB    INIFLG                  ;IF NOT SET FLAG AND DO
001362  012767  177570  177510  ONCE:   MOV     #DSWR,SWR               ;RELOAD HARDWARE SWITCH REGISTER INTO POINTER
001370  012767  177570  177504          MOV     #DLIGHTS,LIGHTS         ;RELOAD HARDWARE DISPLAY REGISTER INTO POINTER
001376  013746  000006                  MOV     @#6,-(SP)               ;SAVE VECTORS
001402  013746  000004                  MOV     @#4,-(SP)
001406  012737  001426  000004          MOV     #648,@#4                ;SET UP FOR TIMEOUT
001414  022777  177777  177456          CMP     #-1,@SWR                ;REFERENCE HARDWARE SWITCH REGISTER
001422  001402                          BEQ     65$
001424  000407                          BR      66$
001426  022626                  64$:    CMP     (SP)+,(SP)+             ;ADJUST STACK
001430  012767  000176  177442  65$:    MOV     #SWREG,SWR              ;POINT TO SOFTWARE SWITCH REG
001436  012767  000174  177436          MOV     #DISPREG,LIGHTS         ;POINT TO SOFT DISPLAY REG
001444  012637  000004          66$:    MOV     (SP)+,@#4               ;RESTORE VECTORS
001450  012637  000006                  MOV     (SP)+,@#6
001454  005737  000042                  TST     @#42                    ;UNDER MONITOR
001460  001005                          BNE     67$
001462  022767  000176  177410          CMP     #SWREG,SWR              ;IS SWREG USED
001470  001001                          BNE     67$
001472  104414                          CNTLU
001474  032777  000001  177376  67$:    BIT     #SW0,@SWR               ;RESELECT VECTOR & CONTROL REG?
001502  001002                          BNE     1$
001504  000167  000446                  JMP     .BEGIN
001510  012700  000300          1$:     MOV     #300,R0                 ;RESTORE VECTOR AREA TO TRAPCATCHER
001514  012701  000302                  MOV     #302,R1                 ;START AT LOCATION 300
001520  012702  000004                  MOV     #4,R2
001524  010110                  2$:     MOV     R1,(R0)
```

```
 904  001526  005011                          CLR     (R1)
 905  001530  060200                          ADD     R2,R0
 906  001532  060201                          ADD     R2,R1
 907  001534  022701  001000                  CMP     #1000,R1                ;END AT LOCATION 776
 908  001540  002771                          BLT     2$
 909  001542  104403                          INSTR                           ;OUTPUT MESSAGE & GET INPUT STRING
 910  001544  015546                          MREGAD                          ;MESSAGE
 911  001546  104405                          PARAM                           ;CONVERT STRING
 912  001550  160000                          160000                          ;LOW LIMIT
 913  001552  167776                          167776                          ;HIGH LIMIT
 914  001554  017402                          DUBASE                          ;STORE AT THIS LOCATION
 915  001556     001                  .BYTE   1                               ;MASK
 916  001557     001                  .BYTE   1                               ;HOW MANY TIMES * 2
 917  001560  016767  015616  177420          MOV     DUBASE,KEEPADD  ;SAVE
 918  001566  004767  015456                  JSR     PC,DUADDR
 919  001572  016767  177410  177404          MOV     KEEPADD,BASEADD ;RESTORE FOR ROTATION
 920  001600  104403                          INSTR                           ;OUTPUT MESSAGE & GET INPUT STRING
 921  001602  015524                          MVECTO                          ;MESSAGE
 922  001604  104405                          PARAM                           ;CONVERT STRING
 923  001606  000300                          300                             ;LOW LIMIT
 924  001610  000776                          776                             ;HIGH LIMIT
 925  001612  017724                          DURIV                           ;STORE AT THIS LOCATION
 926  001614     001                  .BYTE   1                               ;MASK
 927  001615     004                  .BYTE   4                               ;HOW MANY TIMES * 2
 928  001616  016767  016102  177370          MOV     DURIV,KEEPIV    ;SAVE
 929  001624  016767  016074  177360          MOV     DURIV,BASEIV    ;SET UP FOR ROTATION
 930  001632  104403                          INSTR                           ;OUTPUT MESSAGE & GET INPUT STRING
 931  001634  015627                          MMULT                           ;MESSAGE
 932  001636  104412                          SETFLG                          ;SET FLAG BASED UPON INPUT STRING
 933  001640  001202                          MULTD                           ;THIS FLAG
 934  001642  105767  177334                  TSTB    MULTD   ;ARE THERE MULTIPLE DEVICES
 935                                                          ;ON THE SYSTEM ?
 936  001646  100406                          BMI     BBB     ;YES,ASK NEXT QUESTION
 937  001650  005067  177342                  CLR     ACTREG
 938  001654  005067  177340                  CLR     ROTADD
 939  001660  000167  000140                  JMP     OUTMUL  ;JUMP AROUND NEXT QUESTION
 940  001664                          BBB:
 941  001664  104403                          INSTR                           ;OUTPUT MESSAGE & GET INPUT STRING
 942  001666  015706                          MLASTD                          ;MESSAGE
 943  001670  104405                          PARAM                           ;CONVERT STRING
 944  001672  160000                          160000                          ;LOW LIMIT
 945  001674  167776                          167776                          ;HIGH LIMIT
 946  001676  001210                          LASTADD                         ;STORE AT THIS LOCATION
 947  001700     001                  .BYTE   1                               ;MASK
 948  001701     001                  .BYTE   1                               ;HOW MANY TIMES * 2
 949                                  ;THE FOLLOWING ROUTINE SETS UP ACTREG FOR THE FIRST TIME
 950  001702  012767  000001  177310  1$:     MOV     #1,ROTADD       ;SET UP POINTER
 951  001710  005067  177302                  CLR     ACTREG  ;CLR ACTIVE REGISTER
 952  001714  056767  177300  177274  2$:     BIS     ROTADD,ACTREG   ;MAKE THIS DEVICE ACTIVE
 953  001722  000241                          CLC
 954  001724  006167  177270                  ROL     ROTADD  ;SET UP POINTER
 955  001730  103421                          BCS     3$      ;ARE YOU OUT OF RANGE ?
 956  001732  062767  000010  177244          ADD     #10,BASEADD     ;SET UP BASE ADDRESS
 957  001740  026767  177244  177236          CMP     LASTADD,BASEADD ;IS THIS THE LAST DEVICE ?
 958  001746  101362                          BHI     2$      ;NO DO IT AGAIN
 959  001750  056767  177244  177240          BIS     ROTADD,ACTREG   ;THIS ASSUMES THAT THERE ARE AT
```

```
                                                        ;LEAST TWO DEVICES WHEN YOU ANSWER YES TO
                                                        ;MULTIPLE DEVICE QUESTION
001756  012767  000001  177234  48:     MOV     #1,ROTADD       ;SET UP FOR LATER USE IN END OF PASS ROUTINE
001764  016767  177216  177212          MOV     KEEPADD,BASEADD ;DITTO
001772  000414                          BR      OUTMUL  ;CONTINUE QUESTIONS
001774  016767  177206  177202  38:     MOV     KEEPADD,BASEADD ;RESTORE
002002  104403                          INSTR                           ;OUTPUT MESSAGE & GET INPUT STRING
002004  016071                          MRANGE                          ;MESSAGE
002006  104405                          PARAM                           ;CONVERT STRING
002010  160000                          160000                          ;LOW LIMIT
002012  167776                          167776                          ;HIGH LIMIT
002014  001210                          LASTADD                         ;STORE AT THIS LOCATION
002016     001                  .BYTE   1                               ;MASK
002017     001                  .BYTE   1                               ;HOW MANY TIMES * 2
002020  000167  177656                  JMP     18      ;DO IT AGAIN
002024                          OUTMUL:
002024  104403                          INSTP                           ;OUTPUT MESSAGE & GET INPUT STRING
002026  016355                          MLEVEL                          ;MESSAGE
002030  104405                          PARAM                           ;CONVERT STRING
002032  000004                          4                               ;LOW LIMIT
002034  000007                          7                               ;HIGH LIMIT
002036  017244                          DUPRT                           ;STORE AT THIS LOCATION
002040     000                  .BYTE   0                               ;MASK
002041     001                  .BYTE   1                               ;HOW MANY TIMES * 2
002042  004767  015126                  JSR     PC,DULEV
                                        ;COMPARE THE FIRST CHARACTER IN THE TELETYPE INPUT
                                        ;BUFFER TO THE CHARACTERS "1" AND "2".
                                        ;IF THE CHARACTER IS "1" CLEAR THE FLAG
                                        ;IF THE CHARACTER IS "2" SET THE FLAG
002046                          AAA:
002046  104403                          INSTR                           ;OUTPUT MESSAGE & GET INPUT STRING
002050  016402                          MSYNC                           ;MESSAGE
002052  122767  000061  014754  38:     CMPB    @#1,INBUF               ;IS IT "1" ?
002060  001003                          BNE     18
002062  105067  177110                  CLRB    SYNCNO                  ;000
002066  000412                          BR      48
002070  122767  000062  014736  18:     CMPB    @#2,INBUF               ;IS IT "2" ?
002076  001004                          BNE     28
002100  112767  177777  177070          MOVB    @#-1,SYNCNO                     ;377
002106  000402                          BR      48
002110  104404                  28:     INSTER                          ;RETRY
002112  000757                          BR      38
002114  000240                  48:     NOP
002116  104403                          INSTR                           ;OUTPUT MESSAGE & GET INPUT STRING
002120  016450                          MWIRE6                          ;MESSAGE
002122  104412                          SETFLG                          ;SET FLAG BASED UPON INPUT STRING
002124  001177                          SFXMIT                          ;THIS FLAG
002126  104403                          INSTR                           ;OUTPUT MESSAGE & GET INPUT STRING
002130  016516                          MWIRE5                          ;MESSAGE
002132  104412                          SETFLG                          ;SET FLAG BASED UPON INPUT STRING
002134  001200                          SFREC                           ;THIS FLAG
002136  104403                          INSTR                           ;OUTPUT MESSAGE & GET INPUT STRING
002140  016563                          MWIRE4                          ;MESSAGE
002142  104412                          SETFLG                          ;SET FLAG BASED UPON INPUT STRING
002144  001201                          OPTCLR                          ;THIS FLAG
002146  104403                          INSTR                           ;OUTPUT MESSAGE & GET INPUT STRING
```

```
1016  002150  016637                          MEXTJ                           ;MESSAGE
1017  002152  104412                          SETFLG                          ;SET FLAG BASED UPON INPUT STRING
1018  002154  001203                          JMRBY                           ;THIS FLAG
1019
1020                                          ;TEST START AND RESTART
1021
1022  002156  012767  000340  175612  .BEGIN: MOV     #340,PS                 ;LOCK OUT INTERRUPTS
1023  002164  012706  001100                  MOV     #STACK,SP               ;SET UP STACK
1024  002170  005737  000042                  TST     @42                     ;IS PROGRAM UNDER MONITOR CONTROL
1025  002174  001056                          BNE     3$
1026  002176  105767  177000                  TSTB    MULTD   ;DON'T ALLOW LOCK ON TEST IF RUNNING
1027                                          ;MULTIPLE DEVICES
1028  002202  001407                          BEQ     5$                      ;IF NO,TEST FOR LOCK ON TEST
1029  002204  016767  011404  011304          MOV     BRW,TTST                ;RESTORE NORMAL SCOPE LOOP
1030  002212  016767  011400  011300          MOV     BRX,TTST+2              ;DITTO
1031  002220  000444                          BR      3$                      ;JUMP AROUND IF YES
1032  002222  032777  000004  176650  5$:     BIT     #BIT2,@SWR              ;CHECK FOR LOCK ON TEST
1033  002230  001416                          BEQ     1$
1034  002232  104403                          INSTR                           ;OUTPUT MESSAGE & GET INPUT STRING
1035  002234  016312                          MLOCK                           ;MESSAGE
1036  002236  104412                          SETFLG                          ;SET FLAG BASED UPON INPUT STRING
1037  002240  001225                          LOKFLG                          ;THIS FLAG
1038  002242  105767  176757                  TSTB    LOKFLG                  ;IS LOCK ON TEST OPTION SELECTED
1039  002246  001407                          BEQ     1$
1040  002250  012767  000240  011240          MOV     #NOP,TTST
1041  002256  012767  000240  011234          MOV     #NOP,TTST+2             ;SET UP TO LOCK
1042  002264  000406                          BR      2$
1043  002266  016767  011322  011222  1$:     MOV     BRW,TTST
1044  002274  016767  011316  011216          MOV     BRX,TTST+2              ;LOCK NOT SELECTED, SET UP FOR NORMAL SCOPE LOOP
1045  002302  032777  000002  176570  2$:     BIT     #SW01,@SWR              ;IF SW01=1, GET STARTING PC
1046  002310  001413                          BEQ     3$
1047  002312  104403                          INSTR                           ;OUTPUT MESSAGE & GET INPUT STRING
1048  002314  016277                          MTSTPC                          ;MESSAGE
1049  002316  104405                          PARAM                           ;CONVERT STRING
1050  002320  002350                          TST1                            ;LOW LIMIT
1051  002322  012642                          TLAST                           ;HIGH LIMIT
1052  002324  001114                          RTRN                            ;STORE AT THIS LOCATION
1053  002326     001                  .BYTE   1                               ;MASK
1054  002327     001                  .BYTE   1                               ;HOW MANY TIMES * 2
1055  002330  000403                          BR      4$
1056  002332  012767  002350  176554  3$:     MOV     #TST1,RTRN              ;START AT TEST 1
1057  002340  104402  016273          4$:     TYPE    ,MR                     ;TYPE R
1058  002344  000177  176544                  JMP     @RTRN                   ;START TESTING
1059
1060                                          ;;THIS TEST PROVES EXISTANCE OF DEVICE REGISTERS
1061                                          ;;
1062  002350  012767  000001  176550  TST1:   MOV     #1,TSTNO        ;SAVE THIS
1063  002356  012767  002436  176532          MOV     #TST2,NEXT              ;GO TO THIS TEST WHEN THRU
1064  002364  012737  017642  000004          MOV     #TRPREG,@#4     ;SETUP TRAPCATCHER
1065  002372  012737  000340  000006          MOV     #LEVEL7,@#6     ;
1066  002400  105277  015274                  INCB    @RXCSR          ;TEST THIS REG
1067  002404  000401                          BR      64$             ;IF OK JMP AROUND HLT
1068  002406  104000                          HLT                     ;CHECK DEVICE REG ADDRESSES
1069  002410  105277  015266          64$:    INCB    @HRXCSR ;TEST UPPER BYTE THIS REGISTER
1070  002414  000401                          BR      65$             ;IF OK JMP AROUND HLT
1071  002416  104000                          HLT                     ;CHECK DEVICE REG ADDRESSES
```

```
1072  002420  012737  000006  000004  658:    MOV     #6,@#4          ;RESTORE TRAPCATCHER
1073  002426  012737  000000  000006          MOV     #0,@#6          ;
1074  002434  104400                          SCOPE
1075                                          ;;THIS TEST PROVES EXISTANCE OF DEVICE REGISTERS
1076                                          ;;
1077  002436  012767  000002  176462  TST2:   MOV     #2,TSTNO        ;SAVE THIS
1078  002444  012767  002524  176444          MOV     #TST3,NEXT              ;GO TO THIS TEST WHEN THRU
1079  002452  012737  017642  000004          MOV     #TRPREG,@#4     ;SETUP TRAPCATCHER
1080  002460  012737  000340  000006          MOV     #LEVEL7,@#6     ;
1081  002466  105277  015212                  INCB    @#RXDBUF        ;TEST THIS REG
1082  002472  000401                          BR      648             ;IF OK JMP AROUND HLT
1083  002474  104000                          HLT                     ;CHECK DEVICE REG ADDRESSES
1084  002476  105277  015204          648:    INCB    @#RXDBUF+1      ;TEST UPPER BYTE THIS REGISTER
1085  002502  000401                          BR      658             ;IF OK JMP AROUND HLT
1086  002504  104000                          HLT                     ;CHECK DEVICE REG ADDRESSES
1087  002506  012737  000006  000004  658:    MOV     #6,@#4          ;RESTORE TRAPCATCHER
1088  002514  012737  000000  000006          MOV     #0,@#6          ;
1089  002522  104400                          SCOPE
1090                                          ;;THIS TEST PROVES EXISTANCE OF DEVICE REGISTERS
1091                                          ;;
1092  002524  012767  000003  176374  TST3:   MOV     #3,TSTNO        ;SAVE THIS
1093  002532  012767  002612  176356          MOV     #TST4,NEXT              ;GO TO THIS TEST WHEN THRU
1094  002540  012737  017642  000004          MOV     #TRPREG,@#4     ;SETUP TRAPCATCHER
1095  002546  012737  000340  000006          MOV     #LEVEL7,@#6     ;
1096  002554  105277  015130                  INCB    @#PARCSR        ;TEST THIS REG
1097  002560  000401                          BR      648             ;IF OK JMP AROUND HLT
1098  002562  104000                          HLT                     ;CHECK DEVICE REG ADDRESSES
1099  002564  105277  015122          648:    INCB    @#PARCSR+1      ;TEST UPPER BYTE THIS REGISTER
1100  002570  000401                          BR      658             ;IF OK JMP AROUND HLT
1101  002572  104000                          HLT                     ;CHECK DEVICE REG ADDRESSES
1102  002574  012737  000006  000004  658:    MOV     #6,@#4          ;RESTORE TRAPCATCHER
1103  002602  012737  000000  000006          MOV     #0,@#6          ;
1104  002610  104400                          SCOPE
1105                                          ;;THIS TEST PROVES EXISTANCE OF DEVICE REGISTERS
1106                                          ;;
1107  002612  012767  000004  176306  TST4:   MOV     #4,TSTNO        ;SAVE THIS
1108  002620  012767  002700  176270          MOV     #TST5,NEXT              ;GO TO THIS TEST WHEN THRU
1109  002626  012737  017642  000004          MOV     #TPPREG,@#4     ;SETUP TRAPCATCHER
1110  002634  012737  000340  000006          MOV     #LEVEL7,@#6     ;
1111  002642  105277  015046                  INCB    @#TXCSR         ;TEST THIS REG
1112  002646  000401                          BR      648             ;IF OK JMP AROUND HLT
1113  002650  104000                          HLT                     ;CHECK DEVICE REG ADDRESSES
1114  002652  105277  015040          648:    INCB    @#TXCSR+1 ;TEST UPPER BYTE THIS REGISTER
1115  002656  000401                          BR      658             ;IF OK JMP AROUND HLT
1116  002660  104000                          HLT                     ;CHECK DEVICE REG ADDRESSES
1117  002662  012737  000006  000004  658:    MOV     #6,@#4          ;RESTORE TRAPCATCHER
1118  002670  012737  000000  000006          MOV     #0,@#6          ;
1119  002676  104400                          SCOPE
1120                                          ;;THIS TEST PROVES EXISTANCE OF DEVICE REGISTERS
1121                                          ;;
1122  002700  012767  000005  176220  TST5:   MOV     #5,TSTNO        ;SAVE THIS
1123  002706  012767  002766  176202          MOV     #TST6,NEXT              ;GO TO THIS TEST WHEN THRU
1124  002714  012737  017642  000004          MOV     #TRPREG,@#4     ;SETUP TRAPCATCHER
1125  002722  012737  000340  000006          MOV     #LEVEL7,@#6     ;
1126  002730  105277  014764                  INCB    @#TXDBUF        ;TEST THIS REG
1127  002734  000401                          BR      648             ;IF OK JMP AROUND HLT
```

```
1128  002736  104000                          HLT                     ;CHECK DEVICE REG ADDRESSES
1129  002740  105277  014756          648:    INCB    @#TXDBUF        ;TEST UPPER BYTE THIS REGISTER
1130  002744  000401                          BR      65$             ;IF OK JMP AROUND HLT
1131  002746  104000                          HLT                     ;CHECK DEVICE REG ADDRESSES
1132  002750  012737  000006  000004  65$:    MOV     #6,@#4          ;RESTORE TRAPCATCHER
1133  002756  012737  000000  000006          MOV     #0,@#6          ;
1134  002764  104400                          SCOPE
1135                                           ;;BUS DRIVER TEST
1136                                           ;;
1137  002766  012767  000006  176132  TST6:    MOV     #6,TSTNO        ;SAVE THIS
1138  002774  012767  003016  176114          MOV     #TST7,NEXT              ;GO TO THIS TEST WHEN THRU
1139  003002  022777  177777  014710          CMP     #177777,@TXDBUF
1140  003010  001401                          BEQ     .+4
1141  003012  104000                          HLT     ;READING TXDBUF SHOULD BE ALL 1'S
1142  003014  104400                          SCOPE
1143                                           ;;THIS TEST PERFORMS MASTER RESET TESTING &
1144                                           ;;TESTING OF READ/WRITE BIT DTR
1145                                           ;;
1146  003016  012767  000007  176102  TST7:    MOV     #7,TSTNO        ;SAVE THIS
1147  003024  012767  003146  176064          MOV     #TST8,NEXT              ;GO TO THIS TEST WHEN THRU
1148  003032  052777  000002  014640          BIS     #DTR,@RXCSR     ;SET THIS BIT
1149  003040  032777  000002  014632          BIT     #DTR,@RXCSR     ;TEST THIS BIT
1150  003046  001001                          BNE     64$     ;BR IF "1"
1151  003050  104000                          HLT                     ;THIS BIT SHOULD BE SET
1152  003052                          64$:
1153  003052  042777  000002  014620          BIC     #DTR,@RXCSR     ;CLR THIS BIT
1154  003060  032777  000002  014612          BIT     #DTR,@RXCSR     ;TEST THIS BIT
1155  003066  001401                          BEQ     65$             ;BR IF "0"
1156  003070  104000                          HLT                     ;THIS BIT SHOULD BE CLR
1157  003072                          65$:
1158                                           ;NOW SET THIS BIT
1159  003072  052777  000002  014600          BIS     #DTR,@RXCSR
1160  003100  052777  000400  014606          BIS     #^MRESET,@TXCSR ;MASTER RESET
1161                                           ;;CHECK EXISTANCE OF OPTIONAL CLEAR JUMPER
1162                                           ;;
1163  003106  105767  176067                  TSTB    OPTCLR          ;TEST FLAG
1164  003112  100006                          BPL     1$              ;OPTIONAL CLR JUMPER IS NOT IN
1165  003114  032777  000002  014556          BIT     #DTR,@RXCSR     ;TEST THIS BIT
1166  003122  001401                          BEQ     66$             ;BR IF "0"
1167  003124  104000                          HLT                     ;CHECK OUT MASTER RESET LOGIC
1168  003126                          66$:
1169  003126  000405                          BR      2$              ;JMP AROUND
1170  003130  032777  000002  014542  1$:     BIT     #DTR,@RXCSR     ;TEST THIS BIT
1171  003136  001001                          BNE     67$     ;BR IF "1"
1172  003140  104000                          HLT                     ;CHECK OUT OPTIONAL CLR JUMPER
1173  003142                          67$:
1174  003142  000240                  2$:     NOP
1175  003144  104400                          SCOPE
1176                                           ;;THIS TEST PERFORMS MASTER RESET TESTING &
1177                                           ;;TESTING OF READ/WRITE BIT RTS
1178                                           ;;
1179  003146  012767  000010  175752  TST8:    MOV     #8,TSTNO        ;SAVE THIS
1180  003154  012767  003276  175734          MOV     #TST9,NEXT              ;GO TO THIS TEST WHEN THRU
1181  003162  052777  000004  014510          BIS     #RTS,@RXCSR     ;SET THIS BIT
1182  003170  032777  000004  014502          BIT     #RTS,@RXCSR     ;TEST THIS BIT
1183  003176  001001                          BNE     64$     ;BR IF "1"
```

J2

```
1184  003200  104000                          HLT                     ;THIS BIT SHOULD BE SET
1185  003202                          648:
1186  003202  042777  000004  014470          BIC     #RTS,@RXCSR     ;CLR THIS BIT
1187  003210  032777  000004  014462          BIT     #RTS,@RXCSR     ;TEST THIS BIT
1188  003216  001401                          BEQ     65$             ;BR IF "0"
1189  003220  104000                          HLT                     ;THIS BIT SHOULD BE CLR
1190  003222                          65$:
1191                                          ;NOW SET THIS BIT
1192  003222  052777  000004  014450          BIS     #RTS,@RXCSR
1193  003230  052777  000400  014456          BIS     #MRESET,@TXCSR  ;MASTER RESET
1194                                          ;;CHECK EXISTANCE OF OPTIONAL CLEAR JUMPER
1195                                          ;;
1196  003236  105767  175737                  TSTB    OPTCLR          ;TEST FLAG
1197  003242  100006                          BPL     1$              ;OPTIONAL CLR JUMPER IS NOT IN
1198  003244  032777  000004  014426          BIT     #RTS,@RXCSR     ;TEST THIS BIT
1199  003252  001401                          BEQ     66$             ;BR IF "0"
1200  003254  104000                          HLT                     ;CHECK OUT MASTER RESET LOGIC
1201  003256                          66$:
1202  003256  000405                          BR      2$              ;JMP AROUND
1203  003260  032777  000004  014412  1$:     BIT     #RTS,@RXCSR     ;TEST THIS BIT
1204  003266  001001                          BNE     67$     ;BR IF "1"
1205  003270  104000                          HLT                     ;CHECK OUT OPTIONAL CLR JUMPER
1206  003272                          67$:
1207  003272  000240                  2$:     NOP
1208  003274  104400                          SCOPE
1209                                          ;;THIS TEST PERFORMS MASTER RESET TESTING &
1210                                          ;;TESTING OF READ/WRITE BIT STD
1211                                          ;;
1212  003276  012767  000011  175622  TST9:    MOV     #9,TSTNO        ;SAVE THIS
1213  003304  012767  003426  175604          MOV     #TST10,NEXT             ;GO TO THIS TEST WHEN THRU
1214  003312  052777  000010  014360          BIS     #STD,@RXCSR     ;SET THIS BIT
1215  003320  032777  000010  014352          BIT     #STD,@RXCSR     ;TEST THIS BIT
1216  003326  001001                          BNE     64$     ;BR IF "1"
1217  003330  104000                          HLT                     ;THIS BIT SHOULD BE SET
1218  003332                          64$:
1219  003332  042777  000010  014340          BIC     #STD,@RXCSR     ;CLR THIS BIT
1220  003340  032777  000010  014332          BIT     #STD,@RXCSR     ;TEST THIS BIT
1221  003346  001401                          BEQ     65$             ;BR IF "0"
1222  003350  104000                          HLT                     ;THIS BIT SHOULD BE CLR
1223  003352                          65$:
1224                                          ;NOW SET THIS BIT
1225  003352  052777  000010  014320          BIS     #STD,@RXCSR
1226  003360  052777  000400  014326          BIS     #MRESET,@TXCSR  ;MASTER RESET
1227                                          ;;CHECK EXISTANCE OF OPTIONAL CLEAR JUMPER
1228                                          ;;
1229  003366  105767  175607                  TSTB    OPTCLR          ;TEST FLAG
1230  003372  100006                          BPL     1$              ;OPTIONAL CLR JUMPER IS NOT IN
1231  003374  032777  000010  014276          BIT     #STD,@RXCSR     ;TEST THIS BIT
1232  003402  001401                          BEQ     66$             ;BR IF "0"
1233  003404  104000                          HLT                     ;CHECK OUT MASTER RESET LOGIC
1234  003406                          66$:
1235  003406  000405                          BR      2$              ;JMP AROUND
1236  003410  032777  000010  014262  1$:     BIT     #STD,@RXCSR     ;TEST THIS BIT
1237  003416  001001                          BNE     67$     ;BR IF "1"
1238  003420  104000                          HLT                     ;CHECK OUT OPTIONAL CLR JUMPER
1239  003422                          67$:
```

K2

