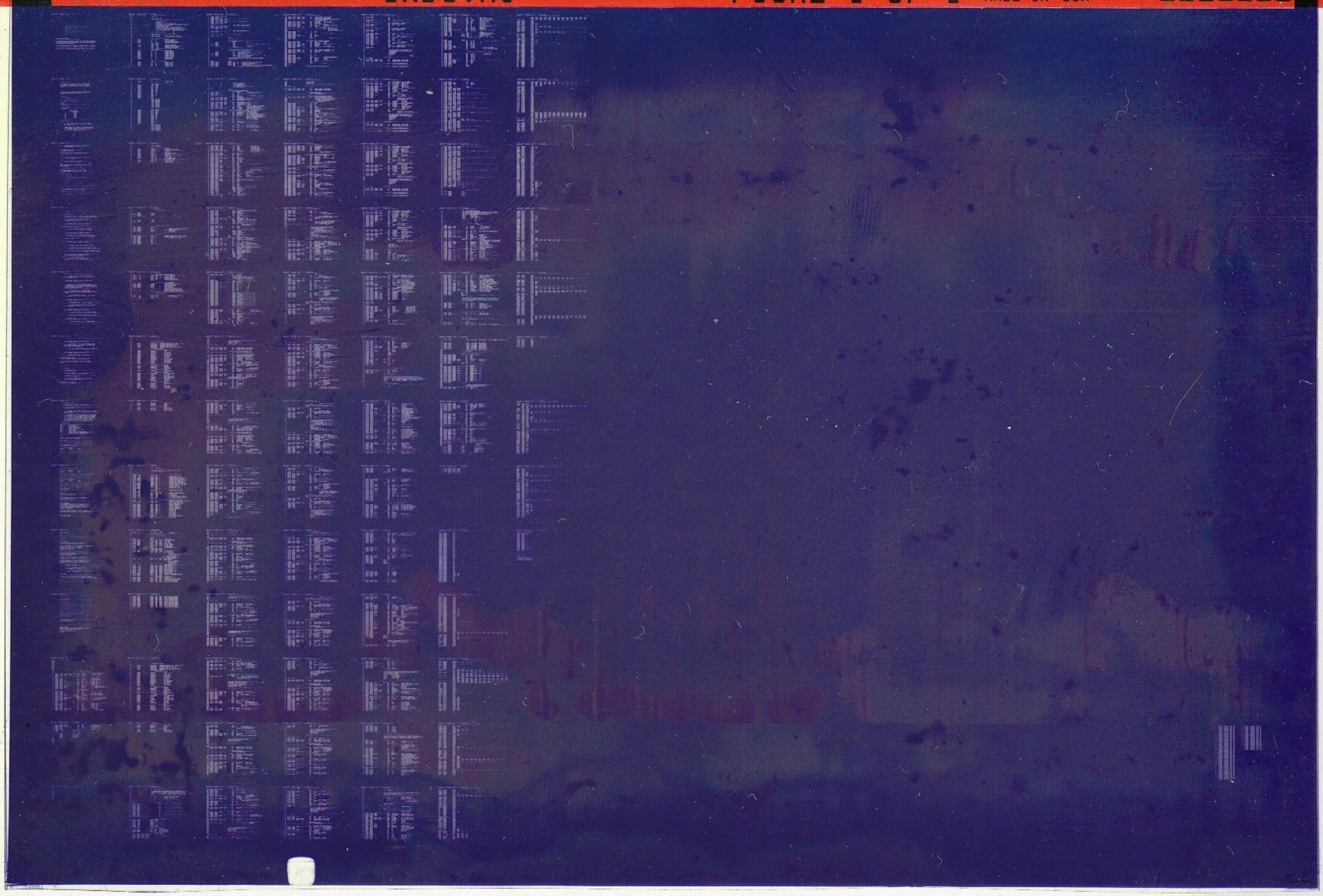
DUV11 OFLNE COMBINED CNDUVA0 AH-T460A-MC FICHE 1 OF 1



.REM *

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

PRODUCT NAME: CNDUVA0 DUV11 OFLNE COMBINED

PRODUCT CODE: AC-T459A-MC

PRODUCT DATE:DEC, 1982

MAINTAINER :DIAGNOSTICS SERVICES/ISS

AUTHOR: K.LIND

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GENERAL DESCRIPTION

THIS DIAGNOSTIC CAN CHAIN 16 DUV11'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.

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.REM *

1. THE DUV11 OFFLINE COMBINED TESTS VERIFY THAT THE TRANSMITTER
AND RECEIVER CAN TALK THRU THE EXTERNAL MODEM CABLE
PROVIDING THAT THE H315 CONNECTOR IS ON

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.REM *

2. REQUIREMENTS

PDP-11/21 COMPUTER (LSI)

DUV11 SYNCRONOUS/ISOCRONOUS OPTION

ONE CONSOLE TELETYPE OR EQUIVALENT

2.2 STORAGE
THE PROGRAM LOADS INTO 4K OF MEMORY WITH BOOTSTRAP

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: ALL SWITCHES RESIDE INTERNAL TO THE CPU AT ADDRESS
176. THESE MAY BE SET VIA THE CONSOLE TTY BY DIRECTLY
MODIFYING LOC. 176.

NOTE: RUNNING UNDER APT-11, THERE IS A USER SWITCH REGISTER
CALLED "$USWR". IN ORDER TO BE FLEXIBLE ON THE AVAILIBILITY OF THE
H315 CONNECTOR, ONE BIT PASSES STATUS TO APT-11.
BIT 0 IN $USWR REFLECTS THIS STATUS, A 0 = CONNECTOR
PRESENT, A 1 = CONNECTOR NOT AVAILIBLE.

THE USER CHANGES THE CONTENTS OF THIS LOCATION
WHEN BUILDING THE E TABLE, BY ANSWERING THE
PROMPT "SWITCH 2".

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)

SW14=1
NOTE1: IN GENERAL SW01 WILL BE USED WHEN SW14=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 SET SWITCH REGISTER (LOC. 176) TO ZERO.

4.3.1.3 TYPE 200G.

4.3.1.4 PROGRAM WILL START.

4.3.1.5 THE PROGRAM WILL TYPE 'DUV11 CNDUV-A TAPE F" (ONCE ONLY)

4.3.1.6 THE PROGRAM WILL TYPE "K" 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 SET SWITCH REGISTER (LOC. 176) TO A 000001.

4.3.3.2 TYPE 200G.

4.3.3.3 PROGRAM WILL START.

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 DUV11 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 DUV11 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 DUV11 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 DUV11 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 @ ACTREG: SEE SECTION 7.2

4.3.3.12 THE PROGRAM WILL TYPE ''# OF SYNC CHARS SELECTED (1 OR 2)-'' AND WAIT FOR AN INPUT FROM THE TELETYPE KEYBOARD. REFER TO MANUAL FOR PROPER SWITCH SETTINGS OF SWITCH E55-4.

4.3.3.13 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 4.3.3.1

4.3.3.14 THE PROGRAM WILL TYPE '' IS SEC XMIT SWITCH E55-2 ON? (Y OR N)-'' AND WAIT FOR AN INPUT FROM THE TELETYPE KEYBOARD

4.3.3.15 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 4.3.3.14

4.3.3.16 THE PROGRAM WILL TYPE ''IS SEC REC SWITCH E55-3 ON? (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: 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 OPT CLR ENABLE SWITCH E55-1 ON? (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 ''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

4.3.3.21 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 ''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 SET SW01=1 IN SWITCH REG (LOC. 176)

4.3.4.2 TYPE 200G.

4.3.4.3 PROGRAM WILL START.

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 RETURN>

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

NOTE: CARE 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 SW14 =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 SET SW14=1 IN SWITCH REG. (LOC. 176)

4.3.5.2 TYPE 200G.

4.3.5.3 PROGRAM WILL START.

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

5.1 OPERATIONAL SWITCH SETTINGS (INTERNAL TO THE CPU, ACCESSED VIA LOC. 176).

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
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 (UNDER LSI ALL HALT ERRORS RETURN CONTROL TO O.D.T.)
THERE ARE FOUR DISTINCT ERROR TYPEOUTS

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 = RECEIVER 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...TYPE 200G...
                        THE PROGRAM WILL CONTINUE WITH THE DEVICE IT WAS IN BEFORE HALTING.

                7.2.2.2 .......OR .....SET SW00=1 IN SWITCH REG (LOC. 176) AND TYPE 200G....
                        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.......TYPE 200G.

        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 11/21 MACHINE.

                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: 174300

VECTOR ADDRESS- DURIV: 330

ARE YOU RUNNING MULTIPLE DEVICES ?- NO MULTD: 0

LAST DEVICE: RECEIVER CONTROL REGISTER ADDRESS- LASTADD: 0

OF SYNC CHARS SELECTED - 2 SYNCNO: 377

IS SEC XMIT SWITCH E55-2 ON?- YES SEXMIT: 377

IS SEC REC SWITCH E55-3 ON?- YES SEREC: 377

IS OPT CLR ENABLE SWITCH E55-1 ON?- YES OPTCLR: 377

DO YOU HAVE THE EXTERNAL MODEM BYPASS JUMPER
CONNECTOR ON (H315)- YES JMRBY: 377

9. PROGRAM DESCRIPTION

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.REM *

9.1 THIS PROGRAM PERFORMS THE OFFLINE COMBINED (TRANSMITTER & RECEIVER)
CABLE TESTING OF THE DEVICE
SEE LISTING FOR DETAILS

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.REM *

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

11. REVISION HISTORY
DZDUVB1 DIAGNOSTIC WAS MODIFIED TO WORK IN 11/21 PROCESSOR
PRIORITY340 WAS CHANGED TO 300 WHEREVER ENCOUNTERED
DEFAULT CSR AND VECTOR HAVE BEEN CHANGED
.INIT CALL ADDED AT THE END.
DIAGNOSTIC WAS RENAMED TO CNDUVA0.

12. LISTINGS

*

```
 6489
 6588
 6589
 6590
 6601
 6615
 6616
 6617
 6678
 6679
 6884
 7012
 7013                                   .SBTTL  APT COMMUNICATIONS ROUTINE
  (1)
  (2)                                   ;;*****************************************************************
  (1)  000000  112767  000001  000236  $ATY1:  MOVB    #1,$FFLG        ;;TO REPORT FATAL ERROR
  (1)  000006  112767  000001  000226  $ATY3:  MOVB    #1,$MFLG        ;;TO TYPE A MESSAGE
  (1)  000014  000403                          BR      $ATYC
  (1)  000016  112767  000001  000220  $ATY4:  MOVB    #1,$FFLG        ;;TO ONLY REPORT FATAL ERROR
  (1)  000024                          $ATYC:
  (3)  000024  010046                          MOV     R0,-(SP)        ;;PUSH R0 ON STACK
  (3)  000026  010146                          MOV     R1,-(SP)        ;;PUSH R1 ON STACK
  (1)  000030  105767  000206                  TSTB    $MFLG           ;;SHOULD TYPE A MESSAGE?
  (1)  000034  001450                          BEQ     5$              ;;IF NOT:  BR
  (1)  000036  122767  000001  001502          CMPB    #APTENV,$ENV    ;;OPERATING UNDER APT?
  (1)  000044  001031                          BNE     3$              ;;IF NOT:  BR
  (1)  000046  132767  000100  001473          BITB    #APTSPOOL,$ENVM ;;SHOULD SPOOL MESSAGES?
  (1)  000054  001425                          BEQ     3$              ;;IF NOT:  BR
  (1)  000056  017600  000004                  MOV     @4(SP),R0       ;;GET MESSAGE ADDR.
  (1)  000062  062766  000002  000004          ADD     #2,4(SP)                ;;BUMP RETURN ADDR.
  (1)  000070  005767  001432          1$:     TST     $MSGTYPE        ;;SEE IF DONE W/ LAST XMISSION?
  (1)  000074  001375                          BNE     1$              ;;IF NOT:  WAIT
  (1)  000076  010067  001440                  MOV     R0,$MSGAD
  (1)                                   ;;PUT ADDR IN MAILBOX
  (1)  000102  105720                  2$:     TSTB    (R0)+           ;;FIND END OF MESSAGE
  (1)  000104  001376                          BNE     2$
  (1)  000106  166700  001430                  SUB     $MSGAD,R0       ;;SUB START OF MESSAGE
  (1)  000112  006200                          ASR     R0              ;;GET MESSAGE LNGTH IN WORDS
  (1)  000114  010067  001424                  MOV     R0,$MSGLGT      ;;PUT LENGTH IN MAILBOX
  (1)  000120  012767  000004  001400          MOV     #4,$MSGTYPE     ;;TELL APT TO TAKE MSG.
  (1)  000126  000413                          BR      5$
  (1)  000130  017667  000004  000016  3$:     MOV     @4(SP),4$       ;;PUT MSG ADDR IN JSR LINKAGE
  (1)  000136  062766  000002  000004          ADD     #2,4(SP)                ;;BUMP RETURN ADDRESS
  (3)  000144  016746  177626                  MOV     177776,-(SP)    ;;PUSH 177776 ON STACK
  (1)  000150  004767  012716                  JSR     PC,$TYPE        ;;CALL TYPE MACRO
  (1)  000154  000000                  4$:     .WORD   0
  (1)  000156                          5$:
  (1)  000156  105767  000062          10$:    TSTB    $FFLG           ;;SHOULD REPORT FATAL ERROR?
  (1)  000162  001416                          BEQ     12$             ;;IF NOT:  BR
  (1)  000164  005767  001356                  TST     $ENV            ;;RUNNING UNDER APT?
  (1)  000170  001413                          BEQ     12$             ;;IF NOT:  BR
  (1)  000172  005767  001330          11$:    TST     $MSGTYPE        ;;FINISHED LAST MESSAGE?
  (1)  000176  001375                          BNE     11$             ;;IF NOT:  WAIT
  (1)  000200  017667  000004  001322          MOV     @4(SP),$FATAL   ;;GET ERROR #
  (1)  000206  062766  000002  000004          ADD     #2,4(SP)                ;;BUMP RETURN ADDR.
  (1)  000214  005267  001306                  INC     $MSGTYPE        ;;TELL APT TO TAKE ERROR
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   (1)  000220  105067  000020          12$:    CLRB    $FFLG           ;;CLEAR FATAL FLAG
   (1)  000224  105067  000013                  CLRB    $LFLG           ;;CLEAR LOG FLAG
   (1)  000230  105067  000006                  CLRB    $MFLG           ;;CLEAR MESSAGE FLAG
   (3)  000234  012601                          MOV     (SP)+,R1        ;;POP STACK INTO R1
   (3)  000236  012600                          MOV     (SP)+,R0        ;;POP STACK INTO R0
   (1)  000240  000207                          RTS     PC              ;;RETURN
   (1)  000242     000                  $MFLG:  .BYTE   0               ;;MESSG. FLAG
   (1)  000243     000                  $LFLG:  .BYTE   0
   (1)                                          ;;LOG FLAG
   (1)  000244     000                  $FFLG:  .BYTE   0               ;;FATAL FLAG
   (1)          000246                          .EVEN
   (1)          000200                  APTSIZE=200
   (1)          000001                  APTENV=001
   (1)          000100                  APTSPOOL=100
   (1)          000040                  APTCSUP=040
 7252           000001                  $TN=1
 7378
 7382
 7417
 7434
 7447
 7459
 7472
```

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7495
7561
7567
7703
7731
7764
7805
7836
7887
7935
7988
8003
8015
8117
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```
  8153                                  .ENABLE ABS
  8154
   (2)                                  ;DUV11 CNDUV-A TAPE F
   (2)                                  ;COPYRIGHT 1977, DIGITAL EQUIPMENT CORP., MAYNARD, MASS. 01754
   (2)
   (2)                                          ;STARTING PROCEDURE
   (2)                                          ;TYPE 200G
   (2)                                          ;PROGRAM WILL TYPE "DUV11 CNDUV-A TAPE F "
   (2)                                          ;PROGRAM WILL TYPE "R" TO INDICATE THAT TESTING HAS STARTED
   (2)                                          ;AT THE END OF A PASS, PROGRAM WILL TYPE "END OF PASS TAPE F"
   (2)                                          ;AND THEN RESUME TESTING
   (2)                                          ;IN ORDER TO BE SPECIFIC TO SBC 11/21 PROCESSOR
   (2)                                          ;PR7 WAS REPLACED WITH PR6 AND #340 REPLACED WITH #300
   (2)                                          ;DZ PREFIX WAS CHANGED TO CN AND REV CORRECTED TO "A"
   (2)                                          ;IN THE DUV11 CNDUV-A TAPE F  OF DIAGNOSTIC WHEREVER FOUND.
   (2)                                          ;.MCALL  INCLUDED TO INITIALIZE START ADDRESS OD ODT.
   (2)
   (2)                                  .SBTTL  BASIC DEFINITIONS
   (2)
   (2)                                  ;*INITIAL ADDRESS OF THE STACK POINTER *** 1100 ***
   (2)          001100                  STACK=  1100
   (2)                                  .EQUIV  EMT,ERROR       ;;BASIC DEFINITION OF ERROR CALL
   (2)                                  .EQUIV  IOT,SCOPE       ;;BASIC DEFINITION OF SCOPE CALL
   (2)
   (2)                                  ;*MISCELLANEOUS DEFINITIONS
   (2)          000011                  HT=     11              ;;CODE FOR HORIZONTAL TAB
   (2)          000012                  LF=     12              ;;CODE FOR LINE FEED
   (2)          000015                  CR=     15              ;;CODE FOR CARRIAGE RETURN
   (2)          000200                  CRLF=   200             ;;CODE FOR CARRIAGE RETURN-LINE FEED
   (2)          177776                  PS=     177776          ;;PROCESSOR STATUS WORD
   (2)                                  .EQUIV  PS,PSW
   (2)          177774                  STKLMT= 177774          ;;STACK LIMIT REGISTER
   (2)          177772                  PIRQ=   177772          ;;PROGRAM INTERRUPT REQUEST REGISTER
   (2)          177570                  DSWR=   177570          ;;HARDWARE SWITCH REGISTER
   (2)          177570                  DDISP=  177570          ;;HARDWARE DISPLAY REGISTER
   (2)                                  ;*****  THE FOLLOWING ODT START ADDRESS FOR SBC 11/21 IS ADDED
   (2)          170000                  ODTST=  170000
   (2)                                  ;*GENERAL PURPOSE REGISTER DEFINITIONS
   (2)          000000                  R0=     %0              ;;GENERAL REGISTER
   (2)          000001                  R1=     %1              ;;GENERAL REGISTER
   (2)          000002                  R2=     %2              ;;GENERAL REGISTER
   (2)          000003                  R3=     %3              ;;GENERAL RECISTER
   (2)          000004                  R4=     %4              ;;GENERAL REGISTER
   (2)          000005                  R5=     %5              ;;GENERAL REGISTER
   (2)          000006                  R6=     %6              ;;GENERAL REGISTER
   (2)          000007                  R7=     %7              ;;GENERAL REGISTER
   (2)          000006                  SP=     %6              ;;STACK POINTER
   (2)          000007                  PC=     %7              ;;PROGRAM COUNTER
   (2)
   (2)                                  ;*PRIORITY LEVEL DEFINITIONS
   (2)          000000                  PR0=    0               ;;PRIORITY LEVEL 0
   (2)          000040                  PR1=    40              ;;PRIORITY LEVEL 1
   (2)          000100                  PR2=    100             ;;PRIORITY LEVEL 2
   (2)          000140                  PR3=    140             ;;PRIORITY LEVEL 3
   (2)          000200                  PR4=    200             ;;PRIORITY LEVEL 4
   (2)          000240                  PR5=    240             ;;PRIORITY LEVEL 5
```

```
(2)             000300                  PR6=    300             ;;PRIORITY LEVEL 6
(2)             000340                  PR7=    340             ;;PRIORITY LEVEL 7
(2)
(2)                                     ;*"SWITCH REGISTER" SWITCH DEFINITIONS
(2)             100000                  SW15=   100000
(2)             040000                  SW14=   40000
(2)             020000                  SW13=   20000
(2)             010000                  SW12=   10000
(2)             004000                  SW11=   4000
(2)             002000                  SW10=   2000
(2)             001000                  SW09=   1000
(2)             000400                  SW08=   400
(2)             000200                  SW07=   200
(2)             000100                  SW06=   100
(2)             000040                  SW05=   40
(2)             000020                  SW04=   20
(2)             000010                  SW03=   10
(2)             000004                  SW02=   4
(2)             000002                  SW01=   2
(2)             000001                  SW00=   1
(2)                                     .EQUIV  SW09,SW9
(2)                                     .EQUIV  SW08,SW8
(2)                                     .EQUIV  SW07,SW7
(2)                                     .EQUIV  SW06,SW6
(2)                                     .EQUIV  SW05,SW5
(2)                                     .EQUIV  SW04,SW4
(2)                                     .EQUIV  SW03,SW3
(2)                                     .FQUIV  SW02,SW2
(2)                                     .EQUIV  SW01,SW1
(2)                                     .EQUIV  SW00,SW0
(2)
(2)                                     ;*DATA BIT DEFINITIONS (BIT00 TO BIT15)
(2)             100000                  BIT15=  100000
(2)             040000                  BIT14=  40000
(2)             020000                  BIT13=  20000
(2)             010000                  BIT12=  10000
(2)             004000                  BIT11=  4000
(2)             002000                  BIT10=  2000
(2)             001000                  BIT09=  1000
(2)             000400                  BIT08=  400
(2)             000200                  BIT07=  200
(2)             000100                  BIT06=  100
(2)             000040                  BIT05=  40
(2)             000020                  BIT04=  20
(2)             000010                  BIT03=  10
(2)             000004                  BIT02=  4
(2)             000002                  BIT01=  2
(2)             000001                  BIT00=  1
(2)                                     .EQUIV  BIT09,BIT9
(2)                                     .EQUIV  BIT08,BIT8
(2)                                     .EQUIV  BIT07,BIT7
(2)                                     .EQUIV  BIT06,BIT6
(2)                                     .EQUIV  BIT05,BIT5
(2)                                     .EQUIV  BIT04,BIT4
(2)                                     .EQUIV  BIT03,BIT3
(2)                                     .EQUIV  BIT02,BIT2
```

```
(2)                                     .EQUIV  BIT01,BIT1
(2)                                     .EQUIV  BIT00,BIT0
(2)
(2)                                     ;*BASIC "CPU" TRAP VECTOR ADDRESSES
(2)             000004                  ERRVEC= 4               ;;TIME OUT AND OTHER ERRORS
(2)             000010                  RESVEC= 10              ;;RESERVED AND ILLEGAL INSTRUCTIONS
(2)             000014                  TBITVEC=14              ;;"T" BIT
(2)             000014                  TRTVEC= 14              ;;TRACE TRAP
(2)             000014                  BPTVEC= 14              ;;BREAKPOINT TRAP (BPT)
(2)             000020                  IOTVEC= 20              ;;INPUT/OUTPUT TRAP (IOT) **SCOPE**
(2)             000024                  PWRVEC= 24              ;;POWER FAIL
(2)             000030                  EMTVEC= 30              ;;EMULATOR TRAP (EMT) **ERROR**
(2)             000034                  TRAPVEC=34              ;;"TRAP" TRAP
(2)             000060                  TKVEC=  60              ;;TTY KEYBOARD VECTOR
(2)             000064                  TPVEC=  64              ;;TTY PRINTER VECTOR
(2)                                     ;*****  THE FOLLOWING BREAK VECTOR AND LINE CLOCK VECTOR ARE INCLUDED
(2)             000100                  LKVEC=  100             ;;LINE CLOCK VECTOR
(2)             000140                  BRKVEC= 140             ;;BREAK VECTOR
(2)             000240                  PIRQVEC=240             ;;PROGRAM INTERRUPT REQUEST VECTOR
```