```
1240  003422  000240                    28$:    NOP
1241  003424  104400                            SCOPE
1242                                            ;;THIS TEST PERFORMS MASTER RESET TESTING &
1243                                            ;;TESTING OF READ/WRITE BIT SYNSCH
1244                                            ;;
1245  003426  012767  000012  175472    TST10$: MOV     #10,TSTNO       ;SAVE THIS
1246  003434  012767  003532  175454            MOV     #TST11,NEXT             ;GO TO THIS TEST WHEN THRU
1247  003442  052777  000020  014230            BIS     #SYNSCH,@RXCSR  ;SET THIS BIT
1248  003450  032777  000020  014222            BIT     #SYNSCH,@RXCSR  ;TEST THIS BIT
1249  003456  001001                            BNE     64$     ;BR IF "1"
1250  003460  104000                            HLT                     ;THIS BIT SHOULD BE SET
1251  003462                            64$:
1252  003462  042777  000020  014210            BIC     #SYNSCH,@RXCSR  ;CLR THIS BIT
1253  003470  032777  000020  014202            BIT     #SYNSCH,@RXCSR  ;TEST THIS BIT
1254  003476  001401                            BEQ     65$             ;BR IF "0"
1255  003500  104000                            HLT                     ;THIS BIT SHOULD BE CLR
1256  003502                            65$:
1257                                            ;NOW SET THIS BIT
1258  003502  052777  000020  014170            BIS     #SYNSCH,@RXCSR
1259  003510  052777  000400  014176            BIS     #MPRESET,@TXCSR ;MASTER RESET
1260  003516  032777  000020  014154            BIT     #SYNSCH,@RXCSR  ;TEST THIS BIT
1261  003524  001401                            BEQ     66$             ;BR IF "0"
1262  003526  104000                            HLT                     ;CHECK OUT MASTER RESET LOGIC
1263  003530                            66$:
1264  003530  104400                            SCOPE
1265                                            ;;THIS TEST PERFORMS MASTER RESET TESTING &
1266                                            ;;TESTING OF READ/WRITE BIT DSINTE
1267                                            ;;
1268  003532  012767  000013  175366    TST11$: MOV     #11,TSTNO       ;SAVE THIS
1269  003540  012767  003636  175350            MOV     #TST12,NEXT             ;GO TO THIS TEST WHEN THRU
1270  003546  052777  000040  014124            BIS     #DSINTE,@RXCSR  ;SET THIS BIT
1271  003554  032777  000040  014116            BIT     #DSINTE,@RXCSR  ;TEST THIS BIT
1272  003562  001001                            BNE     64$     ;BR IF "1"
1273  003564  104000                            HLT                     ;THIS BIT SHOULD BE SET
1274  003566                            64$:
1275  003566  042777  000040  014104            BIC     #DSINTE,@RXCSR  ;CLR THIS BIT
1276  003574  032777  000040  014076            BIT     #DSINTE,@RXCSR  ;TEST THIS BIT
1277  003602  001401                            BEQ     65$             ;BR IF "0"
1278  003604  104000                            HLT                     ;THIS BIT SHOULD BE CLR
1279  003606                            65$:
1280                                            ;NOW SET THIS BIT
1281  003606  052777  000040  014064            BIS     #DSINTE,@RXCSR
1282  003614  052777  000400  014072            BIS     #MPRESET,@TXCSR ;MASTER RESET
1283  003622  032777  000040  014050            BIT     #DSINTE,@RXCSR  ;TEST THIS BIT
1284  003630  001401                            BEQ     66$             ;BR IF "0"
1285  003632  104000                            HLT                     ;CHECK OUT MASTER RESET LOGIC
1286  003634                            66$:
1287  003634  104400                            SCOPE
1288                                            ;;THIS TEST PERFORMS MASTER RESET TESTING &
1289                                            ;;TESTING OF READ/WRITE BIT RINTEN
1290                                            ;;
1291  003636  012767  000014  175262    TST12$: MOV     #12,TSTNO       ;SAVE THIS
1292  003644  012767  003742  175244            MOV     #TST13,NEXT             ;GO TO THIS TEST WHEN THRU
1293  003652  052777  000100  014120            BIS     #RINTEN,@RXCSR  ;SET THIS BIT
1294  003660  032777  000100  014112            BIT     #RINTEN,@RXCSR  ;TEST THIS BIT
1295  003666  001001                            BNE     64$     ;BR IF "1"
```

```
1296  003670  104000                        HLT                     ;THIS BIT SHOULD BE SET
1297  003672                        648:
1298  003672  042777  000100  014000        BIC     #RINTEN,@RXCSR  ;CLR THIS BIT
1299  003700  032777  000100  013772        BIT     #RINTEN,@RXCSR  ;TEST THIS BIT
1300  003706  001401                        BEQ     658             ;BR IF "0"
1301  003710  104000                        HLT                     ;THIS BIT SHOULD BE CLR
1302  003712                        658:
1303                                        ;NOW SET THIS BIT
1304  003712  052777  000100  013760        BIS     #RINTEN,@RXCSR
1305  003720  052777  000400  013766        BIS     #MRESET,@TXCSR  ;MASTER RESET
1306  003726  032777  000100  013744        BIT     #RINTEN,@RXCSR  ;TEST THIS BIT
1307  003734  001401                        BEQ     668             ;BR IF "0"
1308  003736  104000                        HLT                     ;CHECK OUT MASTER RESET LOGIC
1309  003740                        668:
1310  003740  104400                        SCOPE
1311                                        ;;THIS TEST PERFORMS MASTER RESET TESTING &
1312                                        ;;TESTING OF READ/WRITE BIT STPSYN
1313                                        ;;
1314  003742  012767  000015  175156  TST13: MOV     #13,TSTNO       ;SAVE THIS
1315  003750  012767  004046  175140        MOV     #TST14,NEXT             ;GO TO THIS TEST WHEN THRU
1316  003756  052777  000400  013714        BIS     #STPSYN,@RXCSR  ;SET THIS BIT
1317  003764  032777  000400  013706        BIT     #STPSYN,@RXCSR  ;TEST THIS BIT
1318  003772  001001                        BNE     648     ;BR IF "1"
1319  003774  104000                        HLT                     ;THIS BIT SHOULD BE SET
1320  003776                        648:
1321  003776  042777  000400  013674        BIC     #STPSYN,@RXCSR  ;CLR THIS BIT
1322  004004  032777  000400  013666        BIT     #STPSYN,@RXCSR  ;TEST THIS BIT
1323  004012  001401                        BEQ     658             ;BR IF "0"
1324  004014  104000                        HLT                     ;THIS BIT SHOULD BE CLR
1325  004016                        658:
1326                                        ;NOW SET THIS BIT
1327  004016  052777  000400  013654        BIS     #STPSYN,@RXCSR
1328  004024  052777  000400  013662        BIS     #MRESET,@TXCSR  ;MASTER RESET
1329  004032  032777  000400  013640        BIT     #STPSYN,@RXCSR  ;TEST THIS BIT
1330  004040  001401                        BEQ     668             ;BR IF "0"
1331  004042  104000                        HLT                     ;CHECK OUT MASTER RESET LOGIC
1332  004044                        668:
1333  004044  104400                        SCOPE
1334                                        ;;THIS TEST PERFORMS MASTER RESET TESTING &
1335                                        ;;TESTING OF READ/WRITE BIT BREAK
1336                                        ;;
1337  004046  012767  000016  175052  TST14: MOV     #14,TSTNO       ;SAVE THIS
1338  004054  012767  004152  175034        MOV     #TST15,NEXT             ;GO TO THIS TEST WHEN THRU
1339  004062  052777  000001  013624        BIS     #BREAK,@TXCSR   ;SET THIS BIT
1340  004070  032777  000001  013616        BIT     #BREAK,@TXCSR   ;TEST THIS BIT
1341  004076  001001                        BNE     648     ;BR IF "1"
1342  004100  104000                        HLT                     ;THIS BIT SHOULD BE SET
1343  004102                        648:
1344  004102  042777  000001  013604        BIC     #BREAK,@TXCSR   ;CLR THIS BIT
1345  004110  032777  000001  013576        BIT     #BREAK,@TXCSR   ;TEST THIS BIT
1346  004116  001401                        BEQ     658             ;BR IF "0"
1347  004120  104000                        HLT                     ;THIS BIT SHOULD BE CLR
1348  004122                        658:
1349                                        ;NOW SET THIS BIT
1350  004122  052777  000001  013564        BIS     #BREAK,@TXCSR
1351  004130  052777  000400  013556        BIS     #MRESET,@TXCSR  ;MASTER RESET
```

m2

```
1352  004136  032777  000001  013550          BIT     #BREAK,@TXCSR   ;TEST THIS BIT
1353  004144  001401                          BEQ     668             ;BR IF "0"
1354  004146  104000                          HLT                     ;CHECK OUT MASTER RESET LOGIC
1355  004150                          668:
1356  004150  104400                          SCOPE
1357                                          ;;THIS TEST PERFORMS MASTER RESET TESTING &
1358                                          ;;TESTING OF READ/WRITE BIT HDXEN
1359                                          ;;
1360  004152  012767  000017  174746  TST15:  MOV     #15,TSTNO       ;SAVE THIS
1361  004160  012767  004256  174730          MOV     #TST16,NEXT             ;GO TO THIS TEST WHEN THRU
1362  004166  052777  000010  013520          BIS     #HDXEN,@TXCSR   ;SET THIS BIT
1363  004174  032777  000010  013512          BIT     #HDXEN,@TXCSR   ;TEST THIS BIT
1364  004202  001001                          BNE     648     ;BR IF "1"
1365  004204  104000                          HLT                     ;THIS BIT SHOULD BE SET
1366  004206                          648:
1367  004206  042777  000010  013500          BIC     #HDXEN,@TXCSR   ;CLR THIS BIT
1368  004214  032777  000010  013472          BIT     #HDXEN,@TXCSR   ;TEST THIS BIT
1369  004222  001401                          BEQ     658             ;BR IF "0"
1370  004224  104000                          HLT                     ;THIS BIT SHOULD BE CLR
1371  004226                          658:
1372                                          ;NOW SET THIS BIT
1373  004226  052777  000010  013460          BIS     #HDXEN,@TXCSR
1374  004234  052777  000400  013452          BIS     #MRESET,@TXCSR  ;MASTER RESET
1375  004242  032777  000010  013444          BIT     #HDXEN,@TXCSR   ;TEST THIS BIT
1376  004250  001401                          BEQ     668             ;BR IF "0"
1377  004252  104000                          HLT                     ;CHECK OUT MASTER RESET LOGIC
1378  004254                          668:
1379  004254  104400                          SCOPE
1380                                          ;;THIS TEST PERFORMS MASTER RESET TESTING &
1381                                          ;;TESTING OF READ/WRITE BIT SEND
1382                                          ;;
1383  004256  012767  000020  174642  TST16:  MOV     #16,TSTNO       ;SAVE THIS
1384  004264  012767  004362  174624          MOV     #TST17,NEXT             ;GO TO THIS TEST WHEN THRU
1385  004272  052777  000020  013414          BIS     #SEND,@TXCSR    ;SET THIS BIT
1386  004300  032777  000020  013406          BIT     #SEND,@TXCSR    ;TEST THIS BIT
1387  004306  001001                          BNE     648     ;BR IF "1"
1388  004310  104000                          HLT                     ;THIS BIT SHOULD BE SET
1389  004312                          648:
1390  004312  042777  000020  013374          BIC     #SEND,@TXCSR    ;CLR THIS BIT
1391  004320  032777  000020  013366          BIT     #SEND,@TXCSR    ;TEST THIS BIT
1392  004326  001401                          BEQ     658             ;BR IF "0"
1393  004330  104000                          HLT                     ;THIS BIT SHOULD BE CLR
1394  004332                          658:
1395                                          ;NOW SET THIS BIT
1396  004332  052777  000020  013354          BIS     #SEND,@TXCSR
1397  004340  052777  000400  013346          BIS     #MRESET,@TXCSR  ;MASTER RESET
1398  004346  032777  000020  013340          BIT     #SEND,@TXCSR    ;TEST THIS BIT
1399  004354  001401                          BEQ     668             ;BR IF "0"
1400  004356  104000                          HLT                     ;CHECK OUT MASTER RESET LOGIC
1401  004360                          668:
1402  004360  104400                          SCOPE
1403                                          ;;THIS TEST PERFORMS MASTER RESET TESTING &
1404                                          ;;TESTING OF READ/WRITE BIT DMAINTE
1405                                          ;;
1406  004362  012767  000021  174536  TST17:  MOV     #17,TSTNO       ;SAVE THIS
1407  004370  012767  004466  174520          MOV     #TST18,NEXT             ;GO TO THIS TEST WHEN THRU
```

```
1408  004376  052777  000040  013310          BIS     #DNAINTE,@TXCSR ;SET THIS BIT
1409  004404  032777  000040  013302          BIT     #DNAINTE,@TXCSR ;TEST THIS BIT
1410  004412  001001                          BNE     648     ;BR IF "1"
1411  004414  104000                          HLT                     ;THIS BIT SHOULD BE SET
1412  004416                          648:
1413  004416  042777  000040  013270          BIC     #DNAINTE,@TXCSR ;CLR THIS BIT
1414  004424  032777  000040  013262          BIT     #DNAINTE,@TXCSR ;TEST THIS BIT
1415  004432  001401                          BEQ     658             ;BR IF "0"
1416  004434  104000                          HLT                     ;THIS BIT SHOULD BE CLR
1417  004436                          658:
1418                                          ;NOW SET THIS BIT
1419  004436  052777  000040  013250          BIS     #DNAINTE,@TXCSR
1420  004444  052777  000400  013242          BIS     #MRESET,@TXCSR  ;MASTER RESET
1421  004452  032777  000040  013234          BIT     #DNAINTE,@TXCSR ;TEST THIS BIT
1422  004460  001401                          BEQ     668             ;BR IF "0"
1423  004462  104000                          HLT                     ;CHECK OUT MASTER RESET LOGIC
1424  004464                          668:
1425  004464  104400                          SCOPE
1426                                          ;;THIS TEST PERFORMS MASTER RESET TESTING &
1427                                          ;;TESTING OF READ/WRITE BIT TXINTE
1428                                          ;;
1429  004466  012767  000022  174432  TST18:  MOV     #18,TSTNO       ;SAVE THIS
1430  004474  012767  004572  174414          MOV     #TST19,NEXT             ;GO TO THIS TEST WHEN THRU
1431  004502  052777  000100  013204          BIS     #TXINTE,@TXCSR  ;SET THIS BIT
1432  004510  032777  000100  013176          BIT     #TXINTE,@TXCSR  ;TEST THIS BIT
1433  004516  001001                          BNE     648     ;BR IF "1"
1434  004520  104000                          HLT                     ;THIS BIT SHOULD BE SET
1435  004522                          648:
1436  004522  042777  000100  013164          BIC     #TXINTE,@TXCSR  ;CLR THIS BIT
1437  004530  032777  000100  013156          BIT     #TXINTE,@TXCSR  ;TEST THIS BIT
1438  004536  001401                          BEQ     658             ;BR IF "0"
1439  004540  104000                          HLT                     ;THIS BIT SHOULD BE CLR
1440  004542                          658:
1441                                          ;NOW SET THIS BIT
1442  004542  052777  000100  013144          BIS     #TXINTE,@TXCSR
1443  004550  052777  000400  013136          BIS     #MRESET,@TXCSR  ;MASTER RESET
1444  004556  032777  000100  013130          BIT     #TXINTE,@TXCSR  ;TEST THIS BIT
1445  004564  001401                          BEQ     668             ;BR IF "0"
1446  004566  104000                          HLT                     ;CHECK OUT MASTER RESET LOGIC
1447  004570                          668:
1448  004570  104400                          SCOPE
1449                                          ;;TEST MAINT MODE BIT 0
1450                                          ;;
1451                                          ;;THIS TEST PERFORMS MASTER RESET TESTING &
1452                                          ;;TESTING OF READ/WRITE BIT BIT11
1453                                          ;;
1454  004572  012767  000023  174326  TST19:  MOV     #19,TSTNO       ;SAVE THIS
1455  004600  012767  004676  174310          MOV     #TST20,NEXT             ;GO TO THIS TEST WHEN THRU
1456  004606  052777  004000  013100          BIS     #BIT11,@TXCSR   ;SET THIS BIT
1457  004614  032777  004000  013072          BIT     #BIT11,@TXCSR   ;TEST THIS BIT
1458  004622  001001                          BNE     648     ;BR IF "1"
1459  004624  104000                          HLT                     ;THIS BIT SHOULD BE SET
1460  004626                          648:
1461  004626  042777  004000  013060          BIC     #BIT11,@TXCSR   ;CLR THIS BIT
1462  004634  032777  004000  013052          BIT     #BIT11,@TXCSR   ;TEST THIS BIT
1463  004642  001401                          BEQ     658             ;BR IF "0"
```

```
1464  004644  104000                          HLT                     ;THIS BIT SHOULD BE CLR
1465  004646                          658:
1466                                          ;NOW SET THIS BIT
1467  004646  052777  004000  013040          BIS     #BIT11,@TXCSR
1468  004654  052777  000400  013032          BIS     #MRESET,@TXCSR  ;MASTER RESET
1469  004662  032777  004000  013024          BIT     #BIT11,@TXCSR   ;TEST THIS BIT
1470  004670  001401                          BEQ     668             ;BR IF "0"
1471  004672  104000                          HLT                     ;CHECK OUT MASTER RESET LOGIC
1472  004674                          668:
1473  004674  104400                          SCOPE
1474                                          ;;TEST MAINT MODE BIT 1
1475                                          ;;
1476                                          ;;THIS TEST PERFORMS MASTER RESET TESTING &
1477                                          ;;TESTING OF READ/WRITE BIT BIT12
1478                                          ;;
1479  004676  012767  000024  174222  TST20:  MOV     #20,TSTNO       ;SAVE THIS
1480  004704  012767  005002  174204          MOV     #TST21,NEXT             ;GO TO THIS TEST WHEN THRU
1481  004712  052777  010000  012774          BIS     #BIT12,@TXCSR   ;SET THIS BIT
1482  004720  032777  010000  012766          BIT     #BIT12,@TXCSR   ;TEST THIS BIT
1483  004726  001001                          BNE     648     ;BR IF "1"
1484  004730  104000                          HLT                     ;THIS BIT SHOULD BE SET
1485  004732                          648:
1486  004732  042777  010000  012754          BIC     #BIT12,@TXCSR   ;CLR THIS BIT
1487  004740  032777  010000  012746          BIT     #BIT12,@TXCSR   ;TEST THIS BIT
1488  004746  001401                          BEQ     658             ;BR IF "0"
1489  004750  104000                          HLT                     ;THIS BIT SHOULD BE CLR
1490  004752                          658:
1491                                          ;NOW SET THIS BIT
1492  004752  052777  010000  012734          BIS     #BIT12,@TXCSR
1493  004760  052777  000400  012726          BIS     #MRESET,@TXCSR  ;MASTER RESET
1494  004766  032777  010000  012720          BIT     #BIT12,@TXCSR   ;TEST THIS BIT
1495  004774  001401                          BEQ     668             ;BR IF "0"
1496  004776  104000                          HLT                     ;CHECK OUT MASTER RESET LOGIC
1497  005000                          668:
1498  005000  104400                          SCOPE
1499                                          ;;THIS TEST PERFORMS MASTER RESET TESTING &
1500                                          ;;TESTING OF READ/WRITE BIT CLK
1501                                          ;;
1502  005002  012767  000025  174116  TST21:  MOV     #21,TSTNO       ;SAVE THIS
1503  005010  012767  005106  174100          MOV     #TST22,NEXT             ;GO TO THIS TEST WHEN THRU
1504  005016  052777  020000  012670          BIS     #CLK,@TXCSR     ;SET THIS BIT
1505  005024  032777  020000  012662          BIT     #CLK,@TXCSR     ;TEST THIS BIT
1506  005032  001001                          BNE     648     ;BR IF "1"
1507  005034  104000                          HLT                     ;THIS BIT SHOULD BE SET
1508  005036                          648:
1509  005036  042777  020000  012650          BIC     #CLK,@TXCSR     ;CLR THIS BIT
1510  005044  032777  020000  012642          BIT     #CLK,@TXCSR     ;TEST THIS BIT
1511  005052  001401                          BEQ     658             ;BR IF "0"
1512  005054  104000                          HLT                     ;THIS BIT SHOULD BE CLR
1513  005056                          658:
1514                                          ;NOW SET THIS BIT
1515  005056  052777  020000  012630          BIS     #CLK,@TXCSR
1516  005064  052777  000400  012622          BIS     #MRESET,@TXCSR  ;MASTER RESET
1517  005072  032777  020000  012614          BIT     #CLK,@TXCSR     ;TEST THIS BIT
1518  005100  001401                          BEQ     668             ;BR IF "0"
1519  005102  104000                          HLT                     ;CHECK OUT MASTER RESET LOGIC
```

```
1520  005104                                  668:
1521  005104  104400                                SCOPE
1522                                          ;;THIS TEST PERFORMS MASTER RESET TESTING &
1523                                          ;;TESTING OF READ/WRITE BIT MTDATA
1524                                          ;;
1525  005106  012767  000026  174012  TST22:  MOV     #22,TSTNO       ;SAVE THIS
1526  005114  012767  005212  173774        MOV     #TST23,NEXT             ;GO TO THIS TEST WHEN THRU
1527  005122  052777  040000  012564        BIS     #MTDATA,@TXCSR  ;SET THIS BIT
1528  005130  032777  040000  012556        BIT     #MTDATA,@TXCSR  ;TEST THIS BIT
1529  005136  001001                        BNE     648     ;BR IF "1"
1530  005140  104000                        HLT                     ;THIS BIT SHOULD BE SET
1531  005142                                648:
1532  005142  042777  040000  012544        BIC     #MTDATA,@TXCSR  ;CLR THIS BIT
1533  005150  032777  040000  012536        BIT     #MTDATA,@TXCSR  ;TEST THIS BIT
1534  005156  001401                        BEQ     658             ;BR IF "0"
1535  005160  104000                        HLT                     ;THIS BIT SHOULD BE CLR
1536  005162                                658:
1537                                        ;NOW SET THIS BIT
1538  005162  052777  040000  012524        BIS     #MTDATA,@TXCSR
1539  005170  052777  000400  012516        BIS     #MRESET,@TXCSR  ;MASTER RESET
1540  005176  032777  040000  012510        BIT     #MTDATA,@TXCSR  ;TEST THIS BIT
1541  005204  001401                        BEQ     668             ;BR IF "0"
1542  005206  104000                        HLT                     ;CHECK OUT MASTER RESET LOGIC
1543  005210                                668:
1544  005210  104400                        SCOPE
1545                                        ;;THIS TEST VERIFYS THAT INIT (RESET) CLEARS BITS IN THE
1546                                        ;;RXCSR & TXCSR
1547                                        ;;
1548  005212  012767  000027  173706  TST23:  MOV     #23,TSTNO       ;SAVE THIS
1549  005220  012767  005322  173670        MOV     #TST24,NEXT             ;GO TO THIS TEST WHEN THRU
1550  005226  012777  177777  012444        MOV     #177777,@RXCSR  ;SET ALL POSSIBLE BITS
1551  005234  012777  177777  012452        MOV     #177777,@TXCSR  ;DITTO
1552  005242  000005                        RESET
1553  005244  012767  000340  172524        MOV     #LEVEL7,PS      ;RESTORE NON INTERRUPT STATUS
1554  005252  017701  012422                MOV     @RXCSR,R1       ;SAVE
1555  005256  017702  012432                MOV     @TXCSR,R2       ;SAVE
1556  005262  105767  173713                TSTB    OPTCLR  ;IS THE OPTIONAL CLR JUMPER ON ?
1557  005266  100402                        BMI     18      ;YES
1558  005270  042701  000016                BIC     #16,R1  ;CLR THE NON RESETABLE BITS
1559  005274  042701  073000          18:   BIC     #073000,R1      ;CLR ALL NON-CLEARABLE BITS
1560  005300  005701                        TST     R1      ;ARE THEY ALL 0 ?
1561  005302  001401                        BEQ     .+4
1562  005304  104003                        HLT     ;ALL SPECIFIED BITS SHOULD BE CLEAR
1563  005306  042702  002200                BIC     #002200,R2      ;CLEAR ALL NON-CLEARABLE BITS
1564  005312  005702                        TST     R2      ;ARE THEY ALL 0 ?
1565  005314  001401                        BEQ     .+4
1566  005316  104000                        HLT     ;ALL SPECIFIED BITS SHOULD BE CLEAR
1567  005320  104400                        SCOPE
1568                                        ;;THIS TEST PERFORMS MASTER RESET TESTING &
1569                                        ;;TESTING OF WRITE ONLY BIT MRESET
1570                                        ;;
1571  005322  012767  000030  173576  TST24:  MOV     #24,TSTNO       ;SAVE THIS
1572  005330  012767  005400  173560        MOV     #TST25,NEXT             ;GO TO THIS TEST WHEN THRU
1573  005336  052777  000400  012350        BIS     #MRESET,@TXCSR  ;TRY TO SET THIS BIT
1574  005344  032777  000400  012342        BIT     #MRESET,@TXCSR  ;TEST THIS BIT
1575  005352  001401                        BEQ     648             ;BR IF "0"
```