```
(2)                                             ;STANDARD INTERRUPT VECTORS
(2)
(2)
(2)             000174                  .=174
(2)   000174    000000                  DISPREG:0
(2)   000176    000000                  SWREG:0
(2)             000200                  .=200
(2)   000200    000167  001746                JMP     .START          ;GO TO START OF PROGRAM
(2)
(2)
(2)
(2)             001100                  .=1100
(2)   001100    000000                  .WORD 0
(2)   001102    177570                  LIGHTS:177570
(2)
(2)
(2)
(2)                                             ;PROGRAM CONTROL PARAMETERS
(2)
(2)   001104    000000                  RETURN: 0
(2)   001106    000000                  NEXT:   0                       ;ADDRESS OF NEXT TEST TO BE EXECUTED
(2)   001110    000000                  LOCK:   0                       ;ADDRESS FOR LOCK ON CURRENT DATA
(2)   001112    000000                  PASCNT: 0               ;ADDRESS CONTAINING PASS COUNT
(2)   001114    000000                  ERRCNT: 0                       ;ERROR COUNT
(2)   001116    000000                  SAVSP:  0               ;STACK POINTER STORAGE
(2)
(2)                                             ;PROGRAM VARIABLES
(2)
(2)   001120    000020                  HOLD:   20              ;TEMPORARY STORAGE=DELAY TIME FOR CABLES
(2)   001122    000000                  SHIFT:  0               ;TEMPORARY STORAGE= # OF SHIFTS PER CHAR
(2)   001124    000000                  COUNT:  0               ;TEMPORARY STORAGE= # OF TIMES A CHAR WILL BE SENT
(2)   001126    000000                  SAVPC:  0                       ;PROGRAM COUNTER STORAGE
(2)   001130    000000                  HLD0:   0
(2)   001132    000000                  HLD1:   0
(2)   001134    000000                  HLD2:   0
(2)   001136    000000                  HLD3:   0
(2)   001140    000000                  HLD4:   0
(2)   001142    000000                  HLD5:   0
(2)   001144    000000                  HLD6:   0
(2)
```

```
(2)                                             ;PROGRAM CONVERSATIONAL PARAMETERS
(2)  001146     377             SYNCNO: .BYTE   377     ;# OF SYNC CHARS REQ'D FOR SYNC'ZATION
(2)  001147     377             SEXMIT: .BYTE   377     ;SEC XMIT JUMPER ''IN''
(2)  001150     377             SEREC:  .BYTE   377     ;SEC REC JUMPER ''IN''
(2)  001151     377             OPTCLR: .BYTE   377     ;OPTIONAL JUMPER CLR ''IN''
(2)  001152     000             MULTD:  .BYTE   0       ;NO MULTIPLE DEVICE FLAG
(2)  001153     377             JMRBY:  .BYTE   377     ;EXTERNAL MODEM BYPASS JUMPER ''IN''
(2)                             .EVEN
(2)
(2)                                             ;PROGRAM MULTIPLE DEVICE PARAMETERS
(2)  001154  000000             BASEADD:        0       ;PROG CONTROLLED 1ST DEVICE ADDR
(2)  001156  000000             KEEPADD:        0       ;SAVED 1ST DEVICE ADDR
(2)  001160  000000             LASTADD:        0       ;LAST DEVICE RXCSR ADDR
(2)  001162  000000             BASEIV:         0       ;PROG CONTROLLED IV
(2)  001164  000000             KEEPIV:         0       ;SAVED INTR VECTOR
(2)  001166  000000             ACTREG:         0       ;ACTIVE REGISTER ,,,MODIFY THIS
(2)                                                     ;LOCATION TO DISQUALIFY OR QUALIFY
(2)                                                     ;DEVICES (1= RUN,,,0= DON'T RUN)
(2)  001170  000000             ROTADD:         0       ;ROTATING POINTER FOR ACTREG..POINTS
(2)                             ;TO DEVICE PRESENTLY UNDER TEST WHEN RUNNING MULTIPLE DEVICES
(2)
(2)                                             ;PROGRAM CONTROL FLAGS
(2)
(2)  001172     000             INIFLG: .BYTE   0               ;PROGRAM INITIALIZATION FLAG
(2)  001173     000             STFLG:  .BYTE   0               ;TEST START FLAG
(2)  001174     000             LOKFLG: .BYTE   0               ;LOCK ON CURRENT TEST FLAG
(2)          001176             .EVEN
(1)          001400             .=1400
(2)
(2)
```

```
(2)
(2)
(2)
(2)                                     ;INSTRUCTION DEFINITIONS
(2)
(2)             005746                  PUSH1SP=5746    ;DECREMENT PROCESSOR STACK 1 WORD =TST -(SP)
(2)             005726                  POP1SP=5726     ;INCREMENT PROCESSOR STACK 1 WORD =TST (SP)+
(2)             010046                  PUSHR0=10046    ;SAVE R0 ON STACK =MOV R0,-(SP)
(2)             012600                  POPR0=12600     ;RESTORE R0 FROM STACK =MOV (SP)+,R0
(2)             024646                  PUSH2SP=24646   ;DECREMENT STACK TWICE =CMP -(SP),-(SP)
(2)             022626                  POP2SP=22626    ;INCREMENT STACK TWICE =CMP (SP)+,(SP)+
(2)                                     ;REGISTER DEFINITIONS
(2)                                             ;RXCSR BIT DEFINITIONS
(2)             100000                  DSC=BIT15               ;DATA SET CHANGE
(2)             040000                  RING=BIT14              ;RING
(2)             020000                  CTS=BIT13               ;CLR TO SEND
(2)             010000                  CARDET=BIT12            ;CARRIER DETECT
(2)             004000                  RECACT=BIT11            ;REC ACTIVE
(2)             002000                  SRD=BIT10               ;SEC REC DATA
(2)             001000                  DSR=BIT9                ;DATA SET RDY
(2)             000400                  STPSYN=BIT8             ;STRIP SYNC
(2)             000200                  RXDONE=BIT7             ;REC DONE
(2)             000100                  RINTEN=BIT6             ;REC INTR ENABLE
(2)             000040                  DSINTE=BIT5             ;DSC INTR ENABLE
(2)             000020                  SYNSCH=BIT4             ;SYNC SEARCH
(2)             000010                  STD=BIT3                ;SEC XMIT DATA
(2)             000004                  RTS=BIT2                ;REQ TO SEND
(2)             000002                  DTR=BIT1                ;DATA TERM RDY
(2)             000001                  VOID=BIT0
(2)                                             ;RXDBUF BIT DEFINITIONS
(2)             100000                  RXERR=BIT15             ;REC ERROR
(2)             040000                  OVRRUN=BIT14            ;OVERRUN
(2)             020000                  FRMERR=BIT13            ;FRAME ERROR
(2)             010000                  PARER=BIT12             ;PARITY ERROR
(2)                                             ;PARCSR BIT DEFINITIONS
(2)             001000                  PAREN=BIT9              ;PARITY ENABLE
(2)             000400                  EVPAR=BIT8              ;EVEN PARITY SENSE
(2)                                             ;PARCSR WRD DEFINITIONS
(2)             030000                  SYNINT=30000            ;SYNC EXTERNAL MODE
(2)             020000                  SYNEXT=20000            ;SYNC INTERNAL MODE
(2)             000000                  ISYMOD=0                ;ISOC MODE
(2)             000000                  FIVE=0                  ;WORD LENGTH 5 BITS
(2)             002000                  SIX=2000                ;WORD LENGTH 6 BITS
(2)             004000                  SEVEN=4000              ;WORD LENGTH 7 BITS
(2)             006000                  EIGHT=6000              ;WORD LENGTH 8 BITS
(2)             000000                  NOPAR=0                 ;NO PARITY
(2)             001000                  ODDPAR=1000             ;ODD PARITY
(2)             001400                  EVEPAR=1400             ;EVEN PARITY
(2)                                             ;TXCSR BIT DEFINITIONS
(2)             100000                  DNA=BIT15               ;DATA NOT AVAILABLE
(2)             040000                  MTDATA=BIT14            ;MAINT DATA
(2)             020000                  CLK=BIT13               ;CLK
(2)             002000                  BITW=BIT10              ;BIT WINDOW
(2)             000400                  MRESET=BIT8             ;MASTER RESET
(2)             000200                  TXDONE=BIT7             ;XMIT DONE
(2)             000100                  TXINTE=BIT6             ;XMIT INTR ENABLE
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    (2)          000040                  DNAINTE=BIT5            ;DNA INTR ENAB
    (2)          000020                  SEND=BIT4               ;SEND
    (2)          000010                  HDXEN=BIT3              ;HDX/FDX
    (2)          000001                  BREAK=BIT0              ;BREAK
    (2)                                          ;TXCSR WRD DEFINITIONS
    (2)          000000                  USER=0                  ;USER MODE
    (2)          004000                  MINT=4000               ;MAINT INT MODE
    (2)          010000                  MEXT=10000              ;MAINT EXT MODE
    (2)          014000                  SYSTST=14000            ;SYSTEM TEST MODE
```

```
                                    .SBTTL  COMMON TAGS

                                    ;;*****************************************************************
                                    ;*THIS TABLE CONTAINS VARIOUS COMMON STORAGE LOCATIONS
                                    ;*USED IN THE PROGRAM.

                          001400            .=.
001400                              $CMTAG:                     ;;START OF COMMON TAGS
001400  000000                              .WORD   0
001402     000              $TSTNM: .BYTE   0                   ;;CONTAINS THE TEST NUMBER
001403     000              $ERFLG: .BYTE   0                   ;;CONTAINS ERROR FLAG
001404  000000              $ICNT:  .WORD   0                   ;;CONTAINS SUBTEST ITERATION COUNT
001406  000000              $LPADR: .WORD   0                   ;;CONTAINS SCOPE LOOP ADDRESS
001410  000000              $LPERR: .WORD   0                   ;;CONTAINS SCOPE RETURN FOR ERRORS
001412  000000              $ERTTL: .WORD   0                   ;;CONTAINS TOTAL ERRORS DETECTED
001414     000              $ITEMB: .BYTE   0                   ;;CONTAINS ITEM CONTROL BYTE
001415     001              $ERMAX: .BYTE   1                   ;;CONTAINS MAX. ERRORS PER TEST
001416  000000              $ERRPC: .WORD   0                   ;;CONTAINS PC OF LAST ERROR INSTRUCTION
001420  000000              $GDADR: .WORD   0                   ;;CONTAINS ADDRESS OF 'GOOD' DATA
001422  000000              $BDADR: .WORD   0                   ;;CONTAINS ADDRESS OF 'BAD' DATA
001424  000000              $GDDAT: .WORD   0                   ;;CONTAINS 'GOOD' DATA
001426  000000              $BDDAT: .WORD   0                   ;;CONTAINS 'BAD' DATA
001430  000000                      .WORD   0                   ;;RESERVED--NOT TO BE USED
001432  000000                      .WORD   0
001434     000              $AUTOB: .BYTE   0                   ;;AUTOMATIC MODE INDICATOR
001435     000              $INTAG: .BYTE   0                   ;;INTERRUPT MODE INDICATOR
001436  000000                      .WORD   0
001440  177570              SWR:    .WORD   DSWR                ;;ADDRESS OF SWITCH REGISTER
001442  177570              DISPLAY: .WORD  DDISP               ;;ADDRESS OF DISPLAY REGISTER
001444  177560              $TKS:   177560                      ;;TTY KBD STATUS
001446  177562              $TKB:   177562                      ;;TTY KBD BUFFER
001450  177564              $TPS:   177564                      ;;TTY PRINTER STATUS REG. ADDRESS
001452  177566              $TPB:   177566                      ;;TTY PRINTER BUFFER REG. ADDRESS
001454     000              $NULL:  .BYTE   0                   ;;CONTAINS NULL CHARACTER FOR FILLS
001455     002              $FILLS: .BYTE   2
                                                                ;;CONTAINS # OF FILLER CHARACTERS REQUIRED
001456     012              $FILLC: .BYTE   12                  ;;INSERT FILL CHARS. AFTER A "LINE FEED"
001457     000              $TPFLG: .BYTE   0                   ;;"TERMINAL AVAILABLE" FLAG (BIT<07>=0=YES)
001460  000000              $REGAD: .WORD   0                   ;;CONTAINS THE ADDRESS FROM
                                                                ;;WHICH  ($REG0) WAS OBTAINED
001462  000000              $REG0:  .WORD   0                   ;;CONTAINS (($REGAD)+0)
001464  000000              $REG1:  .WORD   0                   ;;CONTAINS (($REGAD)+2)
001466  000000              $REG2:  .WORD   0                   ;;CONTAINS (($REGAD)+4)
001470  000000              $REG3:  .WORD   0                   ;;CONTAINS (($REGAD)+6)
001472  000000              $REG4:  .WORD   0                   ;;CONTAINS (($REGAD)+10)
001474  000000              $REG5:  .WORD   0                   ;;CONTAINS (($REGAD)+12)
001476  000000              $TMP0:  .WORD   0                   ;;USER DEFINED
001500  000000              $TMP1:  .WORD   0                   ;;USER DEFINED
001502  000000              $TMP2:  .WORD   0                   ;;USER DEFINED
001504  000000              $TMP3:  .WORD   0                   ;;USER DEFINED
001506  000000              $TMP4:  .WORD   0                   ;;USER DEFINED
001510  000000              $TMP5:  .WORD   0                   ;;USER DEFINED
001512  000000              $TIMES: 0                           ;;MAX. NUMBER OF ITERATIONS
001514  000000              $ESCAPE:0                           ;;ESCAPE ON ERROR ADDRESS
001516  177607  000377        $BELL:  .ASCIZ  <207><377><377>   ;;CODE FOR BELL
001522     077              $QUES:  .ASCII  /?/                ;;QUESTION MARK
```

```
(2)  001523     015                 $CRLF:  .ASCII  <15>            ;;CARRIAGE RETURN
(2)  001524  000012                 $LF:    .ASCIZ  <12>            ;;LINE FEED
(3)                                 ;;*****************************************************************
(3)                                 .SBTTL  APT MAILBOX-ETABLE
(3)
(4)                                 ;;*****************************************************************
(3)                                 .EVEN
(3)  001526                         $MAIL:                          ;;APT MAILBOX
(3)  001526  000000                 $MSGTY: .WORD   AMSGTY  ;;MESSAGE TYPE CODE
(3)  001530  000000                 $FATAL: .WORD   AFATAL  ;;FATAL ERROR NUMBER
(3)  001532  000000                 $TESTN: .WORD   ATESTN  ;;TEST NUMBER
(3)  001534  000000                 $PASS:  .WORD   APASS   ;;PASS COUNT
(3)  001536  000000                 $DEVCT: .WORD   ADEVCT  ;;DEVICE COUNT
(3)  001540  000000                 $UNIT:  .WORD   AUNIT   ;;I/O UNIT NUMBER
(3)  001542  000000                 $MSGAD: .WORD   AMSGAD  ;;MESSAGE ADDRESS
(3)  001544  000000                 $MSGLG: .WORD   AMSGLG  ;;MESSAGE LENGTH
(3)  001546                         $ETABLE:                        ;;APT ENVIRONMENT TABLE
(3)  001546     000                 $ENV:   .BYTE   AENV    ;;ENVIRONMENT BYTE
(3)  001547     000                 $ENVM:  .BYTE   AENVM
(3)                                 ;;ENVIRONMENT MODE BITS
(3)  001550  000000                 $SWREG: .WORD   ASWREG  ;;APT SWITCH REGISTER
(3)  001552  000000                 $USWR:  .WORD   AUSWR   ;;USER SWITCHES
(3)  001554  000000                 $CPUOP: .WORD   ACPUOP  ;;CPU TYPE,OPTIONS
(3)                                 ;*                      BITS 15-11=CPU TYPE
(3)                                 ;*                              11/04=01,11/05=02,11/20=03,11/40=04,11/45=05
(3)                                 ;*                              11/70=06,PDQ=07,Q=10
(3)                                 ;*                      BIT 10=REAL TIME CLOCK
(3)                                 ;*                      BIT  9=FLOATING POINT PROCESSOR
(3)                                 ;*                      BIT  8=MEMORY MANAGEMENT
(3)  001556     000                 $MAMS1: .BYTE   AMAMS1  ;;HIGH ADDRESS,M.S. BYTE
(3)  001557     000                 $MTYP1: .BYTE   AMTYP1  ;;MEM. TYPE,BLK#1
(3)                                 ;*                      MEM.TYPE BYTE   --  (HIGH BYTE)
(3)                                 ;*                              900 NSEC CORE=001
(3)                                 ;*                              300 NSEC BIPOLAR=002
(3)                                 ;*                              500 NSEC MOS=003
(3)  001560  000000                 $MADR1: .WORD   AMADR1  ;;HIGH ADDRESS,BLK#1
(3)                                 ;*                        MEM.LAST ADDR.=3 BYTES,THIS WORD AND LOW OF ''TYPE'' ABOVE
(3)  001562     000                 $MAMS2: .BYTE   AMAMS2  ;;HIGH ADDRESS,M.S. BYTE
(3)  001563     000                 $MTYP2: .BYTE   AMTYP2  ;;MEM.TYPE,BLK#2
(3)  001564  000000                 $MADR2: .WORD   AMADR2  ;;MEM.LAST ADDRESS,BLK#2
(3)  001566     000                 $MAMS3: .BYTE   AMAMS3  ;;HIGH ADDRESS,M.S.BYTE
(3)  001567     000                 $MTYP3: .BYTE   AMTYP3  ;;MEM.TYPE,BLK#3
(3)  001570  000000                 $MADR3: .WORD   AMADR3  ;;MEM.LAST ADDRESS,BLK#3
(3)  001572     000                 $MAMS4: .BYTE   AMAMS4  ;;HIGH ADDRESS,M.S.BYTE
(3)  001573     000                 $MTYP4: .BYTE   AMTYP4  ;;MEM.TYPE,BLK#4
(3)  001574  000000                 $MADR4: .WORD   AMADR4  ;;MEM.LAST ADDRESS,BLK#4
(3)  001576  000000                 $VECT1: .WORD   AVECT1  ;;INTERRUPT VECTOR#1,BUS PRIORITY#1
(3)  001600  000000                 $VECT2: .WORD   AVECT2  ;;INTERRUPT VECTOR#2BUS PRIORITY#2
(3)  001602  000000                 $BASE:  .WORD   ABASE
(3)                                         ;;BASE ADDRESS OF EQUIPMENT UNDER TEST
(3)  001604  000000                 $DEVM:  .WORD   ADEVM   ;;DEVICE MAP
(3)  001606  000000                 $CDW1:  .WORD   ACDW1   ;;CONTROLLER DESCRIPTION WORD#1
(3)  001610  000000                 $CDW2:  .WORD   ACDW2   ;;CONTROLLER DESCRIPTION WORD#2
(3)  001612  000000                 $DDW0:  .WORD   ADDW0   ;;DEVICE DESCRIPTOR WORD#0
(3)  001614  000000                 $DDW1:  .WORD   ADDW1   ;;DEVICE DESCRIPTOR WORD#1
(3)  001616  000000                 $DDW2:  .WORD   ADDW2   ;;DEVICE DESCRIPTOR WORD#2
```

```
   (3)  001620  000000                  $DDW3:  .WORD   ADDW3   ;;DEVICE DESCRIPTOR WORD#3
   (3)  001622  000000                  $DDW4:  .WORD   ADDW4   ;;DEVICE DESCRIPTOR WORD#4
   (3)  001624  000000                  $DDW5:  .WORD   ADDW5   ;;DEVICE DESCRIPTOR WORD#5
   (3)  001626  000000                  $DDW6:  .WORD   ADDW6   ;;DEVICE DESCRIPTOR WORD#6
   (3)  001630  000000                  $DDW7:  .WORD   ADDW7   ;;DEVICE DESCRIPTOR WORD#7
   (3)  001632  000000                  $DDW8:  .WORD   ADDW8   ;;DEVICE DESCRIPTOR WORD#8
   (3)  001634  000000                  $DDW9:  .WORD   ADDW9   ;;DEVICE DESCRIPTOR WORD#9
   (3)  001636  000000                  $DDW10: .WORD   ADDW10  ;;DEVICE DESCRIPTOR WORD#10
   (3)  001640  000000                  $DDW11: .WORD   ADDW11  ;;DEVICE DESCRIPTOR WORD#11
   (3)  001642  000000                  $DDW12: .WORD   ADDW12  ;;DEVICE DESCRIPTOR WORD#12
   (3)  001644  000000                  $DDW13: .WORD   ADDW13  ;;DEVICE DESCRIPTOR WORD#13
   (3)  001646  000000                  $DDW14: .WORD   ADDW14  ;;DEVICE DESCRIPTOR WORD#14
   (3)  001650  000000                  $DDW15: .WORD   ADDW15  ;;DEVICE DESCRIPTOR WORD#15
   (3)
   (3)
   (3)  001652                          $ETEND:
   (3)
   (4)
   (4)
```

```
(4)
(4)
(4)
(4)                                 ;INSTRUCTION DEFINITIONS
(4)
(4)             005746              PUSH1SP=5746    ;DECREMENT PROCESSOR STACK 1 WORD =TST -(SP)
(4)             005726              POP1SP=5726     ;INCREMENT PROCESSOR STACK 1 WORD =TST (SP)+
(4)             010046              PUSHR0=10046    ;SAVE R0 ON STACK =MOV R0,-(SP)
(4)             012600              POPR0=12600     ;RESTORE R0 FROM STACK =MOV (SP)+,R0
(4)             024646              PUSH2SP=24646   ;DECREMENT STACK TWICE =CMP -(SP),-(SP)
(4)             022626              POP2SP=22626    ;INCREMENT STACK TWICE =CMP (SP)+,(SP)+
(4)                                 ;REGISTER DEFINITIONS
(4)                                         ;RXCSR BIT DEFINITIONS
(4)             100000              DSC=BIT15               ;DATA SET CHANGE
(4)             040000              RING=BIT14              ;RING
(4)             020000              CTS=BIT13               ;CLR TO SEND
(4)             010000              CARDET=BIT12            ;CARRIER DETECT
(4)             004000              RECACT=BIT11            ;REC ACTIVE
(4)             002000              SRD=BIT10               ;SEC REC DATA
(4)             001000              DSR=BIT9                ;DATA SET RDY
(4)             000400              STPSYN=BIT8             ;STRIP SYNC
(4)             000200              RXDONE=BIT7             ;REC DONE
(4)             000100              RINTEN=BIT6             ;REC INTR ENABLE
(4)             000040              DSINTE=BIT5             ;DSC INTR ENABLE
(4)             000020              SYNSCH=BIT4             ;SYNC SEARCH
(4)             000010              STD=BIT3                ;SEC XMIT DATA
(4)             000004              RTS=BIT2                ;REQ TO SEND
(4)             000002              DTR=BIT1                ;DATA TERM RDY
(4)             000001              VOID=BIT0
(4)                                         ;RXDBUF BIT DEFINITIONS
(4)             100000              RXERR=BIT15             ;REC ERROR
(4)             040000              OVRRUN=BIT14            ;OVERRUN
(4)             020000              FRMERR=BIT13            ;FRAME ERROR
(4)             010000              PARER=BIT12             ;PARITY ERROR
(4)                                         ;PARCSR BIT DEFINITIONS
(4)             001000              PAREN=BIT9              ;PARITY ENABLE
(4)             000400              EVPAR=BIT8              ;EVEN PARITY SENSE
(4)                                         ;PARCSR WRD DEFINITIONS
(4)             030000              SYNINT=30000            ;SYNC EXTERNAL MODE
(4)             020000              SYNEXT=20000            ;SYNC INTERNAL MODE
(4)             000000              ISYMOD=0                ;ISOC MODE
(4)             000000              FIVE=0                  ;WORD LENGTH 5 BITS
(4)             002000              SIX=2000                ;WORD LENGTH 6 BITS
(4)             004000              SEVEN=4000              ;WORD LENGTH 7 BITS
(4)             006000              EIGHT=6000              ;WORD LENGTH 8 BITS
(4)             000000              NOPAR=0                 ;NO PARITY
(4)             001000              ODDPAR=1000             ;ODD PARITY
(4)             001400              EVEPAR=1400             ;EVEN PARITY
(4)                                         ;TXCSR BIT DEFINITIONS
(4)             100000              DNA=BIT15               ;DATA NOT AVAILABLE
(4)             040000              MTDATA=BIT14            ;MAINT DATA
(4)             020000              CLK=BIT13               ;CLK
(4)             002000              BITW=BIT10              ;BIT WINDOW
(4)             000400              MRESET=BIT8             ;MASTER RESET
(4)             000200              TXDONE=BIT7             ;XMIT DONE
(4)             000100              TXINTE=BIT6             ;XMIT INTR ENABLE
```