```
1576  005354  104000                          HLT                     ;THIS BIT SHOULD NOT BE SET
1577  005356                          648:
1578  005356  052777  000400  012330          BIS     #MRESET,@TXCSR  ;MASTER RESET
1579  005364  032777  000400  012322          BIT     #MRESET,@TXCSR  ;TEST THIS BIT
1580  005372  001401                          BEQ     658             ;BR IF "0"
1581  005374  104000                          HLT                     ;THIS BIT SHOULD NOT BE SET
1582  005376                          658:
1583                                                                  ;CHECK MASTER RESET LOGIC
1584  005376  104400                          SCOPE
1585                                  ;;THIS TEST VERIFYS THAT THE RXCSR & TXCSR CAN BE BYTE ADDRESSED (DATOB)
1586                                  ;;
1587  005400  012767  000031  173520  TST25:  MOV     #25,TSTNO       ;SAVE THIS
1588  005406  012767  005566  173502          MOV     #TST26,NEXT             ;GO TO THIS TEST WHEN THRU
1589  005414  052777  000400  012272          BIS     #MRESET,@TXCSR  ;MASTER RESET
1590  005422  105767  173553                  TSTB    OPTCLR  ;IS THE OPTIONAL CLR JUMPER ON ?
1591  005426  100405                          BMI     18      ;YES
1592  005430  012777  000000  012242          MOV     #0,@RXCSR       ;CLR OUT NON RESETABLE BITS
1593  005436  005777  012236                  TST     @RXCSR  ;CLR OUT DSC BY READING RXCSR
1594  005442  152777  000001  012232  18:     BISB    #BIT0,@MRXCSR   ;SET STRIP SYNC  UPPER BYTE
1595  005450  017701  012224                  MOV     @RXCSR,R1       ;SAVE RXCSR
1596  005454  022701  000400                  CMP     #400,R1 ;TEST RXCSR
1597  005460  001401                          BEQ     .+4
1598  005462  104000                          HLT     ;ONLY STRIP SYNC SHOULD BE SET
1599  005464  105077  012210                  CLRB    @RXCSR  ;CLR LOWER BYTE
1600  005470  017701  012204                  MOV     @RXCSR,R1       ;SAVE RXCSR
1601  005474  022701  000400                  CMP     #400,R1 ;TEST RXCSR
1602  005500  001401                          BEQ     .+4
1603  005502  104000                          HLT     ;ONLY STRIP SYNC SHOULD BE SET
1604  005504  052777  000400  012202          BIS     #MRESET,@TXCSR  ;MASTER RESET
1605  005512  152777  000040  012176          BISB    #BIT5,@MTXCSR   ;SET MAINT CLK  UPPER BYTE
1606  005520  017701  012170                  MOV     @TXCSR,R1       ;SAVE TXCSR
1607  005524  042701  002000                  BIC     #BITW,R1        ;CLR BIT WINDOW (DEPENDENT
1608                                                          ;ON H315 CONNECTOR EXISTANCE)
1609  005530  022701  020200                  CMP     #20200,R1       ;TEST TXCSR
1610  005534  001401                          BEQ     .+4
1611  005536  104000                          HLT     ;ONLY MAINT CLK BIT & TXDONE SHOULD BE SET
1612  005540  105077  012150                  CLRB    @TXCSR  ;CLR LOWER BYTE
1613  005544  017701  012144                  MOV     @TXCSR,R1       ;SAVE TXCSR
1614  005550  042701  002000                  BIC     #BITW,R1        ;CLR BIT WINDOW (DITTO)
1615  005554  022701  020200                  CMP     #20200,R1       ;TEST TXCSP
1616  005560  001401                          BEQ     .+4
1617  005562  104000                          HLT     ;ONLY MAINT CLK BIT & TXDONE SHOULD BE SET
1618  005564  104400                          SCOPE
1619                                  ;;THIS TEST PERFORMS MASTER RESET TESTING &
1620                                  ;;TESTING OF READ ONLY BIT BITW
1621                                  ;;MAINT INTERNAL
1622                                  ;;
1623  005566  012767  000032  173332  TST26:  MOV     #26,TSTNO       ;SAVE THIS
1624  005574  012767  005726  173314          MOV     #TST27,NEXT             ;GO TO THIS TEST WHEN THRU
1625  005602  012777  044001  012104          MOV     #MINT!MTDATA!BREAK,@TXCSR       ;SET MAINT INT,,BREAK,
1626                                                                  ;&MTDATA
1627  005610  032777  002000  012076          BIT     #BITW,@TXCSR    ;TEST BITW
1628  005616  001001                          BNE     .+4
1629  005620  104000                                  HLT             ;BIT WINDOW SHOULD BE SET
1630  005622  042777  040000  012064          BIC     #MTDATA,@TXCSR
1631  005630  013702  001136                  MOV     @#HOLD,R2
```

```
1632  005634  005302                    18:     DEC     R2
1633  005636  001376                            BNE     18
1634  005640  032777  002000  012046            BIT     #BITW,@TXCSR
1635  005646  001401                            BEQ     .+4
1636  005650  104000                            HLT                     ;BIT SHOULD BE CLR
1637                                            ;NOW SET THE MTDATA
1638  005652  052777  040000  012034            BIS     #MTDATA,@TXCSR
1639  005660  052777  000400  012026            BIS     #MRESET,@TXCSR  ;MASTER RESET
1640  005666  052777  004001  012020            BIS     #MINT!BREAK,@TXCSR
1641  005674  013702  001136                    MOV     @#HOLD,R2
1642  005700  005302                    28:     DEC     R2
1643  005702  001376                            BNE     28
1644  005704  032777  002000  012002            BIT     #BITW,@TXCSR
1645  005712  001401                            BEQ     .+4
1646  005714  104000                            HLT     ;BITW SHOULD BE CLR BY MASTER RESET
1647  005716  104400                            SCOPE
1648                                            ;;THIS TEST PERFORMS MASTER RESET TESTING &
1649                                            ;;TESTING OF READ ONLY BIT BITW
1650                                            ;;MAINT EXTERNAL
1651                                            ;;
1652  005720  012767  000033  173200  TST27:    MOV     #27,TSTNO       ;SAVE THIS
1653  005726  012767  006060  173162            MOV     #TST28,NEXT             ;GO TO THIS TEST WHEN THRU
1654                                            ;TEST TO SEE IF EXTERNAL MODEM BYPASS CONNECTOR
1655                                            ;IS ON (H315)....IF "NO" JUMP AROUND TEST
1656  005734  105767  173243                    TSTB    JMPBY
1657  005740  100046                            BPL     18      ;IT IS NOT ON
1658  005742  012777  050001  011744            MOV     #MEXT!MTDATA!BREAK,@TXCSR       ;SET MAINT EXT,,BREAK,
1659                                                                                    ;&MTDATA
1660  005750  032777  002000  011736            BIT     #BITW,@TXCSR    ;TEST BITW
1661  005756  001001                            BNE     .+4
1662  005760  104000                            HLT                     ;BIT WINDOW SHOULD BE SET
1663  005762  042777  040000  011724            BIC     #MTDATA,@TXCSR
1664  005770  013702  001136                    MOV     @#HOLD,R2
1665  005774  005302                    28:     DEC     R2
1666  005776  001376                            BNE     28
1667  006000  032777  002000  011706            BIT     #BITW,@TXCSR
1668  006006  001401                            BEQ     .+4
1669  006010  104000                            HLT                     ;BIT SHOULD BE CLR
1670                                            ;NOW SET THE MTDATA
1671  006012  052777  040000  011674            BIS     #MTDATA,@TXCSR
1672  006020  052777  000400  011666            BIS     #MRESET,@TXCSR  ;MASTER RESET
1673  006026  052777  010001  011660            BIS     #MEXT!BREAK,@TXCSR
1674  006034  013702  001136                    MOV     @#HOLD,R2
1675  006040  005302                    38:     DEC     R2
1676  006042  001376                            BNE     38
1677  006044  032777  002000  011642            BIT     #BITW,@TXCSR
1678  006052  001401                            BEQ     .+4
1679  006054  104000                            HLT     ;BITW SHOULD BE CLR BY MASTER RESET
1680  006056  104400                    18:     SCOPE
1681
1682
1683                                            ;;THIS TEST PERFORMS MASTER RESET TESTING &
1684                                            ;;TESTING OF READ ONLY BIT RXDONE
1685                                            ;;
1686  006060  012767  000034  173040  TST28:    MOV     #28,TSTNO       ;SAVE THIS
1687  006066  012767  006116  173022            MOV     #TST29,NEXT             ;GO TO THIS TEST WHEN THRU
```

```
1688  006074  052777  000400  011612          BIS     #MRESET,@TXCSR  ;MASTER RESET
1689  006102  032777  000200  011570          BIT     #RXDONE,@RXCSR  ;TEST THIS BIT
1690  006110  001401                          BEQ     64$             ;BR IF "0"
1691  006112  104000                          HLT                     ;CHECK MASTER RESET LOGIC
1692  006114                          64$:
1693                                                  ;OR SHORT ON THIS BIT
1694  006114  104400                          SCOPE
1695                                          ;;THIS TEST PERFORMS MASTER RESET TESTING &
1696                                          ;;TESTING OF READ ONLY BIT RECACT
1697                                          ;;
1698  006116  012767  000035  173002  TST29:  MOV     #29,TSTNO       ;SAVE THIS
1699  006124  012767  006154  172764          MOV     #TST30,NEXT             ;GO TO THIS TEST WHEN THRU
1700  006132  052777  000400  011554          BIS     #MRESET,@TXCSR  ;MASTER RESET
1701  006140  032777  004000  011532          BIT     #RECACT,@RXCSR  ;TEST THIS BIT
1702  006146  001401                          BEQ     64$             ;BR IF "0"
1703  006150  104000                          HLT                     ;CHECK MASTER RESET LOGIC
1704  006152                          64$:
1705                                                  ;OR SHORT ON THIS BIT
1706  006152  104400                          SCOPE
1707                                          ;;THIS TEST PERFORMS MASTER RESET TESTING &
1708                                          ;;TESTING OF READ ONLY BIT DSC
1709                                          ;;
1710  006154  012767  000036  172744  TST30:  MOV     #30,TSTNO       ;SAVE THIS
1711  006162  012767  006212  172726          MOV     #TST31,NEXT             ;GO TO THIS TEST WHEN THRU
1712  006170  052777  000400  011516          BIS     #MRESET,@TXCSR  ;MASTER RESET
1713  006176  032777  100000  011474          BIT     #DSC,@RXCSR     ;TEST THIS BIT
1714  006204  001401                          BEQ     64$             ;BR IF "0"
1715  006206  104000                          HLT                     ;CHECK MASTER RESET LOGIC
1716  006210                          64$:
1717                                                  ;OR SHORT ON THIS BIT
1718  006210  104400                          SCOPE
1719                                          ;;THIS TEST PERFORMS MASTER RESET TESTING &
1720                                          ;;TESTING OF READ ONLY BIT TXDONE
1721                                          ;;
1722  006212  012767  000037  172706  TST31:  MOV     #31,TSTNO       ;SAVE THIS
1723  006220  012767  006250  172670          MOV     #TST32,NEXT             ;GO TO THIS TEST WHEN THRU
1724  006226  052777  000400  011460          BIS     #MRESET,@TXCSR  ;MASTER RESET
1725  006234  032777  000200  011452          BIT     #TXDONE,@TXCSR  ;TEST THIS BIT
1726  006242  001001                          BNE     .+4                     ;BR IF "1"
1727  006244  104000                          HLT             ;CHECK MASTER RESET LOGIC
1728                                                  ;OR SHORT ON THIS BIT
1729  006246  104400                          SCOPE
1730                                          ;;THIS TEST PERFORMS MASTER RESET TESTING &
1731                                          ;;TESTING OF READ ONLY BIT DNA
1732                                          ;;
1733  006250  012767  000040  172650  TST32:  MOV     #32,TSTNO       ;SAVE THIS
1734  006256  012767  006306  172632          MOV     #TST33,NEXT             ;GO TO THIS TEST WHEN THRU
1735  006264  052777  000400  011422          BIS     #MRESET,@TXCSR  ;MASTER RESET
1736  006272  032777  100000  011414          BIT     #DNA,@TXCSR     ;TEST THIS BIT
1737  006300  001401                          BEQ     64$             ;BR IF "0"
1738  006302  104000                          HLT                     ;CHECK MASTER RESET LOGIC
1739  006304                          64$:
1740                                                  ;OR SHORT ON THIS BIT
1741  006304  104400                          SCOPE
1742                                          ;;THIS TEST PERFORMS MASTER RESET TESTING &
1743                                          ;;TESTING OF READ  ONLY WORD RECEIVE DATA
```

```
1744                                                    ;;
1745  006306  012767  000041  172612  TST33:  MOV     #33,TSTNO       ;SAVE THIS
1746  006314  012767  006354  172574          MOV     #TST34,NEXT             ;GO TO THIS TEST WHEN THRU
1747  006322  052777  000400  011364          BIS     #MRESET,@TXCSR  ;MASTER RESET
1748  006330  016703  011350                  MOV     RXDBUF,R3       ;FOR ERROR MESSAGE
1749  006334  012700  000377                  MOV     #377,R0         ;EXPECTED
1750  006340  017701  011340                  MOV     @RXDBUF,R1      ;ACTUAL
1751  006344  120001                          CMPB    R0,R1
1752  006346  001401                          BEQ     .+4             ;BR IF "0"
1753  006350  104002                          HLT     2               ;REC DATA SHOULD BE ALL 1'S
1754  006352  104400                          SCOPE
1755                                          ;;THIS TEST PERFORMS MASTER RESET TESTING &
1756                                          ;;TESTING OF READ ONLY BIT PARER
1757                                          ;;
1758  006354  012767  000042  172544  TST34:  MOV     #34,TSTNO       ;SAVE THIS
1759  006362  012767  006412  172526          MOV     #TST35,NEXT             ;GO TO THIS TEST WHEN THRU
1760  006370  052777  000400  011316          BIS     #MRESET,@TXCSR  ;MASTER RESET
1761  006376  032777  010000  011300          BIT     #PARER,@RXDBUF  ;TEST THIS BIT
1762  006404  001401                          BEQ     648             ;BR IF "0"
1763  006406  104000                          HLT                     ;CHECK MASTER RESET LOGIC
1764  006410                          648:
1765                                                  ;OR SHORT ON THIS BIT
1766  006410  104400                          SCOPE
1767                                          ;;THIS TEST PERFORMS MASTER RESET TESTING &
1768                                          ;;TESTING OF READ ONLY BIT FRMERR
1769                                          ;;
1770  006412  012767  000043  172506  TST35:  MOV     #35,TSTNO       ;SAVE THIS
1771  006420  012767  006450  172470          MOV     #TST36,NEXT             ;GO TO THIS TEST WHEN THRU
1772  006426  052777  000400  011260          BIS     #MRESET,@TXCSR  ;MASTER RESET
1773  006434  032777  020000  011242          BIT     #FRMERR,@RXDBUF ;TEST THIS BIT
1774  006442  001401                          BEQ     648             ;BR IF "0"
1775  006444  104000                          HLT                     ;CHECK MASTER RESET LOGIC
1776  006446                          648:
1777                                                  ;OR SHORT ON THIS BIT
1778  006446  104400                          SCOPE
1779                                          ;;THIS TEST PERFORMS MASTER RESET TESTING &
1780                                          ;;TESTING OF READ ONLY BIT OVRRUN
1781                                          ;;
1782  006450  012767  000044  172450  TST36:  MOV     #36,TSTNO       ;SAVE THIS
1783  006456  012767  006506  172432          MOV     #TST37,NEXT             ;GO TO THIS TEST WHEN THRU
1784  006464  052777  000400  011222          BIS     #MRESET,@TXCSR  ;MASTER RESET
1785  006472  032777  040000  011204          BIT     #OVRRUN,@RXDBUF ;TEST THIS BIT
1786  006500  001401                          BEQ     648             ;BR IF "0"
1787  006502  104000                          HLT                     ;CHECK MASTER RESET LOGIC
1788  006504                          648:
1789                                                  ;OR SHORT ON THIS BIT
1790  006504  104400                          SCOPE
1791                                          ;;THIS TEST PERFORMS MASTER RESET TESTING &
1792                                          ;;TESTING OF READ ONLY BIT RXERR
1793                                          ;;
1794  006506  012767  000045  172412  TST37:  MOV     #37,TSTNO       ;SAVE THIS
1795  006514  012767  006544  172374          MOV     #TST38,NEXT             ;GO TO THIS TEST WHEN THRU
1796  006522  052777  000400  011164          BIS     #MRESET,@TXCSR  ;MASTER RESET
1797  006530  032777  100000  011146          BIT     #RXERR,@RXDBUF  ;TEST THIS BIT
1798  006536  001401                          BEQ     648             ;BR IF "0"
1799  006540  104000                          HLT                     ;CHECK MASTER RESET LOGIC
```

```
1800  006542                                  648:
1801                                                    ;OR SHORT ON THIS BIT
1802  006542  104400                                    SCOPE
1803                                                    ;;THIS TEST VERIFYS THAT THE DEVICE REGISTER RXCSR
1804                                                    ;;IS CLEARED BY MASTER RESET
1805  006544  012767  000046  172354  TST38:  MOV     #38,TSTNO       ;SAVE THIS
1806  006552  012767  006652  172336          MOV     #TST39,NEXT             ;GO TO THIS TEST WHEN THRU
1807  006560  012777  177777  011112          MOV     #177777,@RXCSR  ;SET ALL POSSIBLE BITS
1808  006566  052777  000400  011120          BIS     #MRESET,@TXCSR  ;MASTER RESET
1809  006574  016703  011100                  MOV     RXCSR,R3        ;FOR ERROR MESSAGE
1810  006600  017701  011074                  MOV     @RXCSR,R1       ;SAVE ACTUAL
1811  006604  105767  172371                  TSTB    OPTCLR          ;TEST THE OPT CLR JUMPER FLAG
1812  006610  100010                          BPL     18              ;NO ,ITS NOT IN
1813  006612  042701  173000                  BIC     #173000,R1      ;CLR NON-MASTER RESETTABLE
1814                                                    ;BITS(SINCE THESE ARE DEPENDENT ON H315 CONNECTORS EXISTANCE)
1815  006616  012700  000000                  MOV     #0,R0   ;EXPECTED
1816  006622  020001                          CMP     R0,R1   ;EXPECTED VS ACTUAL
1817  006624  001401                          BEQ     .+4
1818  006626  104001                          HLT     1       ;ALL MASTER RESETABLE BITS SHOULD BE CLR
1819  006630  000407                          BR      28              ;JUMP AROUND
1820  006632  042701  073000          18:     BIC     #73000,R1       ;CLR NON-MASTER RESETABLE
1821                                                    ;BITS(SINCE THESE ARE DEPENDENT ON H315 CONNECTORS EXISTANCE)
1822  006636  012700  000016                  MOV     #16,R0          ;EXPECTED
1823  006642  020001                          CMP     R0,R1   ;EXPECTED VS ACTUAL
1824  006644  001401                          BEQ     .+4
1825  006646  104001                          HLT     1       ;ONLY STD,RTS,DTR BITS SHOULD BE SET
1826                                                    ;NOTE THAT STD IS READ =1 INDEPENDENT OF
1827                                                    ;SEC XMIT #6 STRAP
1828  006650  104400                  28:     SCOPE
1829
1830                                                    ;;THIS TEST VERIFYS THAT THE DEVICE REGISTER TXCSR
1831                                                    ;;IS CLEARED BY MASTER RESET
1832                                                    ;;
1833  006652  012767  000047  172246  TST39:  MOV     #39,TSTNO       ;SAVE THIS
1834  006660  012767  006726  172230          MOV     #TST40,NEXT             ;GO TO THIS TEST WHEN THRU
1835  006666  012777  177777  011020          MOV     #177777,@TXCSR  ;SET ALL POSSIBLE BITS
1836  006674  052777  000400  011012          BIS     #MRESET,@TXCSR  ;MASTER RESET
1837  006702  016703  011006                  MOV     TXCSR,R3        ;FOR ERROR MESSAGE
1838  006706  017701  011002                  MOV     @TXCSR,R1       ;SAVE ACTUAL
1839  006712  012700  000200                  MOV     #200,R0 ;EXPECTED
1840  006716  020001                          CMP     R0,R1   ;EXPECTED VS ACTUAL
1841  006720  001401                          BEQ     .+4
1842  006722  104001                          HLT     1       ;ONLY TXDONE SHOULD BE SET
1843  006724  104400                          SCOPE
1844
1845                                                    ;;THIS TEST VERIFYS THAT THE DEVICE REGISTER RXDBUF
1846                                                    ;;IS CLEARED BY MASTER RESET
1847                                                    ;;
1848  006726  012767  000050  172172  TST40:  MOV     #40,TSTNO       ;SAVE THIS
1849  006734  012767  006774  172154          MOV     #TST41,NEXT             ;GO TO THIS TEST WHEN THRU
1850  006742  052777  000400  010744          BIS     #MRESET,@TXCSR  ;MASTER RESET
1851  006750  016703  010730                  MOV     RXDBUF,R3       ;FOR ERROR MESSAGE
1852  006754  017701  010724                  MOV     @RXDBUF,R1      ;SAVE
1853  006760  012700  000377                  MOV     #377,R0 ;EXPECTED
1854  006764  020001                          CMP     R0,R1   ;EXPECTED VS ACTUAL
1855  006766  001401                          BEQ     .+4
```

```
1856  006770  104302                        HLT     2       ;ONLY REC DATA BITS SHOULD BE SET
1857  006772  104400                        SCOPE
1858                                        ;;THIS TEST VERIFYS BITS RING,CTS,CARDET,SRD,DSR
1859                                        ;;ALSO DSC IS GENERATED WHEN ANY OF THESE BITS ARE SET
1860                                        ;;OR CLEARED.....IT ALSO CHECKS THE MODEM BYPASS
1861                                        ;;JUMPER AND THAT THESE BITS CAN BE READ
1862                                        ;;NOTE: THE MODEM BYPASS JUMPER MUST BE ON (H315)
1863                                        ;;
1864  006774  012767  000051  172124  TST41: MOV     #41,TSTNO       ;SAVE THIS
1865  007002  012767  007710  172106        MOV     #TST42,NEXT             ;GO TO THIS TEST WHEN THRU
1866  007010  005077  010664                CLR     @RXCSR  ;TO GET RID OF STD ,RTS,DTR IF OPTCLR JUMPER #4 IS NOT ON
1867  007014  052777  000400  010672        BIS     #MRESET,@TXCSR  ;MASTER RESET
1868                                        ;TEST THAT A "YES" ANSWER WAS GIVEN TO QUESTION IN
1869                                        ;THE MONITOR OR BY DEFAULT
1870                                        ;THIS TEST WILL BE BYPASSED  IF THE EXTERNAL BYPASS
1871                                        ;JUMPER IS NOT INSTALLED
1872  007022  105767  172155                TSTB    JMPBY
1873  007026  100402                        BMI     .+6     ;THE ANSWER WAS YES.....
1874                                                        ; PERFORM THIS TEST
1875  007030  000167  000652                JMP     OUT1    ;JUMP AROUND THIS TEST IF THE ANSWER
1876                                                        ;WAS NO
1877  007034  016703  010640                MOV     RXCSR,R3        ;SET UP FOR ERROR MESSAGE
1878  007040  017701  010634                MOV     @RXCSR,R1       ;ACTUAL
1879  007044  005000                        CLR     R0      ;EXPECTED
1880  007046  005701                        TST     R1      ;IS IT = 0 ?
1881  007050  001401                        BEQ     .+4
1882  007052  104001                        HLT     1       ;RXCSR SHOULD BE CLR
1883  007054  052777  000002  010616        BIS     #DTR,@RXCSR     ;SET DTR
1884                                        ;WAIT FOR CABLE DELAYS
1885                                        ;*****************************************
1886                                        ;MODIFY "HOLD:"  ACCORDINGLY FOR FASTER OR SLOWER  MACHINE
1887                                        ;*****************************************
1888  007062  016702  172056                MOV     HOLD,R2 ;SET DELAY TIME
1889  007066                        648:
1890  007066  005302                        DEC     R2
1891  007070  001376                        BNE     648     ;WAIT THIS TIME
1892                                        ;OK NOW FALL THRU AND CONTINUE TESTING.....
1893                                        ;EXIT STAGE LEFT....CHINNNG!
1894  007072  017701  010602                MOV     @RXCSR,R1       ;ACTUAL
1895  007076  012700  130002                MOV     #130002,R0      ;DSC,CTS,CARDET,DTR
1896  007102  020001                        CMP     R0,R1   ;EXPECTED VS ACTUAL
1897  007104  001401                        BEQ     .+4
1898  007106  104001                        HLT     1       ;CHECK BYPASS CONNECTOR
1899  007110  017701  010564                MOV     @RXCSR,R1       ;ACTUAL
1900  007114  012700  030002                MOV     #30002,R0       ;CTS,CARDET,DTR
1901  007120  020001                        CMP     R0,R1   ;EXPECTED VS ACTUAL
1902  007122  001401                        BEQ     .+4
1903  007124  104001                        HLT     1       ;PREVIOUS READING OF RXCSR SHOULD
1904                                                        ;HAVE CLEARED DSC
1905  007126  052777  000004  010544        BIS     #RTS,@RXCSR
1906                                        ;WAIT FOR CABLE DELAYS
1907                                        ;*****************************************
1908                                        ;MODIFY "HOLD:"  ACCORDINGLY FOR FASTER OR SLOWER  MACHINE
1909                                        ;*****************************************
1910  007134  016702  171776                MOV     HOLD,R2 ;SET DELAY TIME
1911  007140                        658:
```

```
1912  007140  005302                          DEC     R2
1913  007142  001376                          BNE     65$     ;WAIT THIS TIME
1914                                          ;OK NOW FALL THRU AND CONTINUE TESTING.....
1915                                          ;EXIT STAGE LEFT....CHINNNG!
1916  007144  017701  010530                  MOV     @RXCSR,R1
1917  007150  012700  170006                  MOV     #170006,R0      ;DSC,RING,CTS,CARDET,RTS,DTR
1918  007154  020001                          CMP     R0,R1   ;EXPECTED VS ACTUAL
1919  007156  001401                          BEQ     .+4
1920  007160  104001                          HLT     1       ;CHECK BYPASS CONNECTOR
1921  007162  017701  010512                  MOV     @RXCSR,R1
1922  007166  012700  070006                  MOV     #70006,R0       ;RING,CTS,CARDET,RTS,DTR
1923  007172  020001                          CMP     R0,R1   ;EXPECTED VS ACTUAL
1924  007174  001401                          BEQ     .+4
1925  007176  104001                          HLT     1       ;PREVIOUS READING OF RXCSR SHOULD
1926                                                          ;HAVE CLEARED DSC
1927  007200  105767  171773                  TSTB    SEXMIT  ;IS SEC XMIT JUMPER IN ?
1928  007204  100112                          BPL     OUT2    ;NO
1929  007206  105767  171766                  TSTB    SEREC   ;IS SEC REC JUMPER IN ?
1930  007212  100163                          BPL     OUT3    ;NO
1931  007214  052777  000010  010456          BIS     #STD,@RXCSR
1932                                          ;WAIT FOR CABLE DELAYS
1933                                          ;*****************************************
1934                                          ;MODIFY "HOLD:"  ACCORDINGLY FOR FASTER OR SLOWER  MACHINE
1935                                          ;*****************************************
1936  007222  016702  171710                  MOV     HOLD,R2 ;SET DELAY TIME
1937  007226                          66$:
1938  007226  005302                          DEC     R2
1939  007230  001376                          BNE     66$     ;WAIT THIS TIME
1940                                          ;OK NOW FALL THRU AND CONTINUE TESTING.....
1941                                          ;EXIT STAGE LEFT....CHINNNG!
1942  007232  017701  010442                  MOV     @RXCSR,R1
1943  007236  012700  173016          MASK1:  MOV     #173016,R0      ;DSC,RING,CTS,CARDET,SRD,DSR
1944                                                          ;STD,RTS,DTR
1945  007242  020001                          CMP     R0,R1   ;EXPECTED VS ACTUAL
1946  007244  001401                          BEQ     .+4
1947  007246  104001                          HLT     1       ;CHECK BYPASS CONNECTOR
1948  007250  017701  010424                  MOV     @RXCSR,R1
1949  007254  012700  073016          MASK2:  MOV     #73016,R0       ;RING,CTS,CARDET,SRD,DSR,STD
1950                                                          ;RTS,DTR
1951  007260  020001                          CMP     R0,R1   ;EXPECTED VS ACTUAL
1952  007262  001401                          BEQ     .+4
1953  007264  104001                          HLT     1       ;PREVIOUS READING OF RXCSR SHOULD
1954                                                          ;HAVE CLEARED DSC
1955  007266  042777  000002  010404          BIC     #DTR,@RXCSR
1956                                          ;WAIT FOR CABLE DELAYS
1957                                          ;*****************************************
1958                                          ;MODIFY "HOLD:"  ACCORDINGLY FOR FASTER OR SLOWER  MACHINE
1959                                          ;*****************************************
1960  007274  016702  171636                  MOV     HOLD,R2 ;SET DELAY TIME
1961  007300                          64$:
1962  007300  005302                          DEC     R2
1963  007302  001376                          BNE     64$     ;WAIT THIS TIME
1964                                          ;OK NOW FALL THRU AND CONTINUE TESTING.....
1965                                          ;EXIT STAGE LEFT....CHINNNG!
1966  007304  017701  010370                  MOV     @RXCSR,R1
1967  007310  012700  143014                  MOV     #143014,R0      ;DSC,RING,SRD,DSR,STD,RTS
```