```
    (4)          000040                  DNAINTE=BIT5            ;DNA INTR ENAB
    (4)          000020                  SEND=BIT4               ;SEND
    (4)          000010                  HDXEN=BIT3              ;HDX/FDX
    (4)          000001                  BREAK=BIT0              ;BREAK
    (4)                                          ;TXCSR WRD DEFINITIONS
    (4)          000000                  USER=0                  ;USER MODE
    (4)          004000                  MINT=4000               ;MAINT INT MODE
    (4)          010000                  MEXT=10000              ;MAINT EXT MODE
    (4)          014000                  SYSTST=14000            ;SYSTEM TEST MODE
```

```
(2)                                     .SBTTL  ERROR POINTER TABLE
(2)
(2)                                     ;*THIS TABLE CONTAINS THE INFORMATION FOR EACH ERROR THAT CAN OCCUR.
(2)                                     ;*THE INFORMATION IS OBTAINED BY USING THE INDEX NUMBER FOUND IN
(2)                                     ;*LOCATION $ITEMB. THIS NUMBER INDICATES WHICH ITEM IN THE TABLE IS PERTINENT.
(2)                                     ;*NOTE1:        IF $ITEMB IS 0 THE ONLY PERTINENT DATA IS ($ERRPC).
(2)                                     ;*NOTE2:        EACH ITEM IN THE TABLE CONTAINS 4 POINTERS EXPLAINED AS FOLLOWS:
(2)
(2)                                     ;*      EM              ;;POINTS TO THE ERROR MESSAGE
(2)                                     ;*      DH              ;;POINTS TO THE DATA HEADER
(2)                                     ;*      DT              ;;POINTS TO THE DATA
(2)                                     ;*      DF              ;;POINTS TO THE DATA FORMAT
(2)
(2)
(2)  001652                             $ERRTB:
(1)                                             ;ERROR TABLE
(1)  001652  001762                             EM1     ;ERROR 1        REGISTER ERROR
(1)  001654  002067                             DH1
(1)  001656  002116                             DT1
(1)  001660  002132                             DF1
(1)  001662  002022                             EM2     ;ERROR 2        RECEIVER ERROR
(1)  001664  002067                             DH1
(1)  001666  002116                             DT1
(1)  001670  002132                             DF1
(1)  001672  002043                             EM3     ;ERROR 3        TRANSMITTER ERROR
(1)  001674  002067                             DH1
(1)  001676  002116                             DT1
(1)  001700  002132                             DF1
(1)  001702  001746                             EM4     ;ERROR 4        BIT ERROR (GENERAL)
(1)  001704  000000                             0
(1)  001706  002126                             DT4
(1)  001710  002132                             DF1
(1)
(1)                                             ;DEFAULT DU ADDRESSES
(1)  001712  174300                     RXCSR:  174300
(1)  001714  174301                     HRXCSR: 174301
(1)  001716  174302                     RXDBUF: 174302
(1)  001720  174303                     HRXDBUF:        174303
(1)  001722  174302                     PARCSR: 174302
(1)  001724  174303                     HPARCSR:        174303
(1)  001726  174304                     TXCSR:  174304
(1)  001730  174305                     HTXCSR: 174305
(1)  001732  174306                     TXDBUF: 174306
(1)  001734  174307                     HTXDBUF:        174307
(1)                                             ;DEFAULT DU VECTORS
(1)  001736  000330                     DURIV:  330     ;REC INTR VECTOR
(1)  001740  000332                     DURIS:  332     ;REC INTR STATUS
(1)  001742  000334                     DUTIV:  334     ;XMIT INTR VECTOR
(1)  001744  000336                     DUTIS:  336     ;XMIT INTR STATUS
(1)                                             ;ERROR MESSAGES
(1)  001746  020040  051105  047522     EM4:    .ASCIZ  /  ERROR PC /
(1)  001754  020122  041520  000040
(1)  001762  020040  047503  050115     EM1:    .ASCIZ /  COMPARISON ERROR ON REGISTERS/
(1)  001770  051101  051511  047117
(1)  001776  042440  051122  051117
(1)  002004  047440  020116  042522
```

```
(1)  002012  044507  052123  051105
(1)  002020  000123
(1)  002022  020040  042522  042503  EM2:    .ASCIZ  /  RECEIVER ERROR/
(1)  002030  053111  051105  042440
(1)  002036  051122  051117     000
(1)  002043     040  052040  040522  EM3:    .ASCIZ  /  TRANSMITTER ERROR/
(1)  002050  051516  044515  052124
(1)  002056  051105  042440  051122
(1)  002064  051117     000
(1)                                  ;DATA HEADERS FOR ERROR MESSAGES
(1)  002067     105  051122  041520  DH1:    .ASCIZ  /ERRPC  WANTED  ACTUAL/
(1)  002074  020040  040527  052116
(1)  002102  042105  020040  041501
(1)  002110  052524  046101     000
(1)          002116                  .EVEN
(1)                                  ;DATA TABLES FOR ERROR MESSAGES
(1)  002116  001416  001130  001132  DT1:    .WORD   $ERRPC,HLD0,HLD1,0
(1)  002124  000000
(1)
(1)  002126  001416  000000          DT4:    .WORD   $ERRPC,0
(1)
(1)  002132     000     000     000  DF1:    .BYTE   0,0,0,0
(1)  002135     000
(1)                                  .EVEN
(2)                                  .SBTTL  ACT11 HOOKS
(2)
(3)                                  ;;*****************************************************************
(2)                                  ;HOOKS REQUIRED BY ACT11
(2)          002136                          $SVPC=.                 ;SAVE PC
(2)          000046                          .=46
(2)  000046  012674                          $ENDAD                  ;;1)SET LOC.46 TO ADDRESS OF $ENDAD IN .$EOP
(2)          000052                          .=52
(2)  000052  000000                          .WORD   0               ;;2)SET LOC.52 TO ZERO
(2)          002136                          .=$SVPC                 ;; RESTORE PC
(2)                                  .SBTTL  APT PARAMETER BLOCK
(2)
(3)                                  ;;*****************************************************************
(2)                                  ;SET LOCATIONS 24 AND 44 AS REQUIRED FOR APT
(3)                                  ;;*****************************************************************
(2)          002136                          .$X=.   ;;SAVE CURRENT LOCATION
(2)          000024                          .=24    ;;SET POWER FAIL TO POINT TO START OF PROGRAM
(2)  000024  000200                          200     ;;FOR APT START UP
(2)          000044                          .=44    ;;POINT TO APT INDIRECT ADDRESS PNTR.
(2)  000044  002136                          $APTHDR ;;POINT TO APT HEADER BLOCK
(2)          002136                          .=.$X   ;;RESET LOCATION COUNTER
(3)                                  ;;*****************************************************************
(2)                                  ;SETUP APT PARAMETER BLOCK AS DEFINED IN THE APT-PDP11 DIAGNOSTIC
(2)                                  ;INTERFACE SPEC.
(2)
(2)  002136                          $APTHD:
(2)  002136  000000                  $HIBTS: .WORD   0       ;;TWO HIGH BITS OF 18 BIT MAILBOX ADDR.
(2)  002140  001526                  $MBADR: .WORD   $MAIL   ;;ADDRESS OF APT MAILBOX (BITS 0-15)
(2)  002142  000010                  $TSTM:  .WORD   10      ;;RUN TIM OF LONGEST TEST
(2)  002144  000010                  $PASTM: .WORD   10      ;;RUN TIME IN SECS. OF 1ST PASS ON 1 UNIT (QUICK VERIFY)
(2)  002146  000000                  $UNITM: .WORD           ;;ADDITIONAL RUN TIME (SECS) OF A PASS FOR EACH ADDITIONAL UNIT
(2)  002150  000052                          .WORD   $ETEND-$MAIL/2 ;;LENGTH MAILBOX-ETABLE(WORDS)
```

```
(1)
(2)
(2)                                             ;PROGRAM INITIALIZATION
(2)                                             ;LOCK OUT INTERRUPTS
(2)                                             ;SET UP PROCESSOR STACK
(2)                                             ;SET UP POWER FAIL VECTOR
(2)                                             ;CLEAR PROGRAM CONTROL FLAGS AND COUNTS
(2)                                             ;TYPE TITLE MESSAGE
(2)
(2)  002152                             .START:
(3)                                     .SBTTL  INITIALIZE THE COMMON TAGS
(3)                                     ;;CLEAR THE COMMON TAGS ($CMTAG) AREA
(3)  002152  012706  001400                     MOV     #$CMTAG,R6      ;;FIRST LOCATION TO BE CLEARED
(3)  002156  005026                             CLR     (R6)+           ;;CLEAR MEMORY LOCATION
(3)  002160  022706  001440                     CMP     #SWR,R6 ;;DONE?
(3)  002164  001374                             BNE     .-6             ;;LOOP BACK IF NO
(3)  002166  012706  001100                     MOV     ##STACK,SP              ;;SETUP THE STACK POINTER
(3)                                     ;;INITIALIZE A FEW VECTORS
(3)  002172  012737  016320  000020             MOV     #$SCOPE,@#IOTVEC ;;IOT VECTOR FOR SCOPE ROUTINE
(3)  002200  012737  000300  000022             MOV     #PR6,@#IOTVEC+2 ;;LEVEL 6
(3)  002206  012737  014210  000030             MOV     #$ERROR,@#EMTVEC ;;EMT VECTOR FOR ERROR ROUTINE
(3)  002214  012737  000300  000032             MOV     #PR6,@#EMTVEC+2 ;;LEVEL 6
(3)                                     ;;BIT02
(3)  002222  012737  016654  000034             MOV     #$TRAP,@#TRAPVEC ;;TRAP VECTOR FOR TRAP CALLS
(3)  002230  012737  000300  000036             MOV     #PR6,@#TRAPVEC+2;LEVEL 6
(3)  002236  012737  015012  000024             MOV     #$PWRDN,@#PWRVEC ;;POWER FAILURE VECTOR
(3)  002244  012737  000300  000026             MOV     #PR6,@#PWRVEC+2 ;;LEVEL 6
(3)  002252  005067  177234                     CLR     $TIMES          ;;INITIALIZE NUMBER OF ITERATIONS
(3)  002256  005067  177232                     CLR     $ESCAPE         ;;CLEAR THE ESCAPE ON ERROR ADDRESS
(3)  002262  112767  000001  177125             MOVB    #1,$ERMAX       ;;ALLOW ONE ERROR PER TEST
(3)  002270  012767  002270  177110             MOV     #.,$LPADR       ;;INITIALIZE THE LOOP ADDRESS FOR SCOPE
(3)  002276  012767  002276  177104             MOV     #.,$LPERR       ;;SETUP THE ERROR LOOP ADDRESS
(4)                                     ;;SIZE FOR A HARDWARE SWITCH REGISTER. IF NOT FOUND OR IT IS
(4)                                     ;;EQUAL TO A "-1", SETUP FOR A SOFTWARE SWITCH REGISTER.
(4)  002304  013746  000004                     MOV     @#ERRVEC,-(SP)  ;;SAVE ERROR VECTOR
(4)  002310  012737  002344  000004             MOV     #64$,@#ERRVEC   ;;SET UP ERROR VECTOR
(4)  002316  012767  177570  177114             MOV     #DSWR,SWR       ;;SETUP FOR A HARDWARE SWICH REGISTER
(4)  002324  012767  177570  177110             MOV     #DDISP,DISPLAY  ;;AND A HARDWARE DISPLAY REGISTER
(4)  002332  022777  177777  177100             CMP     #-1,@SWR        ;;TRY TO REFERENCE HARDWARE SWR
(4)  002340  001012                             BNE     66$             ;;BRANCH IF NO TIMEOUT TRAP OCCURRED
(4)                                                                     ;;AND  THE HARDWARE SWR IS NOT = -1
(4)  002342  000403                             BR      65$             ;;BRANCH IF NO TIMEOUT
(4)  002344  012716  002352          64$:      MOV     #65$,(SP)       ;;SET UP FOR TRAP RETURN
(4)  002350  000002                             RTI
(4)  002352  012767  000176  177060  65$:      MOV     #SWREG,SWR      ;;POINT TO SOFTWARE SWR
(4)  002360  012767  000174  177054             MOV     #DISPREG,DISPLAY
(4)  002366  012637  000004          66$:      MOV     (SP)+,@#ERRVEC  ;;RESTORE ERROR VECTOR
(3)
(4)  002372  005067  177136                     CLR     $PASS           ;;CLEAR PASS COUNT
(4)  002376  132767  000200  177143             BITB    #APTSIZE,$ENVM  ;;TEST USER SIZE UNDER APT
(4)  002404  001403                             BEQ     67$             ;;YES,USE NON-APT SWITCH
(4)  002406  012767  001550  177024             MOV     #$SWREG,SWR     ;;NO,USE APT SWITCH REGISTER
(4)  002414                             67$:
(2)  002414  012706  001100                     MOV     #STACK,SP               ;SET STACK
(2)  002420  106427  000300                     MTPS    #300                    ;LOCK INTERRUPTS
(2)  002424  012737  015012  000024             MOV     #.PFAIL,@#24            ;SET UP POWER FAIL VECTOR
```

```
(2)  002432  105067  176535                CLRB    STFLG                   ;CLEAR START F AG
(2)  002436  005067  176450                CLR     PASCNT                  ;CLEAR PASS COUNT
(2)  002442  105067  176735                CLRB    $ERFLG                  ;CLEAR ERROR FLAG
(2)  002446  005067  176740                CLR     $ERTTL                  ;CLEAR ERROR COUNT
(2)  002452  005067  176740                CLR     $ERRPC                  ;CLEAR LAST ERROR POINTER
(2)  002456  012767  000001  176716        MOV     #1,$TSTNM               ;SET UP FOR TEST 1
(2)  002464  012767  002152  176412        MOV     #.START,RETURN          ;SET UP FOR POWER FAIL BEFORE
(2)                                                                        ;TESTING STARTS
(2)  002472  013746  000006                MOV     @#6,-(SP)
(2)  002476  013746  000004                MOV     @#4,-(SP)
(2)  002502  012737  002516  000004        MOV     #1$,@#4
(2)  002510  005777  176724                TST     @SWR
(2)  002514  000407                        BR      2$
(2)  002516  012767  000176  176714  1$:   MOV     #SWREG,SWR
(2)  002524  012767  000174  176710        MOV     #DISPREG,DISPLAY
(2)  002532  022626                        CMP     (SP)+,(SP)+
(2)  002534  012637  000004          2$:   MOV     (SP)+,@#4
(2)  002540  012637  000006                MOV     (SP)+,@#6
(2)  002544  022767  0001 <  176666        CMP     #SWREG,SWR
(2)  002552  001007                        BNE     3$
(2)  002554  005737  000042                TST     @#42                    ;CHECK FOR CHAIN
(2)  002560  001402                        BEQ     33$
(2)  002562  000167  000522                JMP     .BEGIN
(2)  002566  004767  010204          33$:  JSR     PC,CNTLU
(2)  002572  105767  176374          3$:   TSTB    INIFLG                  ;HAS INITIALIZATION BEEN PERFORMED
(2)  002576  001004                        BNE     ONCE
(2)  002600  104401  015152                TYPE    ,MTITLE                 ;TYPE TITLE MESSAGE
(2)  002604  105167  176362                COMB    INIFLG                  ;IF NOT SET FLAG AND DO
(2)  002610  105767  176732          ONCE: TSTB    $ENV                    ;APT CONTROL?
(2)  002614  001410                        BEQ     11$                     ;BR IF NO
(2)  002616  032767  000001  176726        BIT     #1,$USWR                ;EXTENAL JUMPER ON?
(2)  002624  001002                        BNE     12$                     ;NO
(2)  002626  105067  176321                CLRB    JMRBY                   ;CLEAR FLAG
(2)  002632  000167  000452          12$:  JMP     .BEGIN                  ;GO DO IT
(2)  002636  032777  000001  176574  11$:  BIT     #SW00,@SWR              ;RESELECT VECTOR & CONTROL REG?
(2)  002644  001002                        BNE     1$
(2)  002646  000167  000436                JMP     .BEGIN
(2)  002652  012700  000300          1$:   MOV     #300,R0 ;RESTORE VECTOR AREA TO TRAPCATCHER
(2)  002656  012701  000302                MOV     #302,R1 ;START AT LOCATION 300
(2)  002662  012702  000004                MOV     #4,R2
(2)  002666  010110                  2$:   MOV     R1,(R0)
(2)  002670  005011                        CLR     (R1)
(2)  002672  060200                        ADD     R2,R0
(2)  002674  060201                        ADD     R2,R1
(2)  002676  022701  001000                CMP     #1000,R1                ;END AT LOCATION 776
(2)  002702  002771                        BLT     2$
(2)  002704  104406                        INSTR   ;OUTPUT MESSAGE & GET INPUT STRING
(2)  002706  015220                        MREGAD  ;MESSAGE
(2)  002710  104410                        PARAM   ;CONVERT STRING
(2)  002712  174000                        174000  ;LOW LIMIT
(2)  002714  177776                        177776  ;HIGH LIMIT
(2)  002716  017150                        DUBASE  ;STORE AT THIS LOCATION
(2)  002720     001                  .BYTE  1       ;MASK
(2)  002721     001                  .BYTE  1       ;HOW MANY TIMES + 2
(1)  002722  016767  014222  176226        MOV     DUBASE,KEEPADD  ;SAVE
(1)  002730  004767  014062                JSR     PC,DUADDR
```

  INITIALIZE THE COMMON TAGS

```
(1)  002734  016767  176216  176212          MOV     KEEPADD,BASEADD ;RESTORE FOR ROTATION
(2)  002742  104406                          INSTR   ;OUTPUT MESSAGE & GET INPUT STRING
(2)  002744  015205                          MVECTO  ;MESSAGE
(2)  002746  104410                          PARAM   ;CONVERT STRING
(2)  002750  000300                          300     ;LOW LIMIT
(2)  002752  000776                          776     ;HIGH LIMIT
(2)  002754  001736                          DURIV   ;STORE AT THIS LOCATION
(2)  002756     001                  .BYTE   1       ;MASK
(2)  002757     004                  .BYTE   4       ;HOW MANY TIMES + 2
(1)  002760  016767  176752  176176          MOV     DURIV,KEEPIV    ;SAVE
(1)  002766  016767  176744  176166          MOV     DURIV,BASEIV    ;SET UP FOR ROTATION
(2)  002774  104406                          INSTR   ;OUTPUT MESSAGE & GET INPUT STRING
(2)  002776  015250                          MMULT   ;MESSAGE
(2)  003000  104414                          SETFLG  ;SET FLAG BASED UPON INPUT STRING
(2)  003002  001152                          MULTD   ;THIS FLAG
(1)  003004  105767  176142                  TSTB    MULTD   ;ARE THERE MULTIPLE DEVICES
(1)                                                          ;ON THE SYSTEM ?
(1)  003010  100406                          BMI     BBB     ;YES,ASK NEXT QUESTION
(1)  003012  005067  176150                  CLR     ACTREG
(1)  003016  005067  176146                  CLR     ROTADD
(1)  003022  000167  000140                  JMP     OUTMUL  ;JUMP AROUND NEXT QUESTION
(1)  003026                          BBB:
(2)  003026  104406                          INSTR   ;OUTPUT MESSAGE & GET INPUT STRING
(2)  003030  015277                          MLASTD  ;MESSAGE
(2)  003032  104410                          PARAM   ;CONVERT STRING
(2)  003034  174000                          174000  ;LOW LIMIT
(2)  003036  177776                          177776  ;HIGH LIMIT
(2)  003040  001160                          LASTADD ;STORE AT THIS LOCATION
(2)  003042     001                  .BYTE   1       ;MASK
(2)  003043     001                  .BYTE   1       ;HOW MANY TIMES + 2
(1)                                  ;THE FOLLOWING ROUTINE SETS UP ACTREG FOR THE FIRST TIME
(1)  003044  012767  000001  176116  1$:     MOV     #1,ROTADD       ;SET UP POINTER
(1)  003052  005067  176110                  CLR     ACTREG  ;CLR ACTIVE REGISTER
(1)  003056  056767  176106  176102  2$:     BIS     ROTADD,ACTREG   ;MAKE THIS DEVICE ACTIVE
(1)  003064  000241                          CLC
(1)  003066  006167  176076                  ROL     ROTADD  ;SET UP POINTER
(1)  003072  103421                          BCS     3$      ;ARE YOU OUT OF RANGE ?
(1)  003074  062767  000010  176052          ADD     #10,BASEADD     ;SET UP BASE ADDRESS
(1)  003102  026767  176052  176044          CMP     LASTADD,BASEADD ;IS THIS THE LAST DEVICE ?
(1)  003110  101362                          BHI     2$      ;NO DO IT AGAIN
(1)  003112  056767  176052  176046          BIS     ROTADD,ACTREG   ;THIS ASSUMES THAT THERE ARE AT
(1)                                                          ;LEAST TWO DEVICES WHEN YOU ANSWER YES TO
(1)                                                          ;MULTIPLE DEVICE QUESTION
(1)  003120  012767  000001  176042  4$:     MOV     #1,ROTADD       ;SET UP FOR LATER USE IN END OF PASS ROUTINE
(1)  003126  016767  176024  176020          MOV     KEEPADD,BASEADD ;DITTO
(1)  003134  000414                          BR      OUTMUL  ;CONTINUE QUESTIONS
(1)  003136  016767  176014  176010  3$:     MOV     KEEPADD,BASEADD ;RESTORE
(2)  003144  104406                          INSTR   ;OUTPUT MESSAGE & GET INPUT STRING
(2)  003146  015373                          MRANGE  ;MESSAGE
(2)  003150  104410                          PARAM   ;CONVERT STRING
(2)  003152  174000                          174000  ;LOW LIMIT
(2)  003154  177776                          177776  ;HIGH LIMIT
(2)  003156  001160                          LASTADD ;STORE AT THIS LOCATION
(2)  003160     001                  .BYTE   1       ;MASK
(2)  003161     001                  .BYTE   1       ;HOW MANY TIMES + 2
(1)  003162  000167  177656                  JMP     1$      ;DO IT AGAIN
```