```
1968  007314  020001                          CMP     R0,R1   ;EXPECTED VS ACTUAL
1969  007316  001401                          BEQ     .+4
1970  007320  104001                          HLT     1       ;DSC SHOULD BE SET
1971  007322  042777  000004  010350          BIC     #RTS,@RXCSR
1972                                          ;WAIT FOR CABLE DELAYS
1973                                          ;*****************************************
1974                                          ;MODIFY "HOLD:"  ACCORDINGLY FOR FASTER OR SLOWER  MACHINE
1975                                          ;*****************************************
1976  007330  016702  171602                  MOV     HOLD,R2 ;SET DELAY TIME
1977  007334                          658:
1978  007334  005302                          DEC     R2
1979  007336  001376                          BNE     658     ;WAIT THIS TIME
1980                                          ;OK NOW FALL THRU AND CONTINUE TESTING.....
1981                                          ;EXIT STAGE LEFT....CHINNNG!
1982  007340  017701  010334                  MOV     @RXCSR,R1
1983  007344  012700  103010          MASK3:  MOV     #103010,R0      ;DSC,SRD,DSR,STD
1984  007350  020001                          CMP     R0,R1   ;EXPECTED VS ACTUAL
1985  007352  001401                          BEQ     .+4
1986  007354  104001                          HLT     1       ;DSC SHOULD BE SET
1987  007356  042777  000010  010314          BIC     #STD,@RXCSR
1988                                          ;WAIT FOR CABLE DELAYS
1989                                          ;*****************************************
1990                                          ;MODIFY "HOLD:"  ACCORDINGLY FOR FASTER OR SLOWER  MACHINE
1991                                          ;*****************************************
1992  007364  016702  171546                  MOV     HOLD,R2 ;SET DELAY TIME
1993  007370                          648:
1994  007370  005302                          DEC     R2
1995  007372  001376                          BNE     648     ;WAIT THIS TIME
1996                                          ;OK NOW FALL THRU AND CONTINUE TESTING.....
1997                                          ;EXIT STAGE LEFT....CHINNNG!
1998  007374  017701  010300                  MOV     @RXCSR,R1
1999  007400  012700  100000                  MOV     #100000,R0      ;DSC
2000  007404  020001                          CMP     R0,R1   ;EXPECTED VS ACTUAL
2001  007406  001401                          BEQ     .+4
2002  007410  104001                          HLT     1       ;DSC SHOULD BE SET
2003  007412  017701  010262                  MOV     @RXCSR,R1
2004  007416  005000                          CLR     R0      ;NONE
2005  007420  005701                          TST     R1
2006  007422  001401                          BEQ     .+4
2007  007424  104001                          HLT     1       ;DSC SHOULD BE CLEARED FROM PREVIOUS
2008                                                          ;READING OF RXCSR
2009  007426  000167  000254                  JMP     OUT1    ;JUMP AROUND
2010                                  ;THE FOLLOWING ROUTINE HANDLES THE SITUATION WHERE SEC XMIT
2011                                  ;AND SEC REC JUMPERS ARE NOT ON
2012  007432  052777  000010  010240  OUT2:   BIS     #STD,@RXCSR
2013                                          ;WAIT FOR CABLE DELAYS
2014                                          ;*****************************************
2015                                          ;MODIFY "HOLD:"  ACCORDINGLY FOR FASTER OR SLOWER  MACHINE
2016                                          ;*****************************************
2017  007440  016702  171472                  MOV     HOLD,R2 ;SET DELAY TIME
2018  007444                          648:
2019  007444  005302                          DEC     R2
2020  007446  001376                          BNE     648     ;WAIT THIS TIME
2021                                          ;OK NOW FALL THRU AND CONTINUE TESTING.....
2022                                          ;EXIT STAGE LEFT....CHINNNG!
2023  007450  017701  010224                  MOV     @RXCSR,R1       ;ACTUAL
```

```
2024  007454  012700  070016                  MOV     #70016,R0       ;EXPECTED: RING ,CTS,CARDET,STD,RTS,DTR
2025  007460  020001                          CMP     R0,R1   ;EXPECTED VS ACTUAL
2026  007462  001401                          BEQ     .+4
2027  007464  104001                          HLT     1       ;CHECK SEC XMIT & SEC REC JUMPERS
2028  007466  042777  000004  010204          BIC     #RTS,@RXCSR
2029                                          ;WAIT FOR CABLE DELAYS
2030                                          ;****************************************
2031                                          ;MODIFY "HOLD:"  ACCORDINGLY FOR FASTER OR SLOWER  MACHINE
2032                                          ;****************************************
2033  007474  016702  171436                  MOV     HOLD,R2 ;SET DELAY TIME
2034  007500                          658:
2035  007500  005302                          DEC     R2
2036  007502  001376                          BNE     658     ;WAIT THIS TIME
2037                                          ;OK NOW FALL THRU AND CONTINUE TESTING.....
2038                                          ;EXIT STAGE LEFT....CHINNNG!
2039  007504  017701  010170                  MOV     @RXCSR,R1       ;ACTUAL
2040  007510  012700  130012                  MOV     #130012,R0      ;DSC,CTS,CARDET,DTR,STD
2041                                          ;NOTE THAT DSC STILL ASSERTS EVEN THO THE SEC XMIT JUMPER # 6 IS NOT ON
2042  007514  020001                          CMP     R0,R1   ;EXPECTED VS ACTUAL
2043  007516  001401                          BEQ     .+4
2044  007520  104001                          HLT     1       ;CHECK BYPASS CONNECTOR
2045  007522  042777  000002  010150          BIC     #DTR,@RXCSR
2046                                          ;WAIT FOR CABLE DELAYS
2047                                          ;****************************************
2048                                          ;MODIFY "HOLD:"  ACCORDINGLY FOR FASTER OR SLOWER  MACHINE
2049                                          ;****************************************
2050  007530  016702  171402                  MOV     HOLD,R2 ;SET DELAY TIME
2051  007534                          668:
2052  007534  005302                          DEC     R2
2053  007536  001376                          BNE     668     ;WAIT THIS TIME
2054                                          ;OK NOW FALL THRU AND CONTINUE TESTING.....
2055                                          ;EXIT STAGE LEFT....CHINNNG!
2056  007540  017701  010134                  MOV     @RXCSR,R1       ;ACTUAL
2057  007544  012700  100010                  MOV     #100010,R0      ;DSC,STD
2058  007550  020001                          CMP     R0,R1   ;EXPECTED VS ACTUAL
2059  007552  001401                          BEQ     .+4
2060  007554  104001                          HLT     1       ;ONLY DSC & STD  SHOULD BE SET
2061  007556  000167  000124                  JMP     OUT1    ;JUMP AROUND
2062  007562  052777  000010  010110  OUT3:   BIS     #STD,@RXCSR
2063                                          ;WAIT FOR CABLE DELAYS
2064                                          ;****************************************
2065                                          ;MODIFY "HOLD:"  ACCORDINGLY FOR FASTER OR SLOWER  MACHINE
2066                                          ;****************************************
2067  007570  016702  171342                  MOV     HOLD,R2 ;SET DELAY TIME
2068  007574                          648:
2069  007574  005302                          DEC     R2
2070  007576  001376                          BNE     648     ;WAIT THIS TIME
2071                                          ;OK NOW FALL THRU AND CONTINUE TESTING.....
2072                                          ;EXIT STAGE LEFT....CHINNNG!
2073  007600  017701  010074                  MOV     @RXCSR,R1       ;ACTUAL
2074  007604  012700  171016                  MOV     #171016,R0      ;EXPECTED: DSC,RING,CTS,CARDET,DSR,STD,RTS,DTR
2075  007610  020001                          CMP     R0,R1   ;EXPECTED VS ACTUAL
2076  007612  001401                          BEQ     .+4
2077  007614  104001                          HLT     1       ;CHECK SEC REC JUMPER
2078  007616  042777  000004  010054          BIC     #RTS,@RXCSR
2079                                          ;WAIT FOR CABLE DELAYS
```

m3

```
2080                                                    ;*****************************************
2081                                                    ;MODIFY "HOLD:"  ACCORDINGLY FOR FASTER OR SLOWER  MACHINE
2082                                                    ;*****************************************
2083  007624  016702  171306                           MOV     HOLD,R2 ;SET DELAY TIME
2084  007630                                  658:
2085  007630  005302                                   DEC     R2
2086  007632  001376                                   BNE     658     ;WAIT THIS TIME
2087                                                    ;OK NOW FALL THRU AND CONTINUE TESTING.....
2088                                                    ;EXIT STAGE LEFT....CHINNNG!
2089  007634  017701  010040                           MOV     @RXCSR,R1       ;ACTUAL
2090  007640  012700  131012                           MOV     #131012,R0      ;EXPECTED: DSC,CTS,CARDET,DSR,STD,DTR
2091  007644  020001                                   CMP     R0,R1   ;EXPECTED VS ACTUAL
2092  007646  001401                                   BEQ     .+4
2093  007650  104001                                   HLT     1       ;CHECK H315 CONNECTOR
2094  007652  042777  000002  010020                   BIC     #DTR,@RXCSR
2095                                                    ;WAIT FOR CABLE DELAYS
2096                                                    ;*****************************************
2097                                                    ;MODIFY "HOLD:"  ACCORDINGLY FOR FASTER OR SLOWER  MACHINE
2098                                                    ;*****************************************
2099  007660  016702  171252                           MOV     HOLD,R2 ;SET DELAY TIME
2100  007664                                  668:
2101  007664  005302                                   DEC     R2
2102  007666  001376                                   BNE     668     ;WAIT THIS TIME
2103                                                    ;OK NOW FALL THRU AND CONTINUE TESTING.....
2104                                                    ;EXIT STAGE LEFT....CHINNNG!
2105  007670  017701  010004                           MOV     @RXCSR,R1       ;ACTUAL
2106  007674  012700  101010                           MOV     #101010,R0      ;EXPECTED: DSC,DSR,STD
2107  007700  020001                                   CMP     R0,R1   ;EXPECTED VS ACTUAL
2108  007702  001401                                   BEQ     .+4
2109  007704  104001                                   HLT     1       ;CHECK H315 CONNECTOR
2110  007706  104400                          OUT1:    SCOPE
2111
2112                                                    ;;THIS TEST VERIFYS THAT RECACT (REC ACTIVE) ASSERTS
2113                                                    ;;IMMED. WHEN SYNC EXTERNAL MODE IS SELECTED
2114                                                    ;;AND SYNC SEARCH IS SET
2115                                                    ;;
2116  007710  012767  000052  171210  TST42:  MOV     #42,TSTNO       ;SAVE THIS
2117  007716  012767  010036  171172           MOV     #TST43,NEXT             ;GO TO THIS TEST WHEN THRU
2118  007724  052777  000400  007762           BIS     #MRESET,@TXCSR  ;MASTER RESET
2119  007732  012777  020000  007750           MOV     #SYNEXT,@PARCSR ;SET THE MODE
2120  007740  052777  000400  007746           BIS     #MRESET,@TXCSR  ;MASTER RESET
2121
2122                                          ;SET MAINT DATA,CLK,BREAK,&MAINTENANCE MODE
2123  007746  012777  064001  007740           MOV     #MTDATA!CLK!MINT!BREAK,@TXCSR
2124
2125                                          ;SET MODE ,# OF BITS,PARITY SENSE,&LOAD SYNC REG
2126  007754  012777  026026  007726           MOV     #SYNEXT!EIGHT!NOPAR!26,@PARCSR
2127  007762  032777  004000  007710           BIT     #RECACT,@RXCSR
2128  007770  001401                           BEQ     648
2129  007772  104000                           HLT             ;RECACT SHOULD NOT BE SET
2130  007774                                  648:
2131  007774  052777  000020  007676           BIS     #SYNSCH,@RXCSR  ;SET SYNC SEARCH
2132  010002  032777  004000  007670           BIT     #RECACT,@RXCSR
2133  010010  001001                           BNE     658
2134  010012  104000                           HLT             ;RECACT DID NOT ASSERT
2135  010014                                  658:
```

```
 2136  010014  042777  000020  007656          BIC     #SYNSCH,@RXCSR  ;DROP SEARCH SYNC
 2137  010022  032777  004000  007650          BIT     #RECACT,@RXCSR  ;IS IT =0?
 2138  010030  001401                          BEQ     668
 2139  010032  104000                          HLT     ;RECACT SHOULD BE 0
 2140  010034                          668:
 2141  010034  104400                          SCOPE
 2142                                           ;;THIS TEST VERIFYS THAT RECACT (REC ACTIVE) ASSERTS
 2143                                           ;;IMMED. WHEN ISOCRONOUS MODE IS SELECTED
 2144                                           ;;AND SYNC SEARCH IS SET
 2145                                           ;;
 2146  010036  012767  000053  171062  TST43:  MOV     #43,TSTNO       ;SAVE THIS
 2147  010044  012767  010164  171044          MOV     #TST44,NEXT             ;GO TO THIS TEST WHEN THRU
 2148  010052  052777  000400  007634          BIS     #MRESET,@TXCSR  ;MASTER RESET
 2149  010060  012777  000000  007622          MOV     #ISYMOD,@PARCSR ;SET THE MODE
 2150  010066  052777  000400  007620          BIS     #MRESET,@TXCSR  ;MASTER RESET
 2151
 2152                                  ;SET MAINT DATA,CLK,BREAK,&MAINTENANCE MODE
 2153  010074  012777  064001  007612          MOV     #MTDATA!CLK!MINT!BREAK,@TXCSR
 2154
 2155                                  ;SET MODE ,# OF BITS,PARITY SENSE,&LOAD SYNC REG
 2156  010102  012777  006026  007600          MOV     #ISYMOD!EIGHT!NOPAR!26,@PARCSR
 2157  010110  032777  004000  007562          BIT     #RECACT,@RXCSR
 2158  010116  001401                          BEQ     648
 2159  010120  104000                          HLT             ;RECACT SHOULD NOT BE SET
 2160  010122                          648:
 2161  010122  052777  000020  007550          BIS     #SYNSCH,@RXCSR  ;SET SYNC SEARCH
 2162  010130  032777  004000  007542          BIT     #RECACT,@RXCSR
 2163  010136  001001                          BNE     658
 2164  010140  104000                          HLT             ;RECACT DID NOT ASSERT
 2165  010142                          658:
 2166  010142  042777  000020  007530          BIC     #SYNSCH,@RXCSR  ;DROP SEARCH SYNC
 2167  010150  032777  004000  007522          BIT     #RECACT,@RXCSR  ;IS IT =0?
 2168  010156  001401                          BEQ     668
 2169  010160  104000                          HLT     ;RECACT SHOULD BE 0
 2170  010162                          668:
 2171  010162  104400                          SCOPE
 2172                                           ;;VERIFY THE MATCH DETECT & DATA RDY FLAGS BY PUMPING
 2173                                           ;;IN TWO * SYNC CHARS THRU MAINT DATA BIT
 2174                                           ;;WATCH THE RECACT BIT
 2175                                           ;;ON THE THIRD * CHARACTER IT SHOULD SET RXDONE
 2176                                           ;;*: DEPENDENT ON MONITOR.............
 2177                                           ;;IF ONE SYNC STRAP IS SELECTED THEN IT WILL ONLY
 2178                                           ;;TAKE ONE SYNC CHARACTER FOR RXDONE TO ASSERT
 2179                                           ;;ON THE SECOND CHARACTER
 2180                                           ;;ALSO CHECK THIS CHARACTER IN RXDBUF
 2181                                           ;;AND CHECK OPERATION OF SYNSCH
 2182                                           ;;MODE: SYNC INTERNAL
 2183                                           ;;LENGTH:FIVE
 2184                                           ;;
 2185  010164  012767  000054  170734  TST44:  MOV     #44,TSTNO       ;SAVE THIS
 2186  010172  012767  010506  170716          MOV     #TST45,NEXT             ;GO TO THIS TEST WHEN THRU
 2187  010200  052777  000400  007506          BIS     #MRESET,@TXCSR  ;MASTER RESET
 2188  010206  012777  030000  007474          MOV     #SYNINT,@PARCSR ;SET THE MODE
 2189  010214  052777  000400  007472          BIS     #MRESET,@TXCSR  ;MASTER RESET
 2190
 2191                                  ;SET MAINT DATA,CLK,BREAK,&MAINTENANCE MODE
```

```
2192  010222  012777  064001  007464          MOV     #MTDATA!CLK!MINT!BREAK,@TXCSR
2193
2194                                  ;SET MODE ,# OF BITS,PARITY SENSE,&LOAD SYNC REG
2195  010230  012777  030026  007452          MOV     #SYNINT!FIVE!NOPAR!26,@PARCSR
2196  010236  016703  007442                  MOV     RXDBUF,R3       ;SET UP FOR ERROR MESSAGE
2197  010242  052777  000020  007430          BIS     #SYNSCH,@RXCSR  ;SET SYNC SEARCH
2198                                  ;POKE CLK TO GET RECEIVER INTO SYNCROIZATION....
2199  010250  042777  020000  007436          BIC     #CLK,@TXCSR     ;POKE CLK DOWN
2200  010256  052777  020000  007430          BIS     #CLK,@TXCSR     ;POKE CLK UP
2201                                  ;POKE CLK TO GET LOGIC INTO SYNCRONIZATION
2202  010264  042777  020000  007422          BIC     #CLK,@TXCSR     ;POKE CLK DOWN
2203  010272  052777  020000  007414          BIS     #CLK,@TXCSR     ;POKE CLK UP
2204  010300  012767  000002  170634          MOV     #2,COUNT
2205  010306  012767  000005  170624  18:     MOV     #5,SHIFT        ;# OF SHIFTS
2206  010314  012767  000026  170622          MOV     #26,TEMP1       ;SYNC CHARACTER
2207  010322  004767  007056                  JSR     PC,RPOKE
2208  010326  005367  170610                  DEC     COUNT
2209  010332  001403                          BEQ     28
2210                                  ;TEST SYNCNO TO SEE HOW MANY SYNC CHARS WERE SELECTED
2211  010334  105767  170636                  TSTB    SYNCNO
2212  010340  100762                          BMI     18      ;TWO SYNC CHARS
2213  010342  105777  007332          28:     TSTB    @RXCSR  ;CHECK REC DONE BIT
2214  010346  100001                          BPL     648
2215  010350  104000                          HLT             ;RXDONE SHOULD NOT BE ASSERTED
2216  010352                          648:
2217  010352  032777  004000  007320          BIT     #RECACT,@RXCSR
2218  010360  001001                          BNE     658
2219  010362  104000                          HLT             ;RECACT SHOULD BE ASSERTED
2220  010364                          658:
2221  010364  012767  000005  170546          MOV     #5,SHIFT
2222  010372  012767  000021  170544          MOV     #21,TEMP1       ;ANY CHARACTER
2223  010400  004767  007000                  JSR     PC,RPOKE
2224  010404  105777  007270                  TSTB    @RXCSR  ;CHECK RXDONE
2225  010410  100001                          BMI     668
2226  010412  104000                          HLT             ;RXDONE SHOULD BE ASSERTED
2227  010414                          668:
2228  010414  032777  004000  007256          BIT     #RECACT,@RXCSR
2229  010422  001001                          BNE     678
2230  010424  104000                          HLT             ;RECACT SHOULD STILL BE ASSERTED
2231  010426                          678:
2232  010426  042777  000020  007244          BIC     #SYNSCH,@RXCSR  ;CLR SYNC SEARCH
2233  010434  032777  004000  007236          BIT     #RECACT,@RXCSR  ;IT SHOULD DROP IMMEDIATELY
2234  010442  001401                          BEQ     688
2235  010444  104000                          HLT             ;RECACT SHOULD BE CLR
2236  010446                          688:
2237  010446  105777  007226                  TSTB    @RXCSR  ;RXDONE
2238  010452  100001                          BMI     698
2239  010454  104000                          HLT             ;RXDONE SHOULD STILL BE ASSERTED
2240  010456                          698:
2241  010456  012700  000021                  MOV     #21,R0  ;EXPECTED DATA
2242  010462  017701  007216                  MOV     @RXDBUF,R1      ;ACTUAL DATA
2243  010466  020001                          CMP     R0,R1   ;COMPARE EXP VS ACT
2244  010470  001401                          BEQ     708
2245  010472  104002                          HLT     2       ;DATA CHARS SHOULD COMPARE
2246  010474                          708:
2247  010474  105777  007200                  TSTB    @RXCSR  ;CHECK RXDONE
```

```
2248  010500  100001                          BPL     718
2249  010502  104000                          HLT     ;RXDONE SHOULD BE CLR FROM
2250  010504                          718:
2251                                          ;PREVIOUS READING OF RXDBUF
2252  010504  104400                          SCOPE
2253                                          ;;VERIFY THE MATCH DETECT & DATA RDY FLAGS BY PUMPING
2254                                          ;;IN TWO * SYNC CHARS THRU MAINT DATA BIT
2255                                          ;;WATCH THE RECACT BIT
2256                                          ;;ON THE THIRD * CHARACTER IT SHOULD SET RXDONE
2257                                          ;;*: DEPENDENT ON MONITOR.............
2258                                          ;;IF ONE SYNC STRAP IS SELECTED THEN IT WILL ONLY
2259                                          ;;TAKE ONE SYNC CHARACTER FOR RXDONE TO ASSERT
2260                                          ;;ON THE SECOND CHAPACTER
2261                                          ;;ALSO CHECK THIS CHARACTER IN RXDBUF
2262                                          ;;AND CHECK OPERATION OF SYNSCH
2263                                          ;;MODE: SYNC INTERNAL
2264                                          ;;LENGTH:SIX
2265                                          ;;
2266  010506  012767  000055  170412  TST45:  MOV     #45,TSTNO       ;SAVE THIS
2267  010514  012767  011030  170374          MOV     #TST46,NEXT             ;GO TO THIS TEST WHEN THRU
2268  010522  052777  000400  007164          BIS     #MPRESET,@TXCSR ;MASTER RESET
2269  010530  012777  030000  007152          MOV     #SYNINT,@PARCSR ;SET THE MODE
2270  010536  052777  000400  007150          BIS     #MPRESET,@TXCSR ;MASTER RESET
2271
2272                                  ;SET MAINT DATA,CLK,BREAK,&MAINTENANCE MODE
2273  010544  012777  064001  007142          MOV     #MTDATA!CLK!MINT!BREAK,@TXCSR
2274
2275                                  ;SET MODE ,# OF BITS,PARITY SENSE,&LOAD SYNC REG
2276  010552  012777  032026  007130          MOV     #SYNINT!SIX!NOPAR!26,@PARCSR
2277  010560  016703  007120                  MOV     RXDBUF,R3       ;SET UP FOR ERROR MESSAGE
2278  010564  052777  000020  007106          BIS     #SYNSCH,@RXCSR  ;SET SYNC SEARCH
2279                                  ;POKE CLK TO GET RECEIVER INTO SYNCROIZATION....
2280  010572  042777  020000  007114          BIC     #CLK,@TXCSR     ;POKE CLK DOWN
2281  010600  052777  020000  007106          BIS     #CLK,@TXCSR     ;POKE CLK UP
2282                                  ;POKE CLK TO GET LOGIC INTO SYNCRONIZATION
2283  010606  042777  020000  007100          BIC     #CLK,@TXCSR     ;POKE CLK DOWN
2284  010614  052777  020000  007072          BIS     #CLK,@TXCSR     ;POKE CLK UP
2285  010622  012767  000002  170312          MOV     #2,COUNT
2286  010630  012767  000006  170302  18:     MOV     #6,SHIFT        ;# OF SHIFTS
2287  010636  012767  000026  170300          MOV     #26,TEMP1       ;SYNC CHARACTER
2288  010644  004767  006534                  JSR     PC,RPOKE
2289  010650  005367  170266                  DEC     COUNT
2290  010654  001403                          BEQ     28
2291                                  ;TEST SYNCNO TO SEE HOW MANY SYNC CHARS WERE SELECTED
2292  010656  105767  170314                  TSTB    SYNCNO
2293  010662  100762                          BMI     18      ;TWO SYNC CHARS
2294  010664  105777  007010          28:     TSTB    @RXCSR  ;CHECK REC DONE BIT
2295  010670  100001                          BPL     648
2296  010672  104000                          HLT             ;RXDONE SHOULD NOT BE ASSERTED
2297  010674                          648:
2298  010674  032777  004000  006776          BIT     #RECACT,@RXCSR
2299  010702  001001                          BNE     658
2300  010704  104000                          HLT             ;RECACT SHOULD BE ASSERTED
2301  010706                          658:
2302  010706  012767  000006  170224          MOV     #6,SHIFT
2303  010714  012767  000021  170222          MOV     #21,TEMP1       ;ANY CHARACTER
```