```
(1)  003166  012767  000300  013616  OUTMUL: MOV     #300,DUPRT
(1)  003174  004767  013542                  JSR     PC,DULEV
(2)                                          ;COMPARE THE FIRST CHARACTER IN THE TELETYPE INPUT
(2)                                          ;BUFFER TO THE CHARACTERS "1" AND "2".
(2)                                          ;IF THE CHARACTER IS "1" CLEAR THE FLAG
(2)                                          ;IF THE CHARACTER IS "2" SET THE FLAG
(2)  003200                          AAA:
(2)  003200  104406                          INSTR   ;OUTPUT MESSAGE & GET INPUT STRING
(2)  003202  015611                          MSYNC   ;MESSAGE
(2)  003204  122767  000061  012740  3$:     CMPB    #'1,INBUF       ;IS IT "1" ?
(2)  003212  001003                          BNE     1$
(2)  003214  105067  175726                  CLRB    SYNCNO  ;000
(2)  003220  000412                          BR      4$
(2)  003222  122767  000062  012722  1$:     CMPB    #'2,INBUF       ;IS IT "2" ?
(2)  003230  001004                          BNE     2$
(2)  003232  112767  177777  175706          MOVB    #-1,SYNCNO      ;377
(2)  003240  000402                          BR      4$
(2)  003242  104407                  2$:     INSTER  ;RETRY
(2)  003244  000757                          BR      3$
(2)  003246  000240                  4$:     NOP
(2)  003250  104406                          INSTR   ;OUTPUT MESSAGE & GET INPUT STRING
(2)  003252  015657                          MWIRE6  ;MESSAGE
(2)  003254  104414                          SETFLG  ;SET FLAG BASED UPON INPUT STRING
(2)  003256  001147                          SEXMIT  ;THIS FLAG
(2)  003260  104406                          INSTR   ;OUTPUT MESSAGE & GET INPUT STRING
(2)  003262  015730                          MWIRE5  ;MESSAGE
(2)  003264  104414                          SETFLG  ;SET FLAG BASED UPON INPUT STRING
(2)  003266  001150                          SEREC   ;THIS FLAG
(2)  003270  104406                          INSTR   ;OUTPUT MESSAGE & GET INPUT STRING
(2)  003272  016000                          MWIRE4  ;MESSAGE
(2)  003274  104414                          SETFLG  ;SET FLAG BASED UPON INPUT STRING
(2)  003276  001151                          OPTCLR  ;THIS FLAG
(2)  003300  104406                          INSTR   ;OUTPUT MESSAGE & GET INPUT STRING
(2)  003302  016057                          MEXTJ   ;MESSAGE
(2)  003304  104414                          SETFLG  ;SET FLAG BASED UPON INPUT STRING
(2)  003306  001153                          JMRBY   ;THIS FLAG
(2)
(2)                                          ;TEST START AND RESTART
(2)
(2)  003310  012706  001100          .BEGIN: MOV     #STACK,SP               ;SET UP STACK
(2)  003314  106427  000300                  MTPS    #300                    ;LOCK OUT INTERRUPTS
(2)  003320  032777  000002  176112          BIT     #SW01,@SWR              ;IF SW01=1, GET STARTING PC
(2)  003326  001413                          BEQ     3$
(3)  003330  104406                          INSTR   ;OUTPUT MESSAGE & GET INPUT STRING
(3)  003332  015543                          MTSTPC  ;MESSAGE
(3)  003334  104410                          PARAM   ;CONVERT STRING
(3)  003336  003374                          TST1    ;LOW LIMIT
(3)  003340  017500                          17500   ;HIGH LIMIT
(3)  003342  001402                          $TSTNM  ;STORE AT THIS LOCATION
(3)  003344     001                  .BYTE   1       ;MASK
(3)  003345     001                  .BYTE   1       ;HOW MANY TIMES * 2
(2)  003346  016767  176030  175530          MOV     $TSTNM,RETURN
(2)  003354  000403                          BR      4$
(2)  003356  012767  003374  175520  3$:     MOV     #TST1,RETURN            ;START AT TEST 1
(2)  003364  104401  015537          4$:     TYPE    ,MR                     ;TYPE R
(2)  003370  000177  175510                  JMP     @RETURN                 ;START TESTING
```

```
                                ;;THIS TEST VERIFYS THAT RXDONE CAUSES AN INTERRUPT
                                ;;MODE:  SYNC EXTERNAL
                                ;;INTERRUPT VECTOR:  DURIV
                                ;;LENGTH:  EIGHT
                                ;;*****************************************************************
  (3)  003374  000004           TST1:   SCOPE
  (3)
                                        BIS     #MRESET,@TXCSR  ;MASTER RESET
  (1)  003404  012777  020000  176310   MOV     #SYNEXT,@PARCSR ;SET THE MODE
  (2)  003412  052777  000400  176306   BIS     #MRESET,@TXCSR  ;MASTER RESET
  (1)
  (1)                           ;SET MAINT DATA,CLK,BREAK,&MAINTENANCE MODE
  (1)  003420  012777  064001  176300   MOV     #MTDATA!CLK!MINT!BREAK,@TXCSR
  (1)
  (1)                           ;SET MODE ,# OF BITS,PARITY SENSE,&LOAD SYNC REG
  (1)  003426  012777  026026  176266   MOV     #SYNEXT!EIGHT!NOPAR!26,@PARCSR
                                        BIS     #SYNSCH,@RXCSR  ;SET SEARCH SYNC
                                ;POKE CLK TO GET LOGIC INTO SYNCRONIZATION
  (1)  003442  042777  020000  176256   BIC     #CLK,@TXCSR     ;POKE CLK DOWN
  (1)  003450  052777  020000  176250   BIS     #CLK,@TXCSR     ;POKE CLK UP
                                        MOV     #1$,@DURIV      ;SET UP TRAPCATCHER
                                        MOV     DUPRT,@DURIS    ;
                                        MTPS    #0      ;ALLOW INTERRUPTS
                                        BR      2$      ;JUMP AROUND INTERRUPT SVC ROUTINE
                                ;THE FOLLOWING IS THE INTERRUPT SVC ROUTINE
                                1$:     MTPS    #300    ;DON'T ALLOW ANYMORE INTERRUPTS
                                        BIC     #RINTEN,@RXCSR  ;CLEAR INTERRUPT ENABLE
                                        TSTB    @RXCSR          ;RXDONE=1?
                                        BMI     .+4
                                        ERROR   4                       ;FALSE INTERRUPT
                                        MOV     #3$,(SP)        ;SET UP RETURN LOCATION
                                        MOV     DURIS,@DURIV    ;RESTORE TRAPCATCHER
                                        MOV     #0,@DURIS       ;
                                        MOV     @RXDBUF,R1      ;CLEAR INTERRUPT
                                        RTI
                                2$:     BIS     #RINTEN,@RXCSR  ;SET INTERRUPT ENABLE
                                        MOV     #8.,SHIFT       ;# OF SHIFTS
                                        MOV     #25,$TMP1       ;TO BE SHIFTED CHARACTER
                                ;THE FOLLOWING POKES THE MAINT DATA BASED UPON THE
                                ;INFORMATION CONTAINED IN $TMP1 AND IT IS
                                ;SHIFTED IN BY THE CONTENTS OF SHIFT
                                5$:     BIC     #MTDATA,@TXCSR
                                        CLC
                                        ROR     $TMP1   ;FORCE CARRY
                                        BCC     4$
                                        BIS     #MTDATA,@TXCSR
                                4$:     BIC     #CLK,@TXCSR
                                        BIS     #CLK,@TXCSR
                                        DEC     SHIFT
                                        BNE     5$
                                ;INTERRUPT SHOULD NOW OCCUR
                                        CLR     R0
```

```
 8199  003642  005200                          INC     R0              ;WAIT FOR INTERRUPT
 8200  003644  001376                          BNE     .-2
 8201  003646  016777  176066  176062          MOV     DURIS,@DURIV    ;RESTORE TRAPCATCHER
 8202  003654  012777  000000  176056          MOV     #0,@DURIS       ;
 8203  003662  016703  176030                  MOV     RXDBUF,R3       ;FOR ERROR MESSAGE
 8204  003666  012700  000025                  MOV     #25,R0          ;EXPECTED
 8205  003672  017701  176020                  MOV     @RXDBUF,R1
 8206  003676  042777  000100  176006          BIC     #RINTEN,@RXCSR  ;CLR INTR ENABLE
 8207  003704  020001                          CMP     R0,R1
 8208  003706  001401                          BEQ     .+4
 8209  003710  104002                          ERROR   2               ;CHARACTERS SHOULD COMPARE
 8210  003712  104004                          ERROR   4                       ;INTERRUPT FAILED TO OCCUR
 8211
 8212  003714  106427  000300          3$:     MTPS    #300    '
 8213
 8214
 8215
 8216                                  ;;THIS TEST VERIFYS THAT TWO INTERRUPTS THAT TRAP TO
 8217                                  ;;THE SAME VECTOR ARE BOTH EXECUTED
 8218                                  ;;INTERRUPT VECTOR:  DURIV
 8219                                  ;;THIS TEST ONLY WORKS IN MAINT EXTERNAL MODE
 8220
 8221                                  ;;*****************************************************************
   (3)  003720  000004                  TST2:   SCOPE
   (3)
 8222  003722  105767  175225                  TSTB    JMRBY           ;IN MAINT. EXTERNAL?
 8223  003726  100402                          BMI     .+6     ;IF ANSWER WAS YES DO THIS TEST
 8224  003730  000167  000402                  JMP     1$      ;IF ANSWER WAS NO JUMP AROUND TEST
 8225  003734  052777  000400  175764          BIS     #MRESET,@TXCSR  ;MASTER RESET
   (1)  003742  012777  020000  175752          MOV     #SYNEXT,@PARCSR ;SET THE MODE
   (2)  003750  052777  000400  175750          BIS     #MRESET,@TXCSR  ;MASTER RESET
   (1)
   (1)                                  ;SET MAINT DATA,CLK,BREAK,&MAINTENANCE MODE
   (1)  003756  012777  064001  175742          MOV     #MTDATA!CLK!MINT!BREAK,@TXCSR
   (1)
   (1)                                  ;SET MODE ,# OF BITS,PARITY SENSE,&LOAD SYNC REG
   (1)  003764  012777  026026  175730          MOV     #SYNEXT!EIGHT!NOPAR!26,@PARCSR
 8226  003772  052777  000020  175712          BIS     #SYNSCH,@RXCSR  ;SET SEARCH SYNC
 8227                                  ;POKE CLK TO GET LOGIC INTO SYNCRONIZATION
   (1)  004000  042777  020000  175720          BIC     #CLK,@TXCSR     ;POKE CLK DOWN
   (1)  004006  052777  020000  175712          BIS     #CLK,@TXCSR     ;POKE CLK UP
 8228  004014  012777  004036  175714          MOV     #2$,@DURIV      ;SET UP TRAPCATCHER
 8229  004022  016777  012764  175710          MOV     DUPRT,@DURIS    ;
 8230  004030  106427  000000                  MTPS    #0      ;ALLOW INTERRUPT
 8231  004034  000454                          BR      3$      ;JUMP AROUND SVC ROUTINE
 8232
 8233                                  ;THE FOLLOWING IS THE 1ST INTERRUPT SVC ROUTINE
 8234  004036  106427  000300          2$:     MTPS    #300    ;DON'T ALLOW ANY MORE INTERRUPTS
 8235  004042  105777  175644                  TSTB    @RXCSR          ;RXDONE = 1 ?
 8236  004046  100401                          BMI     .+4
 8237  004050  104004                          ERROR   4                       ;FALSE INTERRUPT
 8238  004052  012716  004332                  MOV     #5$,(SP)        ;SET UP RETURN LOCATION
 8239  004056  012777  004136  175652          MOV     #4$,@DURIV      ;SET UP TRAPCATCHER FOR SECOND
 8240                                                                  ;INTERRUPT
 8241  004064  052777  000002  175620          BIS     #DTR,@RXCSR     ;TRY TO CAUSE SECOND INTERRUPT
 8242  004072  017701  175620                  MOV     @RXDBUF,R1      ;JUST READ RXDBUF TO CLR RXDONE
```

```
                                                        ;TO ALLOW SECOND INTERRUPT
004076  106427  000000            MTPS    #0      ;ALLOW INTERRUPT
004102  005000                    CLR     R0
004104  005200                    INC     R0              ;WAIT FOR INTERRUPT
004106  001376                    BNE     .-2
004110  042777  000140  175574    BIC     #RINTEN!DSINTE,@RXCSR   ;CLR INTR ENABLES
004116  104004                    ERROR   4                       ;2ND INTERRUPT FAILED TO OCCUR

004120  016777  175614  175610  6$:     MOV     DURIS,@DURIV    ;RESTORE TRAPCATCHER
004126  012777  000000  175604          MOV     #0,@DURIS       ;
004134  000002                    RTI

                                ;THE FOLLOWING IS THE 2ND INTERRUPT SVC ROUTINE
004136  106427  000300          4$:     MTPS    #300    ;DON'T ALLOW ANYMORE INTERRUPTS
004142  005777  175544                  TST     @RXCSR          ;DSC = 1 ?
004146  100401                    BMI     .+4
004150  104004                    ERROR   4                       ;FALSE INTERRUPT
004152  042777  000140  175532    BIC     #RINTEN!DSINTE,@RXCSR   ;CLR BOTH INTR ENABLES
004160  012716  004120            MOV     #6$,(SP)        ;SET UP RETURN LOCATION
004164  000002                    RTI