```
 2304  010722  004767  006456                    JSR     PC,PPOKE
 2305  010726  105777  006746                    TSTB    @RXCSR  ;CHECK RXDONE
 2306  010732  100401                            BMI     668
 2307  010734  104000                            HLT             ;RXDONE SHOULD BE ASSERTED
 2308  010736                            668:
 2309  010736  032777  004000  006734            BIT     #RECACT,@RXCSR
 2310  010744  001001                            BNE     678
 2311  010746  104000                            HLT             ;RECACT SHOULD STILL BE ASSERTED
 2312  010750                            678:
 2313  010750  042777  000020  006722            BIC     #SYNSCH,@RXCSR  ;CLR SYNC SEARCH
 2314  010756  032777  004000  006714            BIT     #RECACT,@RXCSR  ;IT SHOULD DROP IMMEDIATELY
 2315  010764  001401                            BEQ     688
 2316  010766  104000                            HLT             ;RECACT SHOULD BE CLR
 2317  010770                            688:
 2318  010770  105777  006704                    TSTB    @RXCSR  ;RXDONE
 2319  010774  100401                            BMI     698
 2320  010776  104000                            HLT             ;RXDONE SHOULD STILL BE ASSERTED
 2321  011000                            698:
 2322  011000  012700  000021                    MOV     #21,R0  ;EXPECTED DATA
 2323  011004  017701  006674                    MOV     @RXDBUF,R1      ;ACTUAL DATA
 2324  011010  020001                            CMP     R0,R1   ;COMPARE EXP VS ACT
 2325  011012  001401                            BEQ     708
 2326  011014  104002                            HLT     2       ;DATA CHARS SHOULD COMPARE
 2327  011016                            708:
 2328  011016  105777  006656                    TSTB    @RXCSR  ;CHECK RXDONE
 2329  011022  100001                            BPL     718
 2330  011024  104000                            HLT     ;RXDONE SHOULD BE CLR FROM
 2331  011026                            718:
 2332                                                    ;PREVIOUS READING OF RXDBUF
 2333  011026  104400                            SCOPE
 2334                                             ;;VERIFY THE MATCH DETECT & DATA RDY FLAGS BY PUMPING
 2335                                             ;;IN TWO * SYNC CHARS THRU MAINT DATA BIT
 2336                                             ;;WATCH THE RECACT BIT
 2337                                             ;;ON THE THIRD * CHARACTER IT SHOULD SET RXDONE
 2338                                             ;;*: DEPENDENT ON MONITOR.............
 2339                                             ;;IF ONE SYNC STRAP IS SELECTED THEN IT WILL ONLY
 2340                                             ;;TAKE ONE SYNC CHARACTER FOR RXDONE TO ASSERT
 2341                                             ;;ON THE SECOND CHARACTER
 2342                                             ;;ALSO CHECK THIS CHARACTER IN RXDBUF
 2343                                             ;;AND CHECK OPERATION OF SYNSCH
 2344                                             ;;MODE: SYNC INTERNAL
 2345                                             ;;LENGTH:SEVEN
 2346                                             ;;
 2347  011030  012767  000056  170070  TST46:     MOV     #46,TSTNO       ;SAVE THIS
 2348  011036  012767  011352  170052            MOV     #TST47,NEXT             ;GO TO THIS TEST WHEN THRU
 2349  011044  052777  000400  006642            BIS     #MRESET,@TXCSR  ;MASTER RESET
 2350  011052  012777  030000  006630            MOV     #SYNINT,@PARCSR ;SET THE MODE
 2351  011060  052777  000400  006626            BIS     #MRESET,@TXCSR  ;MASTER RESET
 2352
 2353                                     ;SET MAINT DATA,CLK,BREAK,&MAINTENANCE MODE
 2354  011066  012777  064001  006620            MOV     #MTDATA!CLK!MINT!BREAK,@TXCSR
 2355
 2356                                     ;SET MODE ,# OF BITS,PARITY SENSE,&LOAD SYNC REG
 2357  011074  012777  034026  006606            MOV     #SYNINT!SEVEN!NOPAR!26,@PARCSR
 2358  011102  016703  006576                    MOV     RXDBUF,R3       ;SET UP FOR ERROR MESSAGE
 2359  011106  052777  000020  006564            BIS     #SYNSCH,@RXCSR  ;SET SYNC SEARCH
```

```
2360                                                    ;POKE CLK TO GET RECEIVER INTO SYNCROIZATION....
2361  011114  042777  020000  006572                    BIC     #CLK,@TXCSR     ;POKE CLK DOWN
2362  011122  052777  020000  006564                    BIS     #CLK,@TXCSR     ;POKE CLK UP
2363                                          ;POKE CLK TO GET LOGIC INTO SYNCRONIZATION
2364  011130  042777  020000  006556                    BIC     #CLK,@TXCSR     ;POKE CLK DOWN
2365  011136  052777  020000  006550                    BIS     #CLK,@TXCSR     ;POKE CLK UP
2366  011144  012767  000002  167770                    MOV     #2,COUNT
2367  011152  012767  000007  167760  18:               MOV     #7,SHIFT        ;# OF SHIFTS
2368  011160  012767  000026  167756                    MOV     #26,TEMP1       ;SYNC CHARACTER
2369  011166  004767  006212                            JSR     PC,RPOKE
2370  011172  005367  167744                            DEC     COUNT
2371  011176  001403                                    BEQ     28
2372                                                    ;TEST SYNCNO TO SEE HOW MANY SYNC CHARS WERE SELECTED
2373  011200  105767  167772                            TSTB    SYNCNO
2374  011204  100762                                    BMI     18      ;TWO SYNC CHARS
2375  011206  105777  006466          28:               TSTB    @RXCSR  ;CHECK REC DONE BIT
2376  011212  100001                                    BPL     648
2377  011214  104000                                    HLT             ;RXDONE SHOULD NOT BE ASSERTED
2378  011216                                  648:
2379  011216  032777  004000  006454                    BIT     #RECACT,@RXCSR
2380  011224  001001                                    BNE     658
2381  011226  104000                                    HLT             ;RECACT SHOULD BE ASSERTED
2382  011230                                  658:
2383  011230  012767  000007  167702                    MOV     #7,SHIFT
2384  011236  012767  000021  167700                    MOV     #21,TEMP1       ;ANY CHARACTER
2385  011244  004767  006134                            JSR     PC,RPOKE
2386  011250  105777  006424                            TSTB    @RXCSR  ;CHECK RXDONE
2387  011254  100401                                    BMI     668
2388  011256  104000                                    HLT             ;RXDONE SHOULD BE ASSERTED
2389  011260                                  668:
2390  011260  032777  004000  006412                    BIT     #RECACT,@RXCSR
2391  011266  001001                                    BNE     678
2392  011270  104000                                    HLT             ;RECACT SHOULD STILL BE ASSERTED
2393  011272                                  678:
2394  011272  042777  000020  006400                    BIC     #SYNSCH,@RXCSR  ;CLR SYNC SEARCH
2395  011300  032777  004000  006372                    BIT     #RECACT,@RXCSR  ;IT SHOULD DROP IMMEDIATELY
2396  011306  001401                                    BEQ     688
2397  011310  104000                                    HLT             ;RECACT SHOULD BE CLR
2398  011312                                  688:
2399  011312  105777  006362                            TSTB    @RXCSR  ;RXDONE
2400  011316  100401                                    BMI     698
2401  011320  104000                                    HLT             ;RXDONE SHOULD STILL BE ASSERTED
2402  011322                                  698:
2403  011322  012700  000021                            MOV     #21,R0  ;EXPECTED DATA
2404  011326  017701  006352                            MOV     @RXDBUF,R1      ;ACTUAL DATA
2405  011332  020001                                    CMP     R0,R1   ;COMPARE EXP VS ACT
2406  011334  001401                                    BEQ     708
2407  011336  104002                                    HLT     2       ;DATA CHARS SHOULD COMPARE
2408  011340                                  708:
2409  011340  105777  006334                            TSTB    @RXCSR  ;CHECK RXDONE
2410  011344  100001                                    BPL     718
2411  011346  104000                                    HLT     ;RXDONE SHOULD BE CLR FROM
2412  011350                                  718:
2413                                                    ;PREVIOUS READING OF RXDBUF
2414  011350  104400                                    SCOPE
2415                                                    ;;VERIFY THE MATCH DETECT & DATA RDY FLAGS BY PUMPING
```

```
2416                                                    ;;IN TWO * SYNC CHARS THRU MAINT DATA BIT
2417                                                    ;;WATCH THE RECACT BIT
2418                                                    ;;ON THE THIRD * CHARACTER IT SHOULD SET RXDONE
2419                                                    ;;*: DEPENDENT ON MONITOR.............
2420                                                    ;;IF ONE SYNC STRAP IS SELECTED THEN IT WILL ONLY
2421                                                    ;;TAKE ONE SYNC CHARACTER FOR RXDONE TO ASSERT
2422                                                    ;;ON THE SECOND CHARACTER
2423                                                    ;;ALSO CHECK THIS CHARACTER IN RXDBUF
2424                                                    ;;AND CHECK OPERATION OF SYNSCH
2425                                                    ;;MODE: SYNC INTERNAL
2426                                                    ;;LENGTH:EIGHT
2427                                                    ;;
2428  011352  012767  000057  167546  TST47:  MOV     #47,TSTNO       ;SAVE THIS
2429  011360  012767  011674  167530           MOV     #TST48,NEXT             ;GO TO THIS TEST WHEN THRU
2430  011366  052777  000400  006320           BIS     #MRESET,@TXCSR  ;MASTER RESET
2431  011374  012777  030000  006306           MOV     #SYNINT,@PARCSR ;SET THE MODE
2432  011402  052777  000400  006304           BIS     #MRESET,@TXCSR  ;MASTER RESET
2433
2434                                          ;SET MAINT DATA,CLK,BREAK,&MAINTENANCE MODE
2435  011410  012777  064001  006276           MOV     #MTDATA!CLK!MINT!BREAK,@TXCSR
2436
2437                                          ;SET MODE ,# OF BITS,PARITY SENSE,&LOAD SYNC REG
2438  011416  012777  036026  006264           MOV     #SYNINT!EIGHT!NOPAR!26,@PARCSR
2439  011424  016703  006254                   MOV     RXDBUF,R3       ;SET UP FOR ERROR MESSAGE
2440  011430  052777  000020  006242           BIS     #SYNSCH,@RXCSR  ;SET SYNC SEARCH
2441                                          ;POKE CLK TO GET RECEIVER INTO SYNCROIZATION....
2442  011436  042777  020000  006250           BIC     #CLK,@TXCSR     ;POKE CLK DOWN
2443  011444  052777  020000  006242           BIS     #CLK,@TXCSR     ;POKE CLK UP
2444                                          ;POKE CLK TO GET LOGIC INTO SYNCRONIZATION
2445  011452  042777  020000  006234           BIC     #CLK,@TXCSR     ;POKE CLK DOWN
2446  011460  052777  020000  006226           BIS     #CLK,@TXCSR     ;POKE CLK UP
2447  011466  012767  000002  167446           MOV     #2,COUNT
2448  011474  012767  000010  167436  18:      MOV     #8.,SHIFT       ;# OF SHIFTS
2449  011502  012767  000026  167434           MOV     #26,TEMP1       ;SYNC CHARACTER
2450  011510  004767  005670                   JSR     PC,RPOKE
2451  011514  005367  167422                   DEC     COUNT
2452  011520  001403                           BEQ     28
2453                                          ;TEST SYNCNO TO SEE HOW MANY SYNC CHARS WERE SELECTED
2454  011522  105767  167450                   TSTB    SYNCNO
2455  011526  100762                           BMI     18      ;TWO SYNC CHARS
2456  011530  105777  006144           28:     TSTB    @RXCSR  ;CHECK REC DONE BIT
2457  011534  100001                           BPL     648
2458  011536  104000                           HLT             ;RXDONE SHOULD NOT BE ASSERTED
2459  011540                           648:
2460  011540  032777  004000  006132           BIT     #RECACT,@RXCSR
2461  011546  001001                           BNE     658
2462  011550  104000                           HLT             ;RECACT SHOULD BE ASSERTED
2463  011552                           658:
2464  011552  012767  000010  167360           MOV     #8.,SHIFT
2465  011560  012767  000021  167356           MOV     #21,TEMP1       ;ANY CHARACTER
2466  011566  004767  005612                   JSR     PC,RPOKE
2467  011572  105777  006102                   TSTB    @RXCSR  ;CHECK RXDONE
2468  011576  100401                           BMI     668
2469  011600  104000                           HLT             ;RXDONE SHOULD BE ASSERTED
2470  011602                           668:
2471  011602  032777  004000  006070           BIT     #RECACT,@RXCSR
```

```
 2472  011610  001001                          BNE     678
 2473  011612  104000                          HLT             ;RECACT SHOULD STILL BE ASSERTED
 2474  011614                          678:
 2475  011614  042777  000020  006056          BIC     #SYNSCH,@RXCSR  ;CLR SYNC SEARCH
 2476  011622  032777  004000  006050          BIT     #RECACT,@RXCSR  ;IT SHOULD DROP IMMEDIATELY
 2477  011630  001401                          BEQ     688
 2478  011632  104000                          HLT             ;RECACT SHOULD BE CLR
 2479  011634                          688:
 2480  011634  105777  006040                  TSTB    @RXCSR  ;RXDONE
 2481  011640  100401                          BMI     698
 2482  011642  104000                          HLT             ;RXDONE SHOULD STILL BE ASSERTED
 2483  011644                          698:
 2484  011644  012700  000021                  MOV     #21,R0  ;EXPECTED DATA
 2485  011650  017701  006030                  MOV     @RXDBUF,R1      ;ACTUAL DATA
 2486  011654  020001                          CMP     R0,R1   ;COMPARE EXP VS ACT
 2487  011656  001401                          BEQ     708
 2488  011660  104002                          HLT     2       ;DATA CHARS SHOULD COMPARE
 2489  011662                          708:
 2490  011662  105777  006012                  TSTB    @RXCSR  ;CHECK RXDONE
 2491  011666  100001                          BPL     718
 2492  011670  104000                          HLT     ;RXDONE SHOULD BE CLR FROM
 2493  011672                          718:
 2494                                          ;PREVIOUS READING OF RXDBUF
 2495  011672  104400                          SCOPE
 2496                                          ;;THIS TEST VERIFYS WORD LENGTH SELECT OF THE
 2497                                          ;;RECEIVER SECTION,IT USES THE ERROR FLAGS
 2498                                          ;;TO DETERMINE THAT IT WAS SELECTED CORRECTLY
 2499                                          ;;(OVRUN,RXERR)
 2500                                          ;;MODE:ISYMOD
 2501                                          ;;LENGTH:FIVE
 2502                                          ;;CHAR:25
 2503                                          ;;
 2504  011674  012767  000060  167224  TST48:  MOV     #48,TSTNO       ;SAVE THIS
 2505  011702  012767  012136  167206          MOV     #TST49,NEXT             ;GO TO THIS TEST WHEN THRU
 2506  011710  052777  000400  005776          BIS     #MRESET,@TXCSR  ;MASTER RESET
 2507  011716  012777  000000  005764          MOV     #ISYMOD,@PARCSR ;SET THE MODE
 2508  011724  052777  000400  005762          BIS     #MRESET,@TXCSR  ;MASTER RESET
 2509
 2510                                  ;SET MAINT DATA,CLK,BREAK,&MAINTENANCE MODE
 2511  011732  012777  064001  005754          MOV     #MTDATA!CLK!MINT!BREAK,@TXCSR
 2512
 2513                                  ;SET MODE ,# OF BITS,PARITY SENSE,&LOAD SYNC REG
 2514  011740  012777  000000  005742          MOV     #ISYMOD!FIVE!NOPAR!0,@PARCSR
 2515  011746  052777  000020  005724          BIS     #SYNSCH,@RXCSR  ;SET SYNC SEARCH
 2516                                          ;POKE CLK TO GET RECEIVER INTO SYNCROIZATION....
 2517  011754  042777  020000  005732          BIC     #CLK,@TXCSR     ;POKE CLK DOWN
 2518  011762  052777  020000  005724          BIS     #CLK,@TXCSR     ;POKE CLK UP
 2519                                  ;POKE CLK TO GET LOGIC INTO SYNCRONIZATION
 2520  011770  042777  020000  005716          BIC     #CLK,@TXCSR     ;POKE CLK DOWN
 2521  011776  052777  020000  005710          BIS     #CLK,@TXCSR     ;POKE CLK UP
 2522  012004  016703  005674                  MOV     RXDBUF,R3       ;SET UP FOR ERROR MESSAGE
 2523  012010  012700  000025                  MOV     #25,R0  ;EXPECTED
 2524  012014  012767  000007  167116          MOV     #7,SHIFT        ;# OF SHIFTS
 2525  012022  012767  000152  167114          MOV     #152,TEMP1      ;DATA CHAR
 2526  012030  004767  005350                  JSR     PC,RPOKE        ;SHIFT IN THIS CHAR
 2527  012034  105777  005640                  TSTB    @RXCSR  ;RXDONE ?
```

```
2528  012040  100401                          BMI     648
2529  012042  104000                          HLT     ;RXDONE SHOULD BE SET
2530  012044                          648:
2531  012044  017701  005634                  MOV     @RXDBUF,R1      ;ACTUAL
2532  012050  020001                          CMP     R0,R1   ;COMPARE EXPECTED VS. ACTUAL
2533  012052  001401                          BEQ     658
2534  012054  104002                          HLT     2       ;RECEIVED DATA DID NOT MATCH
2535                                                          ;EXPECTED DATA - CHECK MAINT DATA
2536                                                          ;OR RECEIVER LOGIC
2537  012056                          658:
2538  012056  012767  000007  167054          MOV     #7,SHIFT        ;# OF SHIFTS
2539  012064  012767  000152  167052          MOV     #152,TEMP1      ;DATA CHAR
2540  012072  004767  005306                  JSR     PC,RPOKE        ;SHIFT IN THIS CHAR
2541                          ;NOW SHIFT IN A SECOND CHARACTER WITHOUT READING RXDBUF
2542  012076  012767  000007  167034          MOV     #7,SHIFT        ;# OF SHIFTS
2543  012104  012767  000152  167032          MOV     #152,TEMP1      ;DATA CHAR
2544  012112  004767  005266                  JSR     PC,RPOKE        ;SHIFT IN THIS CHAR
2545  012116  012700  140025                  MOV     #140000125,R0   ;EXPECTED DATA PLUS
2546                                                          ;RXERR & OVRRUN
2547  012122  017701  005556                  MOV     @RXDBUF,R1      ;ACTUAL
2548  012126  020001                          CMP     R0,R1   ;COMPARE EXP VS. ACT
2549  012130  001401                          BEQ     668
2550  012132  104002                          HLT     2       ;SPECIFICALLY LOOK AT RXERR &
2551                                                          ;OVRRUN BITS...THEY BOTH SHOULD BE SET
2552  012134                          668:
2553  012134  104400                          SCOPE
2554                                          ;;THIS TEST VERIFYS WORD LENGTH SELECT OF THE
2555                                          ;;RECEIVER SECTION,IT USES THE ERROR FLAGS
2556                                          ;;TO DETERMINE THAT IT WAS SELECTED CORRECTLY
2557                                          ;;(OVRRUN,RXERR)
2558                                          ;;MODE:ISYMOD
2559                                          ;;LENGTH:FIVE
2560                                          ;;CHAR:12
2561                                          ;;
2562  012136  012767  000061  166762  TST49:  MOV     #49,TSTNO       ;SAVE THIS
2563  012144  012767  012400  166744          MOV     #TST50,NEXT             ;GO TO THIS TEST WHEN THRU
2564  012152  052777  000400  005534          BIS     #MRESET,@TXCSR  ;MASTER RESET
2565  012160  012777  000000  005522          MOV     #ISYMOD,@PARCSR ;SET THE MODE
2566  012166  052777  000400  005520          BIS     #MRESET,@TXCSR  ;MASTER RESET
2567
2568                          ;SET MAINT DATA,CLK,BREAK,&MAINTENANCE MODE
2569  012174  012777  064001  005512          MOV     #MTDATA!CLK!MINT!BREAK,@TXCSR
2570
2571                          ;SET MODE ,# OF BITS,PARITY SENSE,&LOAD SYNC REG
2572  012202  012777  000000  005500          MOV     #ISYMOD!FIVE!NOPAR!0,@PARCSR
2573  012210  052777  000020  005462          BIS     #SYNSCH,@RXCSR  ;SET SYNC SEARCH
2574                                          ;POKE CLK TO GET RECEIVER INTO SYNCROIZATION....
2575  012216  042777  020000  005470          BIC     #CLK,@TXCSR     ;POKE CLK DOWN
2576  012224  052777  020000  005462          BIS     #CLK,@TXCSR     ;POKE CLK UP
2577                          ;POKE CLK TO GET LOGIC INTO SYNCRONIZATION
2578  012232  042777  020000  005454          BIC     #CLK,@TXCSR     ;POKE CLK DOWN
2579  012240  052777  020000  005446          BIS     #CLK,@TXCSR     ;POKE CLK UP
2580  012246  016703  005432                  MOV     RXDBUF,R3       ;SET UP FOR ERROR MESSAGE
2581  012252  012700  000012                  MOV     #12,R0  ;EXPECTED
2582  012256  012767  000007  166654          MOV     #7,SHIFT        ;# OF SHIFTS
2583  012264  012767  000124  166652          MOV     #124,TEMP1      ;DATA CHAR
```

```
 2584  012272  004767  005106                  JSR     PC,RPOKE        ;SHIFT IN THIS CHAR
 2585  012276  105777  005376                  TSTB    @RXCSR  ;RXDONE ?
 2586  012302  100401                          BMI     648
 2587  012304  104000                          HLT     ;RXDONE SHOULD BE SET
 2588  012306                          648:
 2589  012306  017701  005372                  MOV     @RXDBUF,R1      ;ACTUAL
 2590  012312  020001                          CMP     R0,R1   ;COMPARE EXPECTED VS. ACTUAL
 2591  012314  001401                          BEQ     658
 2592  012316  104002                          HLT     2       ;RECEIVED DATA DID NOT MATCH
 2593                                                          ;EXPECTED DATA - CHECK MAINT DATA
 2594                                                          ;OR RECEIVER LOGIC
 2595  012320                          658:
 2596  012320  012767  000007  166612          MOV     #7,SHIFT        ;# OF SHIFTS
 2597  012326  012767  000124  166610          MOV     #124,TEMP1      ;DATA CHAR
 2598  012334  004767  005044                  JSR     PC,RPOKE        ;SHIFT IN THIS CHAR
 2599                          ;NOW SHIFT IN A SECOND CHARACTER WITHOUT READING RXDBUF
 2600  012340  012767  000007  166572          MOV     #7,SHIFT        ;# OF SHIFTS
 2601  012346  012767  000124  166570          MOV     #124,TEMP1      ;DATA CHAR
 2602  012354  004767  005024                  JSR     PC,RPOKE        ;SHIFT IN THIS CHAR
 2603  012360  012700  140012                  MOV     #140000!12,R0   ;EXPECTED DATA PLUS
 2604                                                          ;RXERR & OVRRUN
 2605  012364  017701  005314                  MOV     @RXDBUF,R1      ;ACTUAL
 2606  012370  020001                          CMP     R0,P1   ;COMPARE EXP VS. ACT
 2607  012372  001401                          BEQ     668
 2608  012374  104002                          HLT     2       ;SPECIFICALLY LOOK AT RXERR &
 2609                                                          ;OVRRUN BITS...THEY BOTH SHOULD BE SET
 2610  012376                          668:
 2611  012376  104400                          SCOPE
 2612                                           ;;THIS TEST VERIFYS WORD LENGTH SELECT OF THE
 2613                                           ;;RECEIVER SECTION,IT USES THE ERROR FLAGS
 2614                                           ;;TO DETERMINE THAT IT WAS SELECTED CORRECTLY
 2615                                           ;;(OVRRUN,RXERR)
 2616                                           ;;MODE:ISYMOD
 2617                                           ;;LENGTH:FIVE
 2618                                           ;;CHAR:37
 2619                                           ;;
 2620  012400  012767  000062  166520  TST50:   MOV     #50,TSTNO       ;SAVE THIS
 2621  012406  012767  012642  166502          MOV     #TST51,NEXT             ;GO TO THIS TEST WHEN THRU
 2622  012414  052777  000400  005272          BIS     #MRESET,@TXCSR  ;MASTER RESET
 2623  012422  012777  000000  005260          MOV     #ISYMOD,@PARCSR ;SET THE MODE
 2624  012430  052777  000400  005256          BIS     #MRESET,@TXCSR  ;MASTER RESET
 2625
 2626                          ;SET MAINT DATA,CLK,BREAK,&MAINTENANCE MODE
 2627  012436  012777  064001  005250          MOV     #MTDATA!CLK!MINT!BREAK,@TXCSR
 2628
 2629                          ;SET MODE ,# OF BITS,PARITY SENSE,&LOAD SYNC REG
 2630  012444  012777  000000  005236          MOV     #ISYMOD!FIVE!NOPAR!0,@PARCSR
 2631  012452  052777  000020  005220          BIS     #SYNSCH,@RXCSR  ;SET SYNC SEARCH
 2632                                          ;POKE CLK TO GET RECEIVER INTO SYNCROIZATION....
 2633  012460  042777  020000  005226          BIC     #CLK,@TXCSR     ;POKE CLK DOWN
 2634  012466  052777  020000  005220          BIS     #CLK,@TXCSR     ;POKE CLK UP
 2635                          ;POKE CLK TO GET LOGIC INTO SYNCRONIZATION
 2636  012474  042777  020000  005212          BIC     #CLK,@TXCSR     ;POKE CLK DOWN
 2637  012502  052777  020000  005204          BIS     #CLK,@TXCSR     ;POKE CLK UP
 2638  012510  016703  005170                  MOV     RXDBUF,R3       ;SET UP FOR ERROR MESSAGE
 2639  012514  012700  000037                  MOV     #37,R0  ;EXPECTED
```

```
 2640  012520  012767  000007  166412          MOV     #7,SHIFT        ;# OF SHIFTS
 2641  012526  012767  000176  166410          MOV     #176,TEMP1      ;DATA CHAR
 2642  012534  004767  004644                  JSR     PC,RPOKE        ;SHIFT IN THIS CHAR
 2643  012540  105777  005134                  TSTB    @RXCSR  ;RXDONE ?
 2644  012544  100401                          BMI     648
 2645  012546  104000                          HLT     ;RXDONE SHOULD BE SET
 2646  012550                          648:
 2647  012550  017701  005130                  MOV     @RXDBUF,R1      ;ACTUAL
 2648  012554  020001                          CMP     R0,R1   ;COMPARE EXPECTED VS. ACTUAL
 2649  012556  001401                          BEQ     658
 2650  012560  104002                          HLT     2       ;RECEIVED DATA DID NOT MATCH
 2651                                                          ;EXPECTED DATA - CHECK MAINT DATA
 2652                                                          ;OR RECEIVER LOGIC
 2653  012562                          658:
 2654  012562  012767  000007  166350          MOV     #7,SHIFT        ;# OF SHIFTS
 2655  012570  012767  000176  166346          MOV     #176,TEMP1      ;DATA CHAR
 2656  012576  004767  004602                  JSR     PC,RPOKE        ;SHIFT IN THIS CHAR
 2657                          ;NOW SHIFT IN A SECOND CHARACTER WITHOUT READING RXDBUF
 2658  012602  012767  000007  166330          MOV     #7,SHIFT        ;# OF SHIFTS
 2659  012610  012767  000176  166326          MOV     #176,TEMP1      ;DATA CHAR
 2660  012616  004767  004562                  JSR     PC,RPOKE        ;SHIFT IN THIS CHAR
 2661  012622  012700  140037                  MOV     #140000137,R0   ;EXPECTED DATA PLUS
 2662                                                          ;RXERR & OVRRUN
 2663  012626  017701  005052                  MOV     @RXDBUF,R1      ;ACTUAL
 2664  012632  020001                          CMP     R0,R1   ;COMPARE EXP VS. ACT
 2665  012634  001401                          BEQ     668
 2666  012636  104002                          HLT     2       ;SPECIFICALLY LOOK AT RXERR &
 2667                                                          ;OVRRUN BITS...THEY BOTH SHOULD BE SET
 2668  012640                          668:
 2669  012640  104400                          SCOPE
 2670                                          ;;THIS TEST VERIFYS WORD LENGTH SELECT OF THE
 2671                                          ;;RECEIVER SECTION,IT USES THE ERROR FLAGS
 2672                                          ;;TO DETERMINE THAT IT WAS SELECTED CORRECTLY
 2673                                          ;;(OVRRUN,RXERR)
 2674                                          ;;MODE:ISYMOD
 2675                                          ;;LENGTH:FIVE
 2676                                          ;;CHAR:0
 2677                                          ;;
 2678  012642  012767  000063  166256  TST51:  MOV     #51,TSTNO       ;SAVE THIS
 2679  012650  012767  013104  166240          MOV     #.EOP,NEXT              ;GO TO THIS TEST WHEN THRU
 2680  012656  052777  000400  005030          BIS     #MRESET,@TXCSR  ;MASTER RESET
 2681  012664  012777  000000  005016          MOV     #ISYMOD,@PARCSR ;SET THE MODE
 2682  012672  052777  000400  005014          BIS     #MRESET,@TXCSR  ;MASTER RESET
 2683
 2684                          ;SET MAINT DATA,CLK,BREAK,&MAINTENANCE MODE
 2685  012700  012777  064001  005006          MOV     #MTDATA!CLK!MINT!BREAK,@TXCSR
 2686
 2687                          ;SET MODE ,# OF BITS,PARITY SENSE,&LOAD SYNC REG
 2688  012706  012777  000000  004774          MOV     #ISYMOD!FIVE!NOPAR!0,@PARCSR
 2689  012714  052777  000020  004756          BIS     #SYNSCH,@RXCSR  ;SET SYNC SEARCH
 2690                                          ;POKE CLK TO GET RECEIVER INTO SYNCROIZATION....
 2691  012722  042777  020000  004764          BIC     #CLK,@TXCSR     ;POKE CLK DOWN
 2692  012730  052777  020000  004756          BIS     #CLK,@TXCSR     ;POKE CLK UP
 2693                          ;POKE CLK TO GET LOGIC INTO SYNCRONIZATION
 2694  012736  042777  020000  004750          BIC     #CLK,@TXCSR     ;POKE CLK DOWN
 2695  012744  052777  020000  004742          BIS     #CLK,@TXCSR     ;POKE CLK UP
```

```
2696  012752  016703  004726                  MOV     RXDBUF,R3       ;SET UP FOR ERROR MESSAGE
2697  012756  012700  000000                  MOV     #0,R0   ;EXPECTED
2698  012762  012767  000007  166150          MOV     #7,SHIFT        ;# OF SHIFTS
2699  012770  012767  000100  166146          MOV     #100,TEMP1      ;DATA CHAR
2700  012776  004767  004402                  JSR     PC,PPOKE        ;SHIFT IN THIS CHAR
2701  013002  105777  004672                  TSTB    @RXCSR  ;RXDONE ?
2702  013006  100401                          BMI     648
2703  013010  104000                          HLT     ;RXDONE SHOULD BE SET
2704  013012                          648:
2705  013012  017701  004666                  MOV     @RXDBUF,R1      ;ACTUAL
2706  013016  020001                          CMP     R0,R1   ;COMPARE EXPECTED VS. ACTUAL
2707  013020  001401                          BEQ     658
2708  013022  104002                          HLT     2       ;RECEIVED DATA DID NOT MATCH
2709                                                          ;EXPECTED DATA - CHECK MAINT DATA
2710                                                          ;OR RECEIVER LOGIC
2711  013024                          658:
2712  013024  012767  000007  166106          MOV     #7,SHIFT        ;# OF SHIFTS
2713  013032  012767  000100  166104          MOV     #100,TEMP1      ;DATA CHAR
2714  013040  004767  004340                  JSR     PC,PPOKE        ;SHIFT IN THIS CHAR
2715                          ;NOW SHIFT IN A SECOND CHARACTER WITHOUT READING RXDBUF
2716  013044  012767  000007  166066          MOV     #7,SHIFT        ;# OF SHIFTS
2717  013052  012767  000100  166064          MOV     #100,TEMP1      ;DATA CHAR
2718  013060  004767  004322                  JSR     PC,PPOKE        ;SHIFT IN THIS CHAR
2719  013064  012700  140000                  MOV     #140000,R0      ;EXPECTED DATA PLUS
2720                                                          ;RXERR & OVRRUN
2721  013070  017701  004610                  MOV     @RXDBUF,R1      ;ACTUAL
2722  013074  020001                          CMP     R0,R1   ;COMPARE EXP VS. ACT
2723  013076  001401                          BEQ     668
2724  013100  104002                          HLT     2       ;SPECIFICALLY LOOK AT RXERR &
2725                                                          ;OVRRUN BITS...THEY BOTH SHOULD BE SET
2726  013102                          668:
2727  013102  104400                          SCOPE
2728
```

```
2729
2730                                                    ;END OF PASS
2731                                                    ;TYPE NAME OF TEST
2732                                                    ;UPDATE PASS COUNT
2733                                                    ;CHECK FOR EXIT TO ACT-11
2734                                                    ;RESTART TEST
2735
2736  013104  104402                        .EOP:     TYPE                                    ;TYPE NAME OF TEST
2737  013106  016246                                  MEPASS
2738  013110  104410  013342                         CONVRT  ,OUTCRY
2739  013114  104402  015767                         TYPE    ,DEVICE
2740  013120  105767  166056                         TSTB    MULTD                           ;ARE YOU RUNNING MULTIPLE DEVICES ?
2741  013124  001511                                 BEQ     CCC                             ;NO,JUMP AROUND
2742  013126  005767  166064                         TST     ACTREG                          ;ARE ANY DEVICES ACTIVE ?
2743  013132  001007                                 BNE     RUNIT                           ;YES
2744  013134  104402  016001                         TYPE    ,#COW                           ;NO
2745  013140  016700  166052                         MOV     ACTREG,R0                       ;DISPLAY ACTREG
2746  013144  000000                                 HALT                                    ;SELECT SOMETHING TO RUN & ACTREG:
2747                                                  ;SELECT SWITCHES & HIT CONTINUE (PUT SW00 =1)
2748  013146  000167  166106                         JMP     .START                          ;START OVER AGAIN.....YOU DESELECTED EVERYTHING
2749  013152  062767  000010  166024  PUNIT:  ADD     #10,BASEADD                             ;NEXT BLOCK (ADDRESSES)
2750  013160  062767  000010  166024  ZERO:   ADD     #10,BASEIV                              ;NEXT BLOCK (VECTORS)
2751  013166  000241                                 CLC
2752  013170  006167  166024                         ROL     ROTADD                          ;UP DATE ROTATING POINTER
2753  013174  103410                                 BCS     28                              ;IS IT THE LAST DEVICE
2754                                                                                          ;TO BE TESTED IN THIS PASS ?
2755  013176  036767  166016  166012                 BIT     ROTADD,ACTREG                   ;TEST THIS DEVICE FOR ACTIVE STATUS
2756  013204  001762                                 BEQ     RUNIT                           ;IF NOT ACTIVE, TRY NEXT ADDRESS
2757  013206  004767  000034                         JSR     PC,REPLAY                       ;CALCULATE NEW PARAMETERS
2758  013212  000167  000174                         JMP     RESTRT                          ;YES IT WAS ACTIVE,TEST THIS DEVICE
2759  013216  012767  000001  165774  28:     MOV     #1,ROTADD                               ;OK!,NOW SET UP  ROTATING
2760                                                                                          ;POINTER FOR NEXT MULTIPLE PASS
2761  013224  016767  165756  165752                 MOV     KEEPADD,BASEADD                 ;RESTORE BASE ADDRESS
2762  013232  016767  165756  165752                 MOV     KEEPIV,BASEIV                   ;RESTORE BASE INTERPUPT VECTORS
2763  013240  004767  000002                         JSR     PC,REPLAY                       ;CALC NEW PARAMETERS
2764  013244  000441                                 BR      CCC                             ;JUMP AROUND REPLAY
2765  013246  016767  165732  000126  REPLAY: MOV     BASEADD,DUBASE                          ;SET UP FOR NEW ADDRESSES
2766  013254  004767  003770                         JSR     PC,DUADDR                       ;CREATE NEW ADDRESSES
2767  013260  016767  165726  000436                 MOV     BASEIV,DURIV                    ;CREATE DURIV
2768  013266  062767  000002  165716                 ADD     #2,BASEIV
2769  013274  016767  165712  000424                 MOV     BASEIV,DURIS                    ;CREATE DURIS
2770  013302  062767  000002  165702                 ADD     #2,BASEIV
2771  013310  016767  165676  000412                 MOV     BASEIV,DUTIV                    ;CREATE DUTIV
2772  013316  062767  000002  165666                 ADD     #2,BASEIV
2773  013324  016767  165662  000400                 MOV     BASEIV,DUTIS                    ;CREATE DUTIS
2774  013332  016767  000366  165652                 MOV     DURIV,BASEIV                    ;RESTORE
2775  013340  000207                                 RTS     PC
2776
2777  013342  000001                        OUTCRY: 1
2778  013344     006     002                         .BYTE   6,2
2779  013346  017700                                 PXCSR
2780
2781  013350                                CCC:
2782  013350  005067  165560                         CLR     LSTERR                          ;CLEAR LAST ERROR PC
2783  013354  005067  165644                         CLR     ERRFLG                          ;CLEAR ERROR FLAG
2784  013360  005267  165544                         INC     PASCNT                          ;UPDATE PASS COUNT
```

```
 2785  013364  016777  165540  165510          MOV     PASCNT,@LIGHTS          ;DISPLAY PASS COUNT
 2786  013372  013701  000042                  MOV     @#42,R1                 ;CHECK FOR ACT-11 OR DDP
 2787  013376  001405                          BEQ     RESTRT                  ;IF NOT, CONTINUE TESTING
 2788  013400  000005                          RESET
 2789  013402  004711                  LOGICAL:        JSR     PC,(R1)
 2790  013404  000240                          NOP
 2791  013406  000240                          NOP
 2792  013410  000240                          NOP
 2793  013412  012767  000340  164356  RESTRT: MOV     #340,PS                 ;PREVENT INTERRUPTS (PRIO: 7)
 2794  013420  104413                          CKSWR                           ;CHECK FOR ^G
 2795  013422  012767  002350  165464          MOV     #TST1,RTRN
 2796  013430  000167  166714                  JMP     TST1
 2797
 2798                                          ;SCOPE LOOP AND INTERATION HANDLER
 2799
 2800  013434                          ,SCOPE:
 2801                                  ;***** START OF CODE FOR THE X OR TESTER ******
 2802  013434  000424                          BR      4$                      ;IF RUNNING ON THE X OR TESTER CHANGE
 2803                                                                          ;THIS INSTRUCTION TO A "NOP"(NOP=240)
 2804  013436  013746  000004                  MOV     @#4,-(SP)               ;SAVE CONTENTS OF ERROR VECTOR
 2805  013442  012737  013462  000004          MOV     #1$,@#4                 ;SET FOR TIME OUT
 2806  013450  005737  177060                  TST     @#177060                ;TIME OUT ON  X OR ?
 2807  013454  012637  000004                  MOV     (SP)+,@#4               ;RESTORE ERROR VECTOR
 2808  013460  000404                          BR      2$                      ;GO TO NEXT TEST
 2809  013462  022626                  1$:     CMP     (SP)+,(SP)+             ;CLEAR THE STACK AFTER A TIMEOUT
 2810  013464  012637  000004                  MOV     (SP)+,@#4               ;RESTORE ERROR VECTOR
 2811  013470  000403                          BR      3$                      ;LOOP ON PRESENT TEST
 2812  013472  016767  165420  165414  2$:     MOV     NEXT,RTRN               ;SET UP NEXT TEST IN RTRN
 2813  013500  016716  165416          3$:     MOV     RTRN,(SP)               ;SET UP STACK FOR RTI
 2814  013504  000002                          RTI
 2815  013506                          4$:     ;***** END OF CODE FOR THE  X OR TESTER ******
 2816  013506  104413                          CKSWR                           ;CHECK FOR ^G
 2817  013510  032777  040000  165362          BIT     #SW14,@SWR              ;LOOP ON CURRENT TEST ?
 2818  013516  001407                  TTST:   BEQ     1$
 2819  013520  000432                          BR      3$
 2820  013522  105777  165356                  TSTB    @TKCSR                  ;TEST TTY FLAG
 2821  013526  100027                          BPL     3$
 2822  013530  017700  165352                  MOV     @TKDBR,R0               ;CLR DONE BIT
 2823  013534  000412                          BR      2$                      ;IF A TTY KEY IS STRUCK GO TO NEXT TST
 2824  013536  032777  004000  165334  1$:     BIT     #SW11,@SWR              ;INHIBIT ITERATIONS ?
 2825  013544  001006                          BNE     2$
 2826  013546  005267  165352                  INC     LPCNT
 2827  013552  026767  165346  165342          CMP     LPCNT,ICOUNT            ;CHECK FOR ITERATION CNT FINISH
 2828  013560  101412                          BLOS    3$
 2829  013562  105067  165436          2$:     CLRB    ERRFLG
 2830  013566  005067  165332                  CLR     LPCNT
 2831  013572  012767  000005  165322          MOV     #5,ICOUNT               ;SET UP ITERATION COUNT
 2832  013600  016767  165312  165306          MOV     NEXT,RTRN               ;SET UP NEXT TEST IN RTRN
 2833  013606  016716  165302          3$:     MOV     RTRN,(SP)               ;SET UP STACK FOR RTI
 2834  013612  000002                          RTI
 2835  013614  001407                  BRW:    1407                            ;RESTORE "BEQ 1$" INSTRUCTION
 2836  013616  000432                  BRX:    432                             ;RESTORE "BR 3$" INSTRUCTION
 2837
 2838                                          ;CHECK FOR FREEZE ON CURRENT DATA
 2839
 2840  013620  104413                  ,SCOP1: CKSWR                           ;CHECK  FOR ^G
```

```
 2841  013622  032777  001000  165250          BIT     @SW09,@SWR
 2842  013630  001402                          BEQ     1$
 2843  013632  016716  165262                  MOV     LOCK,(SP)
 2844  013636  000002                  1$:     RTI
 2845
 2846                                          ;TELETYPE OUTPUT ROUTINE
 2847
 2848  013640  010546                  .TYPE:  MOV     R5,-(SP)
 2849  013642  017605  000002                  MOV     @2(SP),R5
 2850  013646  062766  000002  000002          ADD     #2,2(SP)
 2851  013654  105715                  1$:     TSTB    (R5)                    ;LOOK FOR "@"
 2852  013656  001406                          BEQ     3$
 2853  013660  105777  165224          2$:     TSTB    @TPCSR                  ;TEST DONE BIT
 2854  013664  100375                          BPL     2$
 2855  013666  112577  165220                  MOVB    (R5)+,@TPDBR            ;TYPE CHAR
 2856  013672  000770                          BR      1$                      ;DO IT AGAIN UNTIL "@" IS SEEN
 2857  013674  012605                  3$:     MOV     (SP)+,R5
 2858  013676  000002                          RTI
 2859
 2860                                          ;ASCII STRING INPUT ROUTINE
 2861
 2862  013700  010346                  .INSTR: MOV     R3,-(SP)
 2863  013702  010446                          MOV     R4,-(SP)
 2864  013704  017667  000004  000010          MOV     @4(SP),.MSG
 2865  013712  062766  000002  000004          ADD     #2,4(SP)
 2866  013720  104402                  .INST1: TYPE
 2867  013722  000000                  .MSG:   0
 2868  013724  012704  017034                  MOV     #INBUF,R4
 2869  013730  012703  000007                  MOV     #7,R3
 2870  013734  105777  165144          1$:     TSTB    @TKCSR
 2871  013740  100375                          BPL     1$
 2872  013742  117714  165140                  MOVB    @TKDBR,(R4)
 2873  013746  142714  000200                  BICB    #200,(R4)
 2874  013752  121427  000025                  CMPB    (R4),#25                ;IS IT <^U>
 2875  013756  001003                          BNE     2008
 2876  013760  104402  016156                  TYPE,MCRLF
 2877  013764  000755                          BR      .INST1
 2878  013766  122427  000015          2008:   CMPB    (R4)+,#15
 2879  013772  001423                          BEQ     INSTR2
 2880  013774  117777  165106  165110          MOVB    @TKDBR,@TPDBR
 2881  014002  105777  165102          2$:     TSTB    @TPCSR
 2882  014006  100375                          BPL     2$
 2883  014010  005303                          DEC     R3
 2884  014012  001350                          BNE     1$
 2885  014014  000402                          BR      .INSTG
 2886  014016  010346                  .INSTE: MOV     R3,-(SP)
 2887  014020  010446                          MOV     R4,-(SP)
 2888  014022  104402                  .INSTG: TYPE
 2889  014024  016152                          MQM
 2890  014026  005737  015314                  TST     @#RDSW
 2891  014032  001402                          BEQ     4008
 2892  014034  104402  016156                  TYPE,MCRLF
 2893  014040  000727                  4008:   BR      .INST1
 2894  014042  012604                  INSTR2: MOV     (SP)+,R4
 2895  014044  012603                          MOV     (SP)+,R3
 2896  014046  000002                          RTI
```

```
2897
2898                                    ;CONVERT ASCII STRING TO OCTAL
2899
2900  014050  010546              .PARAM: MOV     R5,-(SP)
2901  014052  010446                      MOV     R4,-(SP)
2902  014054  016605  000004              MOV     4(SP),R5
2903  014060  012567  000170              MOV     (R5)+,LOLIM
2904  014064  012567  000166              MOV     (R5)+,HILIM
2905  014070  012567  000164              MOV     (R5)+,DEVADR
2906  014074  112567  000162              MOVB    (R5)+,LOBITS
2907  014100  112567  000157              MOVB    (R5)+,ADRCNT
2908  014104  010566  000004              MOV     R5,4(SP)
2909  014110  005005              PARAM1: CLR     R5
2910  014112  012704  017034              MOV     #INBUF,R4
2911  014116  122714  000015              CMPB    #15,(R4)
2912  014122  001420                      BEQ     PARERR
2913  014124  121427  000060      18:     CMPB    (R4),#60
2914  014130  002415                      BLT     PARERR
2915  014132  121427  000067              CMPB    (R4),#67
2916  014136  003012                      BGT     PARERR
2917  014140  142714  000060              BICB    #60,(R4)
2918  014144  152405                      BISB    (R4)+,R5
2919  014146  122714  000015              CMPB    #15,(R4)
2920  014152  001414                      BEQ     LIMITS
2921  014154  006305                      ASL     R5
2922  014156  006305                      ASL     R5
2923  014160  006305                      ASL     R5
2924  014162  000760                      BR      18
2925  014164  122714  000015      PARERR: CMPB    #15,(R4)        ;IS FIRST CHARACTER A <CR>
2926  014170  001003                      BNE     120$
2927  014172  005737  015314              TST     @#RDSW          ;IS CKSWR ROUTINE BEING USED
2928  014176  001023                      BNE     PARTI
2929  014200  104404              120$:   INSTER
2930  014202  000742                      BR      PARAM1
2931
2932                                    ;TEST TO SEE IF NUMBER IS WITHIN LIMITS
2933
2934  014204  020567  000046      LIMITS: CMP     R5,HILIM
2935  014210  101365                      BHI     PARERR
2936  014212  020567  000036              CMP     R5,LOLIM
2937  014216  103762                      BLO     PARERR
2938  014220  136705  000036              BITB    LOBITS,R5
2939  014224  001357                      BNE     PARERR
2940
2941                                    ;STORE NUMBER AT SPECIFIED ADDRESS
2942
2943  014226  016704  000026              MOV     DEVADR,R4
2944  014232  010524              18:     MOV     R5,(R4)+
2945  014234  062705  000002              ADD     #2,R5
2946  014240  105367  000017              DECB    ADRCNT
2947  014244  001372                      BNE     18
2948  014246  012604              PARTI:  MOV     (SP)+,R4
2949  014250  012605                      MOV     (SP)+,R5
2950  014252  000002                      RTI
2951  014254  000000              LOLIM:  0
2952  014256  000000              HILIM:  0
```

```
2953  014260  000000                    DFVADR: 0
2954  014262  000000                    LOBITS: 0
2955          014263                    ADPCNT=LOBITS+1
2956
2957                                            ;SAVE PC OF TEST THAT FAILED AND R0-R5
2958
2959  014264  016667  000004  164702    .SAV05: MOV     4(SP),SAVPC
2960
2961                                            ;SAVE R0-R5
2962
2963  014272  010567  164672            SV05:   MOV     R5,SAVR5
2964  014276  010467  164664                    MOV     R4,SAVR4
2965  014302  010367  164656                    MOV     R3,SAVR3
2966  014306  010267  164650                    MOV     R2,SAVR2
2967  014312  010167  164642                    MOV     R1,SAVR1
2968  014316  010067  164634                    MOV     R0,SAVR0
2969  014322  000002                          RTI
2970
2971                                            ;RESTORE R0-R5
2972
2973  014324  016700  164626            .RES05: MOV     SAVR0,R0
2974  014330  016701  164624                    MOV     SAVR1,R1
2975  014334  016702  164622                    MOV     SAVR2,R2
2976  014340  016703  164620                    MOV     SAVR3,R3
2977  014344  016704  164616                    MOV     SAVR4,R4
2978  014350  016705  164614                    MOV     SAVR5,R5
2979  014354  000002                          RTI
2980
2981                                            ;CONVERT OCTAL NUMBER TO ASCII AND OUTPUT TO TELEPRINTER
2982
2983  014356  104402                    .CONVR: TYPE
2984  014360  016156                            MCRLF
2985  014362  010046                    .CNVRT: MOV     R0,-(SP)
2986  014364  010146                            MOV     R1,-(SP)
2987  014366  010346                            MOV     R3,-(SP)
2988  014370  010446                            MOV     R4,-(SP)
2989  014372  010546                            MOV     R5,-(SP)
2990  014374  017601  000012                    MOV     @12(SP),R1
2991  014400  016767  002470  164542            MOV     TEMP,TEMP3
2992  014406  062766  000002  000012            ADD     #2,12(SP)
2993  014414  012167  000154                    MOV     (R1)+,WRDCNT
2994  014420  112167  000152            1$:     MOVB    (R1)+,CHRCNT
2995  014424  112167  000147                    MOVB    (R1)+,SPACNT
2996  014430  013167  000144                    MOV     @(R1)+,BINWRD
2997  014434  016704  000140            2$:     MOV     BINWRD,R4
2998  014440  116705  000132                    MOVB    CHRCNT,R5
2999  014444  012700  017074                    MOV     #TEMP,R0
3000  014450  010403                    3$:     MOV     R4,R3
3001  014452  042703  177770                    BIC     #177770,R3
3002  014456  062703  000060                    ADD     #060,R3
3003  014462  110320                          MOVB    R3,(R0)+
3004  014464  006204                          ASR     R4                      ;SHIFT FOR NEXT #
3005  014466  042704  100000                    BIC     #100000,R4              ;CLUGE TO STOP BIT 15 PROPAGATING.
3006  014472  006204                          ASR     R4                      ;DITTO
3007  014474  006204                          ASR     R4                      ;DITTO
3008  014476  005305                          DEC     R5
```

```
3009  014500  001363                          BNE     3$
3010  014502  012703  017134                  MOV     #MDATA,R3
3011  014506  114023                  4$:     MOVB    -(R0),(R3)+
3012  014510  105367  000062                  DECB    CHRCNT
3013  014514  001374                          BNE     4$
3014  014516  105767  000055                  TSTB    SPACNT
3015  014522  001405                          BEQ     6$
3016  014524  112723  000040          5$:     MOVB    #40,(R3)+
3017  014530  105367  000043                  DECB    SPACNT
3018  014534  001373                          BNE     5$
3019  014536  105013                  6$:     CLRB    (R3)
3020  014540  104402                          TYPE
3021  014542  017134                          MDATA
3022  014544  005367  000024                  DEC     WRDCNT
3023  014550  001323                          BNE     1$
3024  014552  016767  164372  002314          MOV     TEMP3,TEMP
3025  014560  012605                          MOV     (SP)+,R5
3026  014562  012604                          MOV     (SP)+,R4
3027  014564  012603                          MOV     (SP)+,R3
3028  014566  012601                          MOV     (SP)+,R1
3029  014570  012600                          MOV     (SP)+,R0
3030  014572  000002                          RTI
3031  014574  000000                  WRDCNT: 0
3032  014576  000000                  CHRCNT: 0
3033          014577                  SPACNT=CHRCNT+1
3034  014600  000000                  BINWRD: 0
3035
3036                                          ;COMPARE THE FIRST CHARACTER IN THE TELETYPE INPUT
3037                                          ;BUFFER TO THE CHARACTERS "N" AND "Y".
3038                                          ;IF THE CHARACTER IS "N" CLEAR THE FLAG
3039                                          ;IF THE CHARACTER IS "Y" SET THE FLAG
3040
3041  014602  017605  000000          .SETFLG:MOV     @(SP),R5
3042  014606  122767  000116  002220          CMPB    #'N,INBUF       ;IS IT "N" ?
3043  014614  001002                          BNE     1$
3044  014616  105015                          CLRB    (R5)    ;000
3045  014620  000406                          BR      2$
3046  014622  122767  000131  002204  1$:     CMPB    #'Y,INBUF               ;IS IT "Y" ?
3047  014630  001005                          BNE     3$
3048  014632  112715  177777                  MOVB    #-1,(R5)                ;377
3049  014636  062716  000002          2$:     ADD     #2,(SP)
3050  014642  000002                          RTI
3051  014644  104404                  3$:     INSTEP                          ;RETRY
3052  014646  000755                          BR      .SETFLG
3053                                          ;TRAP DISPATCH SERVICE
3054                                          ;ARGUMENT OF TRAP IS EXTRACTED
3055                                          ;AND USED AS OFFSET TO OBTAIN POINTER
3056                                          ;TO SELECTED SUBROUTINE
3057
3058  014650  011646                  .TRPSP: MOV     (SP),-(SP)              ;GET PC OF RETURN
3059  014652  162716  000002                  SUB     #2,(SP)                 ;=PC OF TRAP
3060  014656  017616  000000                  MOV     @(SP),(SP)              ;GET TRP
3061  014662  006316                  TPPOK:  ASL     (SP)                    ;MULTIPLY TRAP ARG BY 2
3062  014664  042716  177001                  BIC     #177001,(SP)            ;CLEAR UNWANTED BITS
3063  014670  062716  001226                  ADD     #.TRPTAB,(SP)           ;POINTER TO SUBROUTINE ADDRESS
3064  014674  017616  000000                  MOV     @(SP),(SP)              ;SUBROUTINE ADDRESS
```

```
 3065  014700  000136                          JMP     @(SP)+                  ;GO TO SUBROUTINE
 3066
 3067                                          ;ERROR HANDLER
 3068
 3069  014702  104413                  .HLT:   CKSWP                           ;CHECK FOR ^G
 3070  014704  032777  020000  164166          BIT     #SW13,@SWR              ;INHIBIT ERROR TYPE OUT ?
 3071  014712  001061                          BNE     HALTS
 3072  014714  021667  164214                  CMP     (SP),LSTERR
 3073  014720  001404                          BEQ     1$
 3074  014722  011667  164206                  MOV     (SP),LSTERR
 3075  014726  105067  164272                  CLRB    ERRFLG
 3076  014732  104426                  1$:     SAV05
 3077  014734  011605                          MOV     (SP),R5
 3078  014736  162705  000002                  SUB     #2,R5
 3079  014742  011504                          MOV     (R5),R4
 3080  014744  006304                          ASL     R4
 3081  014746  061504                          ADD     (R5),R4
 3082  014750  006304                          ASL     R4
 3083  014752  042704  177001                  BIC     #177001,R4
 3084  014756  062704  017650                  ADD     #,ERRTAB,R4
 3085  014762  012467  000040                  MOV     (R4)+,ERRMSG
 3086  014766  012467  000046                  MOV     (R4)+,DATAHD
 3087  014772  011467  000054                  MOV     (R4),DATABP
 3088  014776  105767  164222                  TSTB    ERRFLG
 3089  015002  001403                          BEQ     TYPMSG
 3090  015004  005767  000042                  TST     DATABP
 3091  015010  001014                          BNE     TYPDAT
 3092  015012  104410                  TYPMSG: CONVRT
 3093  015014  015144                          ERTAB0
 3094  015016  112767  177777  164200          MOVB    #-1,ERRFLG
 3095  015024  104402                          TYPE
 3096  015026  000000                  ERRMSG: 0
 3097  015030  005767  000004                  TST     DATAHD
 3098  015034  001402                          BEQ     TYPDAT
 3099  015036  104402                          TYPE
 3100  015040  000000                  DATAHD: 0
 3101  015042  005767  000004          TYPDAT: TST     DATABP
 3102  015046  001402                          BEQ     RESREG
 3103  015050  104410                          CONVRT
 3104  015052  000000                  DATABP: 0
 3105  015054  104407                  RESREG: RES05
 3106  015056  005777  164016          HALTS:  TST     @SWR
 3107  015062  100005                          BPL     EXITER
 3108  015064  010046                          PUSHR0
 3109  015066  016600  000002                  MOV     2(SP),R0
 3110  015072  000000                          HALT
 3111  015074  012600                          POPR0
 3112  015076  104413                  EXITER: CKSWR                           ;CHECK FOR ^G
 3113  015100  005267  164026                  INC     ERRCNT
 3114  015104  032777  000400  163766          BIT     #SW08,@SWR              ;LOOP ON ERROR ?
 3115  015112  001007                          BNE     1$
 3116  015114  032777  002000  163756          BIT     #SW10,@SWR              ;ESCAPE TO NEXT ON ERROR ?
 3117  015122  001407                          BEQ     2$
 3118  015124  016767  163766  163762          MOV     NEXT,RTRN               ;SET UP FOR NEXT TEST
 3119  015132  012706  001100          1$:     MOV     #STACK,SP               ;REINITIALIZE SP
 3120  015136  000177  163752                  JMP     @RTRN
```

```
 3121  015142  000002                    28:     RTI
 3122  015144  000001                    EPTAB0: 1
 3123  015146     006     002                    .BYTE   6,2
 3124  015150  001174                            SAVPC
 3125                                            ;ENTER HERE ON POWER FAILURE
 3126
 3127
 3128  015152  010046                    .PFAIL: MOV     R0,-(SP)                ;SAVE R0-R5 ON PROCESSOR STACK
 3129  015154  010146                            MOV     R1,-(SP)
 3130  015156  010246                            MOV     R2,-(SP)
 3131  015160  010346                            MOV     R3,-(SP)
 3132  015162  010446                            MOV     R4,-(SP)
 3133  015164  010546                            MOV     R5,-(SP)
 3134  015166  016746  162632                    MOV     24,-(SP)
 3135  015172  010667  163774                    MOV     SP,SAVSP                ;SAVE STACK POINTER
 3136  015176  012767  015210  162620            MOV     #RESTART,24             ;SET UP FOR POWER UP TRAP
 3137  015204  000000                            HALT                            ;HALT ON POWER DOWN NORMAL
 3138  015206  000777                    18:     BR      18
 3139
 3140                                            ;PROCESSOR WILL TRAP HERE WHEN POWER IS RESTORED
 3141
 3142  015210  016706  163756            RESTAR: MOV     SAVSP,SP                ;RESTORE STACK POINTER
 3143  015214  012605                            MOV     (SP)+,R5                ;RESTORE R0-R5
 3144  015216  012604                            MOV     (SP)+,R4
 3145  015220  012603                            MOV     (SP)+,R3
 3146  015222  012602                            MOV     (SP)+,R2
 3147  015224  012601                            MOV     (SP)+,R1
 3148  015226  012600                            MOV     (SP)+,R0
 3149  015230  012767  015152  162566            MOV     #,PFAIL,24              ;SET UP FOR POWER FAILURE
 3150  015236  012767  000340  162532            MOV     #340,PS
 3151  015244  012706  001100                    MOV     #STACK,SP
 3152  015250  005067  001620                    CLR     TEMP
 3153  015254  005267  001614            18:     INC     TEMP
 3154  015260  001375                            BNE     18
 3155  015262  104410                            CONVRT
 3156  015264  015306                            PFTAB
 3157  015266  104402                            TYPE
 3158  015270  016161                            MPFAIL
 3159  015272  005067  163726                    CLR     ERRFLG
 3160  015276  005067  163632                    CLR     LSTERR
 3161  015302  000177  163606                    JMP     @RTPN
 3162  015306  000001                    PFTAB:  1
 3163  015310     006     002                    .BYTE   6,2
 3164  015312  001114                            RTRN
 3165
 3166
 3167                                            ;CHECK SWITCH REGISTER ROUTINE. CHECKS FOR ^G TO ALLOW CHANGING
 3168                                            ;OF LOC.176.
 3169                                            ;LOCATIONS USED:
 3170  015314  000000                    RDSW:   .WORD   0
 3171
 3172
 3173  015316  005737  001042            .CKSWP: TST     @#42
 3174  015322  001042                            BNE     OUT
 3175  015324  022767  000176  163546            CMP     #SWPEG,SWR              ;SOFTWARE SWITCH REGISTER PRESENT
 3176  015332  001036                            BNE     OUT                     ;NO, GET OUT
```

```
 3177  015334  105777  163544                    TSTB    @TKCSR                  ;YES,WAIT FOR
 3178  015340  100033                            BPL     OUT                     ;READY, GET CHARACTER
 3179  015342  017767  163540  176352            MOV     @TKDBR,.MSG             ;AND STRIP OFF
 3180  015350  042767  177600  176344            BIC     #177600,.MSG            ;THE GARBAGE
 3181  015356  122767  000007  176336            CMPB    #7,.MSG                 ;IS IT A <^G>
 3182  015364  001021                            BNE     OUT
 3183  015366  104402  015444                    TYPE,$CNTG
 3184  015372  005137  015314          .CNTLU: COM     @#RDSW
 3185  015376  104402  015451                    TYPE,$MSWR
 3186  015402  104411  015436                    CNVRT,SWREGC
 3187  015406  104403  015461                    INSTR,$MNEW
 3188  015412  104405                            PARAM
 3189  015414  000000                            0
 3190  015416  177777                            177777
 3191  015420  000176                            SWREG
 3192  015422     000     001            .BYTE           0,1
 3193  015424  104402  016156                    TYPE,MCRLF
 3194  015430  005037  015314          OUT:    CLR     @#RDSW
 3195  015434  000002                            RTI
 3196  015436  000001                  SWREGC: 1
 3197  015440     006     002            .BYTE   6,2
 3198  015442  000176                            SWREG
 3199  015444  005015  043536     000  $CNTG:  .ASCIZ  <15><12>/^G/
 3200  015451     015  051412  051127  $MSWR:  .ASCIZ  <15><12>/SWR= /
 3201  015456  020075     000
 3202  015461     040  047040  053505  $MNEW:  .ASCIZ  /  NEW= /
 3203  015466  020075     000
 3204          015472                  .EVEN
 3205  015472  005015  042012  030525  MTITLE: .ASCIZ  <15><12><12>/DU11 DZDUA-D TAPE A /<15><12>
 3206  015500  020061  055104  052504
 3207  015506  026501  020104  040524
 3208  015514  042520  044040  006440
 3209  015522  000012
 3210  015524  005015  042526  052103  MVECTO: .ASCIZ  <15><12>/VECTOR ADDRESS=/
 3211  015532  051117  040440  042104
 3212  015540  042522  051523  000055
 3213  015546  005015  051461  020124  MREGAD: .ASCIZ  <15><12>/1ST DEVICE: RECEIVER CONTROL REGISTER ADDRESS=/
 3214  015554  042504  044526  042503
 3215  015562  020072  042522  042503
 3216  015570  053111  051105  041440
 3217  015576  047117  051124  046117
 3218  015604  051040  043505  051511
 3219  015612  042524  020122  042101
 3220  015620  051104  051505  026523
 3221  015626     000
 3222  015627     015  040412  042522  MMULT:  .ASCIZ  <15><12>/ARE YOU RUNNING MULTIPLE DEVICES ? (Y OR N)=/
 3223  015634  054440  052517  051040
 3224  015642  047125  044516  043516
 3225  015650  046440  046125  044524
 3226  015656  046120  020105  042504
 3227  015664  044526  042503  020123
 3228  015672  020077  054450  047440
 3229  015700  020122  024516  000055
 3230  015706  005015  040514  052123  MLASTD: .ASCIZ  <15><12>/LAST DEVICE:PECEIVER CONTROL REGISTER ADDRESS=/
 3231  015714  042040  053105  041511
 3232  015722  035105  042522  042503
```

```
 3233  016730  053111  051105  041440
 3234  016736  047117  051124  046117
 3235  016744  051040  043505  051511
 3236  016752  042524  020122  042101
 3237  016760  051104  051505  026523
 3238  016766     000
 3239  016767     075  042504  044526  DEVICE: .ASCIZ  /=DEVICE  /
 3240  016774  042503  020040     000
 3241  017001     015  044012  053517  MCOW:   .ASCIZ  <15><12>/HOW NOW BROWN COW? ...SELECT SOMETHING TO RUN @ACTREG/
 3242  017006  047040  053517  041040
 3243  017014  047522  047127  041440
 3244  017022  053517  020077  027056
 3245  017030  051456  046105  041505
 3246  017036  020124  047523  042515
 3247  017044  044124  047111  020107
 3248  017052  047524  051040  047125
 3249  017060  042040  041501  051124
 3250  017066  043505     000
 3251  017071     015  047412  052125  MRANGE: .ASCIZ  <15><12>/OUT OF RANGE:RETYPE LAST DEVICE RXCSR ADDRESS=/
 3252  017076  047440  020106  040522
 3253  017104  043516  035105  042522
 3254  017112  054524  042520  046040
 3255  017120  051501  020124  042504
 3256  017126  044526  042503  051040
 3257  017134  041530  051123  040440
 3258  017142  042104  042522  051523
 3259  017150  000055
 3260  017152  020040  000077          MQM:    .ASCIZ  /  ?/
 3261  017156  005015     000          MCRLF:  .ASCIZ   <15><12>
 3262  017161     040  050040  053517  MPFAIL: .ASCIZ  /  POWER FAILURE, PROGRAM RESTART AT TEST IN PROGRESS/
 3263  017166  051105  043040  044501
 3264  017174  052516  042522  020054
 3265  017202  051120  043517  040522
 3266  017210  020115  042522  052123
 3267  017216  051101  020124  052101
 3268  017224  052040  051505  020124
 3269  017232  047111  050040  047522
 3270  017240  051107  051505  000123
 3271  017246  005015  047105  020104  MEPASS: .ASCIZ  <15><12>/END OF PASS TAPE A/
 3272  017254  043117  050040  051501
 3273  017262  020123  040524  042520
 3274  017270  040440     000
 3275  017273     015  051012     000  MR:     .ASCIZ  <15><12>/R/
 3276  017277     015  052012  051505  MTSTPC: .ASCIZ  <15><12>/TEST PC=/
 3277  017304  020124  041520  000055
 3278  017312  005015  047514  045503  MLOCK:  .ASCIZ  <15><12>/LOCK ON SELECTED TEST? (Y OR N)=/
 3279  017320  047440  020116  042523
 3280  017326  042514  052103  042105
 3281  017334  052040  051505  037524
 3282  017342  024040  020131  051117
 3283  017350  047040  026451     000
 3284  017355     015  042012  020125  MLEVEL: .ASCIZ  <15><12>/DU PRIORITY LEVEL=/
 3285  017362  051120  047511  044522
 3286  017370  054524  046040  053105
 3287  017376  046105  000055
 3288  017402  005015  020043  043117  MSYNC:  .ASCIZ  <15><12>/# OF SYNC CHARS SELECTED ( 1 OR 2)=/
```

```
  3289  016410  051440  047131  020103
  3290  016416  044103  051101  020123
  3291  016424  042523  042514  052103
  3292  016432  042105  024040  030440
  3293  016440  047440  020122  024462
  3294  016446  000055
  3295  016450  005015  051511  051440  MWIRE6: .ASCIZ  <15><12>/IS SEC XMIT JUMPER #6 IN? (Y OR N)-/
  3296  016456  041505  054040  044515
  3297  016464  020124  052512  050115
  3298  016472  051105  021440  020066
  3299  016500  047111  020077  054450
  3300  016506  047440  020122  024516
  3301  016514  000055
  3302  016516  005015  051511  051440  MWIRE5: .ASCIZ  <15><12>/IS SEC RFC JUMPER #5 IN? (Y OR N)-/
  3303  016524  041505  051040  041505
  3304  016532  045040  046525  042520
  3305  016540  020122  032443  044440
  3306  016546  037516  024040  020131
  3307  016554  051117  047040  026451
  3308  016562     000
  3309  016563     015  044412  020123  MWIRE4: .ASCIZ  <15><12>/IS OPT CLR ENABLE JUMPER #4 IN? (Y OR N)-/
  3310  016570  050117  020124  046103
  3311  016576  020122  047105  041101
  3312  016604  042514  045040  046525
  3313  016612  042520  020122  032043
  3314  016620  044440  037516  024040
  3315  016626  020131  051117  047040
  3316  016634  026451     000
  3317  016637     015  040412  042522  MEXTJ:  .ASCII  <15><12>/ARE YOU RUNNING IN MAINT MODE EXTERNAL?/
  3318  016644  054440  052517  051040
  3319  016652  047125  044516  043516
  3320  016660  044440  020116  040515
  3321  016666  047111  020124  047515
  3322  016674  042504  042440  052130
  3323  016702  051105  040516  037514
  3324  016710  005015  040401  042116          .ASCII  <15><12><1>/AND ..... DO YOU HAVE THE EXTERNAL MODEM BYPASS/
  3325  016716  027040  027056  027056
  3326  016724  042040  020117  047531
  3327  016732  020125  040510  042526
  3328  016740  052040  042510  044440
  3329  016746  052130  051105  040516
  3330  016754  020114  047515  042504
  3331  016762  020115  054502  040520
  3332  016770  051523
  3333  016772  005015  045001  046525          .ASCIZ  <15><12><1>/JUMPER CONNECTION ON ?(Y OR N)-/
  3334  017000  042520  020122  047503
  3335  017006  047116  041505  047524
  3336  017014  020122  047117  037440
  3337  017022  054450  047440  020122
  3338  017030  024516  000055
  3339                                  .EVEN
  3340
  3341                                  ;BUFFERS FOR INPUT-OUTPUT
  3342
  3343  017034  000040                  INBUF:  .BLKB   40
  3344  017074  000040                  TEMP:   .BLKB   40
```

```
3345  017134  000040                  MDATA:  .BLKB   40
3346                                  ;*****************************************************************
3347                                          ;UTILITIES
3348                                  ;*****************************************************************
3349
3350                                  ;THIS UTILITY CALCULATES PRIORITY LEVEL
3351  017174  006367  000044           DULEV:  ASL     DUPRT   ;SHIFT LEFT
3352  017200  006367  000040                   ASL     DUPRT   ;
3353  017204  006367  000034                   ASL     DUPRT   ;
3354  017210  006367  000030                   ASL     DUPRT   ;
3355  017214  006367  000024                   ASL     DUPRT   ;
3356  017220  016767  000020  000020           MOV     DUPPT,LESS1     ;MOVE THIS TO LESS1
3357  017226  162767  000001  000012           SUB     #1,LESS1        ;CREATE LESS1
3358  017234  042767  000037  000004           BIC     #37,LESS1       ;CLEAR TNZVC
3359  017242  000207                           RTS     PC
3360  017244  000240                  DUPRT:  LEVEL5
3361  017246  000200                  LESS1:  LEVEL4  ;LEVEL TO ALLOW INTERRUPTS
3362
3363                                          ;NEW DU ADDRESSES
3364  017250  016767  000126  000422  DUADDR: MOV     DUBASE,RXCSP    ;XXX0
3365  017256  005267  000120                   INC     DUBASE
3366  017262  016767  000114  000412           MOV     DUBASE,HRXCSR   ;XXX1
3367  017270  005267  000106                   INC     DUBASE
3368  017274  016767  000102  000402           MOV     DUBASE,RXDBUF   ;XXX2
3369  017302  016767  000074  200400           MOV     DUBASE,PARCSR   ;XXX2
3370  017310  005267  000066                   INC     DUBASE
3371  017314  016767  000062  000364           MOV     DUBASE,HRXDBUF  ;XXX3
3372  017322  016767  000054  000362           MOV     DUBASE,HPARCSR  ;XXX3
3373  017330  005267  000046                   INC     DUBASE
3374  017334  016767  000042  000352           MOV     DUBASE,TXCSR    ;XXX4
3375  017342  005267  000034                   INC     DUBASE
3376  017346  016767  000030  000342           MOV     DUBASE,HTXCSR   ;XXX5
3377  017354  005267  000022                   INC     DUBASE
3378  017360  016767  000016  000332           MOV     DUBASE,TXDBUF   ;XXX6
3379  017366  005267  000010                   INC     DUBASE
3380  017372  016767  000004  000322           MOV     DUBASE,HTXDBUF  ;XXX7
3381  017400  000207                           RTS     PC
3382  017402  000000                  DUBASE: 0
3383
3384                                          ;THIS UTILITY POKES THE MAINT DATA BASED UPON THE
3385                                          ;INFORMATION CONTAINED IN TEMP1 AND IT IS
3386                                          ;SHIFTED IN BY THE CONTENTS OF SHIFT
3387  017404  042777  040000  000302  RPOKE:  BIC     #MTDATA,@TXCSR
3388  017412  005067  161530                   CLR     TEMP2
3389  017416  006067  161522                   ROR     TEMP1   ;FORCE CARRY
3390  017422  006067  161520                   ROR     TEMP2   ;PICK UP CARRY IN BIT 15
3391  017426  006267  161514                   ASR     TEMP2   ;SHIFT INTO BIT 14
3392  017432  042767  100000  161506           BIC     #BIT15,TEMP2    ;CLR BIT 15
3393  017440  056777  161502  000246           BIS     TEMP2,@TXCSR    ;POKE MAINT DATA
3394  017446  042777  020000  000240           BIC     #CLK,@TXCSR     ;POKE CLK
3395  017454  052777  020000  000232           BIS     #CLK,@TXCSR     ;
3396  017462  005367  161452                   DEC     SHIFT
3397  017466  001346                           BNE     RPOKE
3398  017470  000207                           RTS     PC
3399
3400                                          ;THIS ROUTINE CALCULATES ODD PARITY FOR AN 8 BIT CHAR
```

```
3401  017472  016767  161446  161446  ODD8:   MOV     TEMP1,TEMP2     ;SAVE TEMP1
3402  017500  005067  161444          CLR     TEMP3
3403  017504  012727  000010          MOV     #8.,(PC)+
3404  017510  000000                  1$:     0
3405  017512  006067  161430          2$:     ROR     TEMP2
3406  017516  005567  161426          ADC     TEMP3
3407  017522  005367  177762          DEC     1$
3408  017526  001371                  BNE     2$
3409  017530  006067  161414          ROR     TEMP3
3410  017534  103404                  BCS     3$
3411  017536  052767  000400  161400  BIS     #BIT8,TEMP1     ;SET ODD PARITY
3412  017544  000403                  BR      4$
3413  017546  042767  000400  161370  3$:     BIC     #BIT8,TEMP1     ;CLR EVEN PARITY
3414                                  ;TEMP1 NOW HAS ODD PARITY CHARACTER
3415  017554  000207                  4$:     RTS     PC
3416
3417                                  ;THIS ROUTINE CALCULATES EVEN PARITY FOR AN 8 BIT CHARACTER
3418  017556  016767  161362  161362  EVEN8:  MOV     TEMP1,TEMP2     ;SAVE TEMP1
3419  017564  005067  161360          CLR     TEMP3
3420  017570  012727  000010          MOV     #8.,(PC)+
3421  017574  000000                  1$:     0
3422  017576  006067  161344          2$:     ROR     TEMP2
3423  017602  005567  161342          ADC     TEMP3
3424  017606  005367  177762          DEC     1$
3425  017612  001371                  BNE     2$
3426  017614  006067  161330          ROR     TEMP3
3427  017620  103004                  BCC     3$
3428  017622  052767  000400  161314  BIS     #BIT8,TEMP1     ;SET EVEN PARITY
3429  017630  000403                  BR      4$
3430  017632  042767  000400  161304  3$:     BIC     #BIT8,TEMP1     ;CLR ODD PARITY
3431                                  ;TEMP1 NOW HAS EVEN PARITY CHARACTER
3432  017640  000207                  4$:     RTS     PC
3433  017642  062716  000002          TRPPEG: ADD     #2,(SP) ;ALLOW IT TO "CRUNCH" INTO HLT BACK
3434                                                          ;IN MAIN PART OF THE PROGRAM
3435  017646  000002                  RTI
3436                                  ;ERROR HLT TABLE
3437  017650  017734                  .ERPTAB:        EM0     ;HLT 0  BIT ERROR (GENERAL)
3438  017652  000000                                  0
3439  017654  000000                                  0
3440  017656  017750                                  EM1     ;HLT 1  REGISTER ERROR
3441  017660  020121                                  DH1
3442  017662  020142                                  DT1
3443  017664  020012                                  EM2     ;HLT 2  RECEIVER ERROR
3444  017666  020121                                  DH1
3445  017670  020142                                  DT1
3446  017672  020054                                  EM3     ;HLT 3  TRANSMITTER ERROR
3447  017674  020121                                  DH1
3448  017676  020142                                  DT1
3449                                  ;DEFAULT DU ADDRESSES
3450  017700  160040                  RXCSR:  160040
3451  017702  160041                  HRXCSR: 160041
3452  017704  160042                  RXDBUF: 160042
3453  017706  160043                  HRXDBUF:        160043
3454  017710  160042                  PARCSR: 160042
3455  017712  160043                  HPARCSP:        160043
3456  017714  160044                  TXCSR:  160044
```

```
  3457  017716  160045                  MTXCSR: 160045
  3458  017720  160046                  TXDBUF: 160046
  3459  017722  160047                  MTXDBUF:        160047
  3460                                          ;DEFAULT DU VECTORS
  3461  017724  000770                  DURIV:  770     ;REC INTR VECTOR
  3462  017726  000772                  DURIS:  772     ;REC INTR STATUS
  3463  017730  000774                  DUTIV:  774     ;XMIT INTR VECTOR
  3464  017732  000776                  DUTIS:  776     ;XMIT INTR STATUS
  3465                                          ;ERROR MESSAGES
  3466  017734  036440  042440  051122  EM0:    .ASCIZ  / = ERROR PC/
  3467  017742  051117  050040  000103
  3468  017750  036440  051040  043505  EM1:    .ASCIZ  / = REGISTER ERROR PC/<15><12><1>/REGISTER  /
  3469  017756  051511  042524  020122
  3470  017764  051105  047522  020122
  3471  017772  041520  045015  051001
  3472  020000  043505  051511  042524
  3473  020006  020122  000040
  3474  020012  036440  051040  041505  EM2:    .ASCIZ  / = RECFIVER ERROR PC/<15><12><1>/REGISTER  /
  3475  020020  044505  042526  020122
  3476  020026  051105  047522  020122
  3477  020034  041520  045015  051001
  3478  020042  043505  051511  042524
  3479  020050  020122  000040
  3480  020054  036440  052040  040522  EM3:    .ASCIZ  / = TRANSMITTER ERROR PC/<15><12><1>/REGISTER  /
  3481  020062  051516  044515  052124
  3482  020070  051105  042440  051122
  3483  020076  051117  050040  006503
  3484  020101  000412  042522  044507
  3485  020112  052123  051105  020040
  3486  020120     000
  3487                                          ;DATA HEADERS FOR ERROR MESSAGES
  3488  020121     105  050130  041505  DH1:    .ASCIZ  /EXPECTED  ACTUAL/
  3489  020126  042524  020104  040440
  3490  020134  052103  040525  000114
  3491                                  .EVEN
  3492                                          ;DATA TABLES FOR ERROR MESSAGES
  3493  020142  000003                  DT1:    3
  3494  020144     006       004                .BYTE   6,4
  3495  020146  001164                          SAVR3   ;REGISTER
  3496  020150     006       004                .BYTE   6,4
  3497  020152  001156                          SAVR0   ;EXPECTED DATA
  3498  020154     006       002                .BYTE   6,2
  3499  020156  001160                          SAVR1   ;ACTUAL DATA
  3500          000001                  .END
```

```
AAA     002046            989#
ACIREG  001216            887#    937*    951*    952*    959*   2742    2745    2755
ADRCNT= 014263           2907*   2946*   2955#
BASEAD  001204            892#    919*    956*    957     963*    965*   2749*   2761*   2765
BASEIV  001212            895#    929*    2750*   2762*   2767    2768*   2769    2770*   2771    2772*   2773    2774*
BBB     001664            936     940#
BINWRD  014620           2996*   2997    3034#
BITW  = 002000            717#   1607    1614    1627    1634    1644    1660    1667    1677
BIT0  = 000001            665#    693     724    1594
BIT1  = 000002            664#    692
BIT10 = 002000            655#    683     717
BIT11 = 004000            654#    682    1456    1457    1461    1462    1467    1469
BIT12 = 010000            653#    681     698    1481    1482    1486    1487    1492    1494
BIT13 = 020000            652#    680     697     716
BIT14 = 040000            651#    679     696     715
BIT15 = 100000            650#    678     695     714    3392
BIT2  = 000004            663#    691    1032
BIT3  = 000010            662#    690     723
BIT4  = 000020            661#    689     722
BIT5  = 000040            660#    688     721    1605
BIT6  = 000100            659#    687     720
BIT7  = 000200            658#    686     719
BIT8  = 000400            657#    685     701     718    3411    3413    3428    3430
BIT9  = 001000            656#    684     700
BREAK = 000001            724#   1339    1340    1344    1345    1350    1352    1625    1640    1658    1673    2123    2153
                         2192    2273    2354    2435    2511    2569    2627    2685
BRW     013614           1029    1043    2835#
BRX     013616           1030    1044    2836#
CARDET= 010000            681#
CCC     013350           2741    2764    2781#
CHRCNT  014576           2994*   2998    3012*   3032*   3033
CKSWR = 104413            849#   2794    2816    2840    3069    3112
CLK   = 020000            716#   1504    1505    1509    1510    1515    1517    2123    2153    2192    2199    2200    2202
                         2203    2273    2280    2281    2283    2284    2354    2361    2362    2364    2365    2435    2442
                         2443    2445    2446    2511    2517    2518    2520    2521    2569    2575    2576    2578    2579
                         2627    2633    2634    2636    2637    2685    2691    2692    2694    2695    3394    3395
CNTLU = 104414            851#    896
CNVRT = 104411            845#   3186
CONVRT= 104413            843#   2738    3092    3103    3155
COUNT   001142            778#   2204*   2208*   2285*   2289*   2366*   2370*   2447*   2451*
CTS   = 020000            680#
DATABP  015052           3087*   3090    3101    3104#
DATAHD  015040           3086*   3097    3100#
DEVADP  014260           2905*   2943    2953#
DEVICE  015767           2739    3239#
DH1     020121           3441    3444    3447    3488#
DISPRE  000174            745#    889
DLIGHT= 177570            635#    880
DNA   = 100000            714#   1736
DNAINT= 000040            721#   1408    1409    1413    1414    1419    1421
DSC   = 100000            678#   1713
DSINTE= 000040            688#   1270    1271    1275    1276    1281    1283
DSR   = 001000            684#
DSWR  = 177570            634#    879
DTR   = 000002            692#   1148    1149    1153    1154    1159    1165    1170    1883    1955    2045    2094
DT1     020142           3442    3445    3448    3493#
```

CROSS REFERENCE TABLE -- USER SYMBOLS

```
DUADDP  017250            918    2766    3364#
DUBASE  017402            914     917    2765*  3364   3365*  3366   3367*  3368   3369   3370*  3371   3372   3373*
                         3374   3375*  3376   3377*  3378   3379*  3380   3382#
DULEV   017174            904    3351#
DUPRT   017244            901    3351*  3352*  3353*  3354*  3355*  3356   3360#
DURIS   017726           2769*   3462#
DUPIV   017724            925     928    929   2767*  2774   3461#
DUTIS   017732           2773*   3464#
DUTIV   017730           2771*   3463#
EIGHT =  000010            709#  2126   2156   2438
EM0     017734           3437    3466#
EM1     017750           3440    3468#
EM2     020012           3443    3474#
EM3     020054           3446    3480#
ERRCNT  001132            771#   870*  3113*
ERRFLG  001224            817#   869*  2783*  2829*  3075*  3088   3094*  3159*
ERRMSG  015026           3085*   3096#
ERTABW  015144           3093    3122#
EVENB   017556           3418#
EVEPAR=  001000            712#
EVPAR =  000400            701#
EXITER  015076           3107    3112#
FIVE =  000005             706#  2195   2514   2572   2630   2688
FRMERR=  020000             697#  1773
HALTS   015056           3071    3106#
HDXEN =  000010            723#  1362   1363   1367   1368   1373   1375
HILIM   014256           2904*   2934   2952#
HOLD    001136            776#  1631   1641   1664   1674   1888   1910   1936   1960   1976   1992   2017   2033
                         2050   2067   2083   2099
HPARCS  017712           1099*   3372*  3455#
HPXCSP  017702           1069*   1594*  3366*  3451#
HPXDBU  017706           1084*   3371*  3453#
HTXCSP  017716           1114*   1605*  3376*  3457#
HTXDBU  017722           1129*   3380*  3459#
ICOUNT  001122            767#   2827   2831*
INBUF   017034            992     996   2868   2910   3042   3046   3343#
INIFLG  001222            815#    875    878*
INSTER=  104401            835#   1000   2029   3051
INSTR =  104403            833#    909    920    930    941    966    976    990   1003   1007   1011   1015   1034
                         1047   3187
INSTR2  014042           2879    2894#
ISYMOD=  000000            705#  2149   2156   2507   2514   2565   2572   2623   2630   2681   2688
JMPBY   001203            798#  1018   1656   1872
KEEPAD  001206            803#   917*   919    963    965   2761
KEEPIV  001214            806#   928*  2762
LASTAD  001210            804#   946    957    971
LFSS1   017246           3356*   3357*  3358*  3361#
LEVEL0=  000000             675#
LEVEL1=  000040             674#
LEVEL2=  000100             673#
LEVEL3=  000140             672#
LEVEL4=  000200             671#  3361
LEVEL5=  000240             670#  3360
LEVEL6=  000300             669#
LEVEL7=  000340             668#  1065   1080   1095   1110   1125   1553
LIGHTS  001102            756#   800*   809*  2785*
```

CROSS REFERENCE TABLE -- USER SYMBOLS

```
LIMITS  016204            2920    2934#
LOBITS  016262            2906*   2938    2954#   2955
LOCK    001120             766#   2843
LOGICA  013402            2789#
LOKFLG  001225             818#   1037    1038
LOLIM   014254            2903*   2936    2951#
LPCNT   001124             768#    866*   2826*   2827    2830*
LSTERR  001134             772#    871*   2782*   3072    3074*   3160*
MASK1   007236            1943#
MASK2   007254            1949#
MASK3   007344            1953#
MCOW    016001            2744    3241#
MCRLF   016156            2876    2892    2984    3193    3261#
MDATA   017134            3010    3021    3345#
MEPASS  016246            2737    3271#
MEXT  = 010000             728#   1658    1673
MEXTJ   016637            1016    3317#
MINT  = 004000             727#   1625    1640    2123    2153    2192    2273    2354    2435    2511    2569    2627    2685
MLASTD  015706             942    3230#
MLEVEL  016355             977    3284#
MLOCK   016312            1035    3278#
MMULT   015627             931    3222#
MPFAIL  016161            3158    3262#
MQM     016152            2889    3260#
MP      016273            1057    3275#
MRANGE  016071             967    3251#
MPEGAD  015546             910    3213#
MPRESET= 004000            718#   1160    1193    1226    1259    1282    1305    1328    1351    1374    1397    1420    1443
                          1468    1493    1516    1539    1573    1574    1578    1579    1589    1604    1639    1672    1688
                          1700    1712    1724    1735    1747    1760    1772    1784    1796    1808    1836    1850    1867
                          2118    2120    2148    2150    2187    2189    2268    2270    2349    2351    2430    2432    2506
                          2508    2564    2566    2622    2624    2680    2682
MSYNC   016402             991    3288#
MTDATA= 040000             715#   1527    1529    1532    1533    1538    1540    1625    1630    1638    1658    1663    1671
                          2123    2153    2192    2273    2354    2435    2511    2569    2627    2685    3307
MTITLE  015472             877    3205#
MTSTPC  016277            1048    3276#
MULTD   001202             797#    933     934    1026    2740
MVECTO  015524             921    3210#
MWIRE4  016563            1012    3309#
MWIPE5  016516            1008    3302#
MWIRE6  016450            1004    3295#
NEXT    001116             765#   1063*   1078*   1093*   1108*   1123*   1138*   1147*   1180*   1213*   1246*   1269*   1292*
                          1315*   1338*   1361*   1384*   1407*   1430*   1455*   1480*   1503*   1526*   1549*   1572*   1588*
                          1624*   1653*   1687*   1699*   1711*   1723*   1734*   1746*   1759*   1771*   1783*   1795*   1806*
                          1834*   1849*   1865*   2117*   2147*   2196*   2267*   2348*   2429*   2505*   2563*   2621*   2679*
                          2812    2832    3118
NOPAR = 000000             710#   2126    2156    2195    2276    2357    2438    2514    2572    2630    2688
ODDPAR= 001000             711#
ODDB    017472            3401#
ONCE    001362             876    879#
OPTCLR  001201             796#   1014    1163    1196    1229    1556    1590    1811
OUT     015430            3174    3176    3178    3182    3194#
OUTCRY  013342            2738    2777#
OUTMUL  002024             939     964    975#
OUT1    007706            1875    2009    2061    2110#
```

CROSS REFERENCE TABLE -- USER SYMBOLS

```
OUT2    000432            1928    2012#
OUT3    000562            1930    2062#
OVRRUN= 040000             696#   1785
PARAM = 104405             837#    911     922     943     968     978    1049    3188
PARAM1  014110            2909#   2930
PARCSP  017710            1096#   2119#   2126#   2149#   2156#   2188#   2195#   2269#   2276#   2350#   2357#   2431#   2438#
                          2507#   2514#   2565#   2572#   2623#   2630#   2681#   2688#   3369#   3454#
PAREN = 001000             700#
PARER = 010000             698#   1761
PAPERP  014164            2912    2914    2916    2925#   2935    2937    2939
PARTI   014246            2928    2948#
PASCNT  001130             770#    868#   2784#   2785
PFTAB   015306            3156    3162#
POPR0 = 012600             644#   3111
POP1SP= 005726             642#
POP2SP= 022626             646#
PS    = 177776             636#    863#   1022#   1553#   2793#   3150#
PUSHR0= 010046             643#   3108
PUSH1S= 005746             641#
PUSH2S= 024646             645#
RDSW    015314            2890    2927    3170#   3184#   3194#
RECACT= 004000             682#   1701    2127    2132    2137    2157    2162    2167    2217    2228    2233    2298    2309
                          2314    2379    2390    2395    2460    2471    2476
REPLAY  013246            2757    2763    2765#
RFSREG  015054            3102    3105#
RFSTAR  015210            3136    3142#
RESTRT  013412            2758    2787    2793#
RES05 = 104007             941#   3105
RING  = 040000             679#
RINTFN= 000100             687#   1293    1294    1298    1299    1304    1306
ROTADD  001220             910#    938#    950#    952     954#    959     962#   2752#   2755    2759#
RPOKE   017404            2207    2223    2288    2304    2369    2385    2450   2466    2526    2540    2544    2584    2598
                          2602    2642    2656    2660    2700    2714    2718   3387#   3397
RTRN    001114             764#    873#   1052    1056#   1058    2795#   2812#  2813    2832#   2833    3118#   3120    3161
                          3164
RTS   = 000004             691#   1101    1102    1106    1107    1192    1198   1203    1905    1971    2028    2078
RUNA  = 000000               1      52      69     135     576
RUNB  = ******  U            20      57      69     138     581
RUNC  = ******  U            20      57      69     138     581
RUND  = ******  U            20      57      69     138     581
RUNE  = ******  U            20      57      72     138     581
RUNF  = ******  U            20      57      72     138     581
RUNIT   013152            2743    2749#   2756
RXCSP   017700            1066#   1148#   1149    1153#   1154    1159#   1165   1170    1181#   1182    1186#   1187    1192#
                          1198    1203    1213#   1215    1219#   1220    1225#  1231    1236    1247#   1248    1252#   1253
                          1258#   1260    1270#   1271    1275#   1276    1281#  1283    1293#   1294    1298#   1299    1304#
                          1306    1316#   1317    1321#   1322    1327#   1329   1550#   1554    1592#   1593    1595    1599#
                          1600    1689    1701    1713    1807#   1809    1810   1866#   1877    1878    1883#   1894    1899
                          1905#   1916    1921    1931#   1942    1948    1955#  1966    1971#   1982    1987#   1998    2003
                          2012#   2023    2028#   2039    2045#   2056    2062#  2073    2078#   2089    2094#   2105    2127
                          2131#   2132    2136#   2137    2157    2161#   2162   2166#   2167    2197#   2213    2217    2224
                          2228    2232#   2233    2237    2247    2278#   2294   2298    2305    2309    2313#   2314    2318
                          2328    2359#   2375    2379    2386    2390    2394#  2395    2399    2409    2440#   2456    2460
                          2467    2471    2475#   2476    2480    2490    2515#  2527    2573#   2585    2631#   2643    2689#
                          2701    2779    3364#   3450#
RXDBUF  017704            1081#   1748    1750    1761    1773    1785    1797   1851    1852    2196    2242    2277    2323
```

CROSS REFERENCE TABLE -- USER SYMBOLS

```
                    2358    2404    2439    2485    2522    2531    2547    2580    2589    2605    2638    2647    2663
                    2696    2705    2721    3368*   3452*
RXDONE= 000200       686#   1689
RXERR = 100000       695#   1797
SAVPC   001174       791#   2959*   3124
SAVR0   001156       784#   2968*   2973    3497
SAVR1   001160       785#   2967*   2974    3499
SAVR2   001162       786#   2966*   2975
SAVR3   001164       787#   2965*   2976    3495
SAVR4   001166       788#   2964*   2977
SAVR5   001170       789#   2963*   2978
SAVSP   001172       790#   3135*   3142
SAV05 = 104426       839#   3076
SCOPE = 104400       827#   1074    1089    1104    1119    1134    1142    1175    1208    1241    1264    1287    1310
                    1333    1356    1379    1402    1425    1448    1473    1498    1521    1544    1567    1584    1618
                    1647    1680    1694    1706    1718    1729    1741    1754    1766    1778    1790    1802    1828
                    1843    1857    2110    2141    2171    2252    2333    2414    2495    2553    2611    2669    2727
SCOP1 = 104401       829#
SEND  = 000020       722#   1385    1386    1390    1391    1396    1398
SEREC   001200       795#   1010    1929
SFTFLG= 104412       847#    932    1005    1009    1013    1017    1036
SEVEN = 004000       708#   2357
SEXMIT  001177       794#   1006    1927
SHIFT   001140       777#   2205*   2221*   2286*   2302*   2367*   2383*   2448*   2464*   2524*   2538*   2542*   2582*
                    2596*   2600*   2644*   2654*   2658*   2698*   2712*   2716*   3396*
SIX   = 002000       707#   2276
SPACNT= 014577      2995*   3014    3017*   3033#
SPD   = 002000       683#
STACK = 001140       637#    864    1023    3119    3151
STD   = 000010       690#   1214    1215    1219    1220    1225    1231    1236    1931    1987    2012    2062
STFLG   001223       816#    867*
STPSYN= 000400       685#   1316    1317    1321    1322    1327    1329
SVR5    014272      2963#
SWR     001100       755#    879*    884     888*    894     897    1032    1045    2817    2824    2841    3070    3106
                    3114    3116    3175
SWREG   000176       746#    888     894     3175    3191    3198
SWREGC  015436      3186    3196#
SW00  = 000001       617#    897
SW01  = 000002       616#   1045
SW02  = 000004       615#
SW03  = 000010       614#
SW04  = 000020       613#
SW05  = 000040       612#
SW06  = 000100       611#
SW08  = 000400       610#   3114
SW09  = 001000       609#   2841
SW10  = 002000       608#   3116
SW11  = 004000       607#   2824
SW12  = 010000       606#
SW13  = 020000       605#   3070
SW14  = 040000       604#   2817
SW15  = 100000       603#
SYNCNO  001176       793#    994*    998*   2211    2292    2373    2454
SYNEXT= 020000       704#   2119    2126
SYNINT= 030000       703#   2188    2195    2269    2276    2350    2357    2431    2438
SYNSCH= 000020       689#   1247    1248    1252    1253    1258    1260    2131    2136    2161    2166    2197    2232
```

CROSS REFERENCE TABLE -- USER SYMBOLS

```
                        2270    2313    2359    2394    2440    2475    2515    2573    2631    2689
SYSTST= 014000           729#
TEMP    017074          2991    2999    3024*   3152*   3153*   3344#
TEMP1   001144           779#   2206*   2222*   2287*   2303*   2368*   2384*   2449*   2465*   2525*   2539*   2543*   2583*
                        2597*   2601*   2641*   2655*   2659*   2699*   2713*   2717*   3389*   3401    3411*   3413*   3418
                        3428*   3430*
TEMP2   001146           780#   3388*   3390*   3391*   3392*   3393    3401*   3405*   3418*   3422*
TEMP3   001150           781#   2991*   3024    3402*   3406*   3409*   3419*   3423*   3426*
TEMP4   001152           782#
TEMP5   001154           783#
TKCSR   001104           757#   2020    2070    3177
TKDBR   001106           758#   2022    2072    2080    3179
TLAST = 012642          1051    2730#
TPCSR   001110           759#   2053    2081
TPDBR   001112           760#   2055*   2080*
TPPOK   014662          3061#
TPPREG  017642          1064    1079    1094    1109    1124    3433#
TSTNO   001126           769#    872*   1062*   1077*   1092*   1107*   1122*   1137*   1146*   1179*   1212*   1245*   1268*
                        1291*   1314*   1337*   1360*   1383*   1406*   1429*   1454*   1479*   1502*   1525*   1548*   1571*
                        1587*   1623*   1652*   1696*   1698*   1710*   1722*   1733*   1745*   1758*   1770*   1782*   1794*
                        1805*   1833*   1848*   1864*   2116*   2146*   2185*   2266*   2347*   2428*   2504*   2562*   2620*
                        2678*
TST1    002350          1050    1056    1062#   2795    2796
TST10   003426          1213    1245#
TST11   003532          1246    1268#
TST12   003636          1269    1291#
TST13   003742          1292    1314#
TST14   004046          1315    1337#
TST15   004152          1338    1360#
TST16   004256          1361    1383#
TST17   004362          1384    1406#
TST18   004466          1407    1429#
TST19   004572          1430    1454#
TST2    002436          1063    1077#
TST20   004676          1455    1479#
TST21   005002          1480    1502#
TST22   005106          1503    1525#
TST23   005212          1526    1548#
TST24   005322          1549    1571#
TST25   005400          1572    1587#
TST26   005566          1590    1623#
TST27   005720          1624    1652#
TST28   006060          1653    1696#
TST29   006116          1697    1698#
TST3    002524          1078    1092#
TST30   006154          1699    1710#
TST31   006212          1711    1722#
TST32   006250          1723    1733#
TST33   006306          1734    1745#
TST34   006354          1746    1758#
TST35   006412          1759    1770#
TST36   006450          1771    1782#
TST37   006506          1783    1794#
TST38   006544          1795    1805#
TST39   006652          1806    1833#
TST4    002612          1093    1107#
```

```
TST40   000726          1834    1848#
TST41   000774          1849    1864#
TST42   007710          1865    2116#
TST43   010036          2117    2146#
TST44   010164          2147    2185#
TST45   010506          2186    2266#
TST46   011030          2267    2347#
TST47   011352          2348    2428#
TST48   011674          2429    2504#
TST49   012136          2505    2562#
TST5    002700          1109    1122#
TST50   012400          2563    2620#
TST51   012642          2621    2678#   2730
TST52 = 000000 U        2679
TST6    002766          1123    1137#
TST7    003016          1138    1146#
TST8    003146          1147    1179#
TST9    003276          1180    1212#
TTST    013516          1029*   1030*   1040*   1041*   1043*   1044*   2818#
TXCSR   017714          1111*   1160*   1193*   1226*   1259*   1282*   1305*   1328*   1339*   1340    1344*   1345    1350*
                        1351*   1352    1362*   1363    1367*   1368    1373*   1374*   1375    1385*   1386    1390*   1391
                        1396*   1397*   1398    1408*   1409    1413*   1414    1419*   1420*   1421    1431*   1432    1436*
                        1437    1442*   1443*   1444    1456*   1457    1461*   1462    1467*   1468*   1469    1481*   1482
                        1486*   1487    1492*   1493*   1494    1504*   1505    1509*   1510    1515*   1516*   1517    1527*
                        1528    1532*   1533    1538*   1539*   1540    1551*   1555    1573*   1574    1578*   1579    1589*
                        1604*   1606    1612*   1613    1625*   1627    1630*   1634    1638*   1639*   1640*   1644    1650*
                        1660    1663*   1667    1671*   1672*   1673*   1677    1688*   1700*   1712*   1724*   1725    1735*
                        1736    1747*   1760*   1772*   1784*   1796*   1808*   1835*   1836*   1837    1838    1850*   1867*
                        2118*   2120*   2123*   2148*   2150*   2153*   2187*   2189*   2192*   2199*   2200*   2202*   2203*
                        2268*   2270*   2273*   2280*   2281*   2283*   2284*   2349*   2351*   2354*   2361*   2362*   2364*
                        2365*   2430*   2432*   2435*   2442*   2443*   2445*   2446*   2506*   2508*   2511*   2517*   2518*
                        2520*   2521*   2564*   2566*   2569*   2575*   2576*   2578*   2579*   2622*   2624*   2627*   2633*
                        2634*   2636*   2637*   2680*   2682*   2685*   2691*   2692*   2694*   2695*   3374*   3387*   3393*
                        3394*   3395*   3456#
TXDBUF  017720          1126*   1139    3378*   3458#
TXDONE= 000200           719#   1725
TXINTE= 000100           720#   1431    1432    1436    1437    1442    1444
TYPDAT  015042          3091    3098    3101#
TYPE   = 104402          831#    877    1057    2736    2739    2744    2866    2876    2888    2892    2983    3020    3095
                        3099    3157    3183    3185    3193
TYPMSG  015012          3089    3092#
USER   = 000200          726#
VOID   = 000001          693#
WRDCNT  014574          2993*   3022*   3031#
ZERO    013160          2750#
$CNTG   015444          3183    3199#
$E     = 000065           587#   1063    1064#   1078    1079#   1093    1094#   1108    1109#   1123    1124#   1138    1139#
                        1147    1148#   1180    1181#   1213    1214#   1246    1247#   1269    1270#   1292    1293#   1315
                        1316#   1338    1339#   1361    1362#   1384    1385#   1407    1408#   1430    1431#   1455    1456#
                        1480    1481#   1503    1504#   1526    1527#   1549    1550#   1572    1573#   1588    1589#   1624
                        1625#   1653    1654#   1687    1688#   1699    1700#   1711    1712#   1723    1724#   1734    1735#
                        1746    1747#   1759    1760#   1771    1772#   1783    1784#   1795    1796#   1806    1807#   1834
                        1835#   1849    1850#   1865    1866#   2117    2118#   2147    2148#   2186    2187#   2267    2268#
                        2348    2349#   2429    2430#   2505    2506#   2563    2564#   2621    2622#   2679    2680#
$MNEM   015461          3187    3202#
$MSWP   015451          3185    3200#
```

CROSS REFERENCE TABLE -- USER SYMBOLS

```
$N     = 000063          587#   1062    1064#   1077    1079#   1092    1094#   1107    1109#   1122    1124#   1137    1139#
                        1146    1148#   1179    1181#   1212    1214#   1245    1247#   1268    1270#   1291    1293#   1314
                        1316#   1337    1339#   1360    1362#   1383    1385#   1406    1408#   1429    1431#   1454    1456#
                        1479    1481#   1502    1504#   1525    1527#   1548    1550#   1571    1573#   1587    1589#   1623
                        1625#   1652    1654#   1686    1688#   1698    1700#   1710    1712#   1722    1724#   1733    1735#
                        1745    1747#   1758    1760#   1770    1772#   1782    1784#   1794    1796#   1805    1807#   1833
                        1835#   1848    1850#   1864    1866#   2116    2118#   2146    2148#   2185    2187#   2266    2268#
                        2347    2349#   2428    2430#   2504    2506#   2562    2564#   2628    2622#   2678    2688#   2738#
$Y     = 000015          819#    827     829#    831#    833#    835#    837#    839#    841#    843#    845#    847#    849#
                         851#    853#
.      = 020160          731#    734#    744#    751#   1140    1561    1565    1597    1602    1618    1616    1628    1635
                        1645    1661    1668    1678    1726    1752    1817    1824    1841    1855    1873    1881    1897
                        1902    1919    1924    1946    1952    1969    1985    2001    2006    2026    2043    2059    2076
                        2092    2108    3284#   3343#   3344#   3345#
.BEGIN  002156           899    1022#
.CKSWR  015316           850    3173#
.CNTLC  015372           852    3184#
.CNVRT  014362           846    2985#
.CONVR  014356           844    2983#
.EOP    013104          2679    2736#
.ERRTA  017650          3084    3437#
.HLT    014702           737    3069#
.INSTE  014016           836    2886#
.INSTG  014022          2885    2888#
.INSTR  013700           834    2862#
.INST1  013720          2866#   2877    2893
.MSG    013722          2864*   2867#   3179*   3180*   3181
.PARAM  014050           838    2900#
.PFAIL  015152           735     865    3128#   3149
.PES05  014324           842    2973#
.SAV05  014264           840    2959#
.SCOPE  013434           828    2800#
.SCOP1  013620           830    2840#
.SETFL  014602           848    3041#   3052
.START  001260           747     863#    873    2748
.TRPSP  014650           739    3058#
.TRPTA  001226           824#   3063
.TYPE   013640           832    2848#
```

CROSS REFERENCE TABLE -- MACRO NAMES

```
HLT      647#   1068   1071   1083   1096   1098   1101   1113   1116   1120   1131   1141   1151   1156   1167
        1172   1184   1189   1200   1205   1217   1222   1233   1238   1250   1255   1262   1273   1278   1285
        1296   1301   1308   1319   1324   1331   1342   1347   1354   1365   1370   1377   1388   1393   1400
        1411   1416   1423   1434   1439   1446   1459   1464   1471   1484   1489   1496   1507   1512   1519
        1530   1535   1542   1562   1566   1576   1581   1598   1603   1611   1617   1629   1636   1646   1662
        1669   1679   1691   1703   1715   1727   1738   1753   1763   1775   1787   1799   1818   1825   1842
        1856   1882   1898   1903   1920   1925   1947   1953   1970   1986   2002   2007   2027   2044   2060
        2077   2093   2109   2129   2134   2139   2159   2164   2169   2215   2219   2226   2230   2235   2239
        2245   2249   2296   2300   2307   2311   2316   2320   2326   2330   2377   2381   2388   2392   2397
        2401   2407   2411   2458   2462   2469   2473   2478   2482   2488   2492   2529   2534   2550   2587
        2592   2608   2645   2650   2666   2703   2708   2724
PRGEND   587#   2729
PPGFRT   587#    588
PUSSYF   587#
RSETUP   587#   2118   2148   2187   2268   2349   2430   2506   2564   2622   2680
TSETUP   587#
$BEGIN   587#   1019
$BINAP   587#
$BUFFE   587#   3340
$CABLE   587#   1884   1906   1932   1956   1972   1988   2013   2029   2046   2063   2079   2095
$CATCH   587#    738
$CLPVE   587#    879
$CONVP   587#   2980
$DNA     587#
$EOP     587#   2729
$GETFL   587#    930   1003   1007   1011   1015   1034
$GETPA   587#    909    920    940    966    975   1047
$GETSY   587#    985
$HEADF   587#    588
$HLT     587#   3066
$INSTR   587#   2859
$ISOB    587#
$MATCH   587#
$MRR     587#   1683   1695   1707   1730   1755   1767   1779   1791
$MRRW    587#   1143   1176   1209   1242   1265   1288   1311   1334   1357   1380   1403   1426   1451   1476
        1499   1522
$MRW     587#   1568
$MSG     587#   3205
$PARAM   587#   2897
$PFAIL   587#   3125
$POKE    587#
$POKER   587#   2201   2282   2363   2444   2519   2577   2635   2693
$PCNET   587#
$RECAC   587#   2172   2253   2334   2415
$REG     587#   2956
$RESET   587#   1160   1193   1226   1259   1282   1305   1328   1351   1374   1397   1420   1443   1468   1493
        1516   1539   1578   1589   1604   1639   1672   1698   1700   1712   1724   1735   1747   1760   1772
        1784   1796   1808   1836   1850   1867   2118   2120   2148   2150   2187   2189   2268   2270   2349
        2351   2430   2432   2506   2508   2564   2566   2622   2624   2680   2682
$RXACT   587#   2112   2142
$SCOPE   587#   2797
$SCOPI   587#   2837
$SETFL   587#   3035
$SETVE   587#    731
$START   587#    855
$STRIP   587#
```

CROSS REFERENCE TABLE -- MACRO NAMES

```
$SYMBO    587#    600
$SYNCR    587#   2197   2278   2359   2440   2515   2573   2631   2689
$TRAPS    587#    819
$TRPAR    587#
$TRPDE    587#    827    829    831    833    835    837    839    841    843    845    847    849    851
$TRPSP    587#   3053
$TSTNO    587#   1062   1077   1092   1107   1122   1137   1146   1179   1212   1245   1260   1291   1314   1337
          1360   1383   1406   1429   1454   1479   1502   1525   1548   1571   1587   1623   1652   1686   1690
          1710   1722   1733   1745   1758   1770   1782   1794   1805   1833   1848   1864   2116   2146   2185
          2266   2347   2428   2504   2562   2620   2678
$TYPE     587#   2845
$UNTBU    587#   1060   1075   1090   1105   1120
$VARIA    587#    750
$WORDF    587#
$WORDO    587#   2496   2554   2612   2670
$WORDP    587#

. ABS.  #20160    000

 ERRORS DETECTED:  0
 DEFAULT GLOBALS GENERATED:  #

 DZDUAD,DZDUAD/CRF/CPU:20/SOL=HELLO.P11/EQ:RUNA.PAPA.P11,KEET.P11,DZDUAD.P11
 RUN-TIME:  24  36  3 SECONDS
 RUN-TIME RATIO: 81/64=1.2
 CORE USED:  18K  (36 PAGES)
```