004166  052777  000140  175516  3$:     BIS     #RINTEN!DSINTE,@RXCSR ;SET INTERRUPT ENABLES
004174  012767  000010  174720          MOV     #8.,SHIFT       ;# OF SHIFTS
004202  012767  000025  175270          MOV     #25,$TMP1
                                ;THE FOLLOWING POKES THE MAINT DATA BASED UPON THE
                                ;INFORMATION CONTAINED IN $TMP1 AND IT IS
                                ;SHIFTED IN BY THE CONTENTS OF SHIFT
004210  042777  040000  175510  8$:     BIC     #MTDATA,@TXCSR
004216  000241                    CLC
004220  006067  175254            ROR     $TMP1   ;FORCE CARRY
004224  103003                    BCC     7$
004226  052777  040000  175472    BIS     #MTDATA,@TXCSR
004234  042777  020000  175464  7$:     BIC     #CLK,@TXCSR
004242  052777  020000  175456          BIS     #CLK,@TXCSR
004250  005367  174646            DEC     SHIFT
004254  001355                    BNE     8$
                                ;1ST INTERRUPT SHOULD NOW OCCUR
004256  005000                    CLR     R0
004260  005200                    INC     R0              ;WAIT FOR INTERRUPT
004262  001376                    BNE     .-2             ;
004264  016777  175450  175444    MOV     DURIS,@DURIV    ;RESTORE TRAPCATCHER
004272  012777  000000  175440    MOV     #0,@DURIS       ;
004300  016703  175412            MOV     RXDBUF,R3       ;FOR ERROR MESSAGE
004304  012700  000025            MOV     #25,R0          ;EXPECTED
004310  017701  175402            MOV     @RXDBUF,R1
004314  042777  000140  175370    BIC     #RINTEN!DSINTE,@RXCSR   ;CLR INTERRUPT ENABLES
004322  020001                    CMP     R0,R1
004324  001401                    BEQ     .+4
004326  104002                    ERROR   2               ;CHARACTERS SHOULD COMPARE
004330  104004                    ERROR   4                       ;INTERRUPT FAILED TO OCCUR

004332  106427  000300          5$:     MTPS    #300    ;DON'T ALLOW ANY MORE INTERRUPTS
004336                          1$:

                                ;;THIS TEST VERIFYS THAT DNA CAUSES AN INTERRUPT
                                ;;MODE:  SYNC EXTERNAL
```

```
 8299                                   ;;INTERRUPT VECTOR:  DUTIV
 8300
 8301                                   ;;*****************************************************************
  (3)  004336  000004                   TST3:   SCOPE
  (3)
 8302
 8303  004340  052777  000400  175360           BIS     #MRESET,@TXCSR  ;MASTER RESET
  (1)  004346  012777  020000  175346           MOV     #SYNEXT,@PARCSR ;SET THE MODE
  (2)  004354  052777  000400  175344           BIS     #MRESET,@TXCSR  ;MASTER RESET
  (1)
  (1)                                   ;SET MAINTENANCE MODE & SEND
  (1)                                           ;NOTE:BIT WINDOW&CLK ARE CLEARED (MTDATA=0)
  (1)  004362  012777  004020  175336           MOV     #MINT!SEND,@TXCSR
  (1)
  (1)                                   ;SET MODE,# OF BITS,PARITY SENSE,& LOAD SYNC REG
  (1)  004370  012777  026026  175324           MOV     #SYNEXT!EIGHT!NOPAR!26,@PARCSR
 8304  004376  112777  000025  175326           MOVB    #25,@TXDBUF     ;LOAD CHARACTER
 8305  004404  012767  000010  174510           MOV     #8.,SHIFT
 8306                                   ;POKE CLK TO GET INTO SYNCHRONIZATION
 8307  004412  052777  020000  175306           BIS     #CLK,@TXCSR     ;POKE CLK UP
  (1)  004420  042777  020000  175300           BIC     #CLK,@TXCSR     ;POKE CLK DOWN
 8308
 8309  004426                                 1$:
  (1)  004426  052777  020000  175272           BIS     #CLK,@TXCSR     ;POKE CLK UP
  (1)  004434  042777  020000  175264           BIC     #CLK,@TXCSR     ;POKE CLK DOWN
 8310  004442  005367  174454                   DEC     SHIFT           ;LAST SHIFT?
 8311  004446  001367                           BNE     1$
 8312  004450  012777  004516  175264           MOV     #2$,@DUTIV      ;SET UP TRAPCATCHER
 8313  004456  016777  012330  175260           MOV     DUPRT,@DUTIS    ;
 8314  004464  106427  000000                   MTPS    #0      ;ALLOW INTERUPTS
 8315  004470  052777  000040  175230           BIS     #DNAINTE,@TXCSR ;ENABLE INTERRUPT
 8316                                   ;NOW POKE CLK TO GET DNA
 8317  004476  052777  020000  175222           BIS     #CLK,@TXCSR     ;POKE CLK
 8318  004504  005000                           CLR     R0
 8319  004506  005200                           INC     R0              ;WAIT FOR INTERRUPT
 8320  004510  001376                           BNE     .-2
 8321  004512  104004                           ERROR   4                       ;INTERRUPT FAILED TO OCCUR
 8322  004514  000422                           BR      3$      ;JUMP AROUND SVC ROUTINE
 8323                                   ;THE FOLLOWING IS THE INTERRUPT SERVICE ROUTINE
 8324  004516  106427  000300           2$:     MTPS    #300    ;DON'T ALLOW ANYMORE INTERRUPTS
 8325  004522  005777  175200                   TST     @TXCSR          ;DNA?
 8326  004526  100401                           BMI     .+4
 8327  004530  104004                           ERROR   4                       ;FALSE INTERRUPT
 8328  004532  042777  000040  175166           BIC     #DNAINTE,@TXCSR ;CLR INTR ENABLE
 8329  004540  012716  004604                   MOV     #4$,(SP)        ;SET UP RETURN LOCATION
 8330  004544  016777  175174  175170           MOV     DUTIS,@DUTIV    ;RESTORE TRAPCATCHER
 8331  004552  012777  000000  175164           MOV     #0,@DUTIS       ;
 8332  004560  000002                           RTI
 8333
 8334  004562  016777  175156  175152  3$:     MOV     DUTIS,@DUTIV    ;RESTORE TRAPCATCHER
 8335  004570  012777  000000  175146           MOV     #0,@DUTIS       ;
 8336
 8337  004576  042777  000040  175122           BIC     #DNAINTE,@TXCSR ;CLR INTERRUPT ENABLE
 8338  004604  106427  000300           4$:     MTPS    #300    ;RESTORE NO INTERRUPT STATUS
 8339
 8340
```

```
                                       ;;THIS TEST VERIFYS THAT TXDONE CAUSES AN INTERRUPT
                                       ;;INTERRUPT VECTOR:  DUTIV
                                       ;;NOTE: TXDONE = 1        AFTER A MASTER RESET
                                       ;;
                                       ;;*****************************************************************
  (3)  004610  000004                  TST4:   SCOPE
  (3)
                                                BIS     #MRESET,@TXCSR  ;MASTER RESET
                                                MOV     #1$,@DUTIV      ,SET UP TRAPCATCHER
                                                MOV     DUPRT,@DUTIS    ;
                                                MTPS    #0      ;ALLOW INTERPUTS
                                                BIS     #TXINTE,@TXCSR  ;ENABLE INTERRUPT
                                                CLR     R0
                                                INC     R0              ;WAIT FOR INTERRUPT
                                                BNE     .-2             ;
                                                BIC     #TXINTE,@TXCSR  ;CLR INTERRUPT ENABLE
                                                ERROR   4                       ;INTERRUPT FAILED TO OCCUR
                                                BR      2$      ;JUMP AROUND SVC ROUTINE

                                       ;THE FOLLOWING IS THE INTERRUPT SERVICE ROUTINE
                                       1$:      MTPS    #300    ;DON'T ALLOW ANYMORE INTERRUPTS
                                                BIC     #TXINTE,@TXCSR  ;CLR INTR ENABLE
                                                TSTB    @TXCSR          ;TXDONE?
                                                BMI     .+4
                                                ERROR   4                       ;FALSE INTERRUPT
                                                MOV     #3$,(SP)        ;SET UP RETURN LOCATION
                                                MOV     DUTIS,@DUTIV    ;RESTORE TRAPCATCHER
                                                MOV     #0,@DUTIS       ;
                                                RTI

                                       2$:      MOV     DUTIS,@DUTIV    ;RESTORE TRAPCATCHER
                                                MOV     #0,@DUTIS       ;

                                       3$:      MTPS    #300    ;RESTORE NO INTERRUPT STATUS



                                       ;;THIS TEST VERIFYS THAT TXDONE DOES NOT CAUSE AN INTERRUPT
                                       ;;WHEN PROCESSOR PRIORITY LEVEL IS TOO HIGH
                                       ;;INTERRUPT VECTOR: DUTIV
                                       ;;NOTE: TXDONE = 1 AFTER A MASTER RESET
                                       ;;
                                       ;;*****************************************************************
  (3)  004752  000004                  TST5:   SCOPE
  (3)
                                                BIS     #MRESET,@TXCSR  ;MASTER RESET
                                                MOV     #1$,@DUTIV      ;SET UP TRAPCATCHER
                                                MOV     DUPRT,@DUTIS    ;
                                                MTPS    #300            ;SET PS LEVEL TOO HIGH
                                                BIS     #TXINTE,@TXCSR  ;ENABLE INTERRRUPT
                                                CLR     R0      ;WAIT FOR INTERRUPT
                                                INC     R0      ;
                                                BNE     .-2     ;
                                                BIC     #TXINTE,@TXCSR  ;CLR INTR ENABLE
                                                MTPS    #300    ;DON'T ALLOW INTERRUPTS
```

```
                                        INITIALIZE THE COMMON TAGS                                              SEQ 0037

 8393  005030  016777  174710  174704          MOV     DUTIS,@DUTIV    ;RESTORE TRAPCATCHER
 8394  005036  012777  000000  174700          MOV     #0,@DUTIS       ;
 8395  005044  000421                          BR      2$      ;TEST IS OK....GET OUT OF TEST
 8396                                  ;THE FOLLOWING IS THE INTERRUPT SVC ROUTINE
 8397  005046  106427  000300                1$:     MTPS    #300    ;DONT ALLOW ANYMORE INTERRUPTS
 8398  005052  042777  000100  174646          BIC     #TXINTE,@TXCSR  ;CLR INTR ENABLE
 8399  005060  012716  005102                  MOV     #3$,(SP)        ;SET UP RETURN LOCATION
 8400                                                                  ;TO REPORT ERROR
 8401  005064  016777  174654  174650          MOV     DUTIS,@DUTIV    ;RESTORE TRAPCATCHER
 8402  005072  012777  000000  174644          MOV     #0,@DUTIS       ;
 8403  005100  000002                          RTI
 8404                                  ;END OF INTERRUPT SVC ROUTINE
 8405
 8406
 8407
 8408                                  ;YOU SHOULD NOT GET INTO THIS FOLLOWING CODE UNLESS THERE
 8409                                  ;WAS AN ERROR
 8410  005102  106427  000300          3$:     MTPS    #300    ;DON'T ALLOW ANYMORE INTERRUPTS
 8411  005106  104004                          ERROR   4       ;INTERRUPT SHOULD NOT OF OCCURED,CHECK
 8412                                                          ;THE INTERRUPT LEVEL SELECTED OR CHECK
 8413                                                          ;INTERRUPT LOGIC OR BOTH
 8414  005110                          2$:
 8415
 8416                                  ;;THIS TEST VERIFYS THAT TXDONE CAUSES ONLY ONE INTERRUPT
 8417                                  ;;PROVIDING THAT TXCSR IS NOT READ
 8418                                  ;;AND TXDBUF IS NOT LOADED (WRITTEN)
 8419                                  ;;THIS TEST CHECKS THE ONCE ONLY FLIP/FLOP (V2)
 8420                                  ;;OF THE INTERRUPT CONTROL LOGIC
 8421                                  ;;INTERRUPT VECTOR: DUTIV
 8422                                  ;;NOTE: TXDONE = 1    AFTER A MASTER RESET
 8423                                  ;;
 8424                                  ;;**************************************************************************
  (3)  005110  000004          TST6:   SCOPE
  (3)
 8425  005112  052777  000400  174606          BIS     #MRESET,@TXCSR  ;MASTER RESET
 8426  005120  012777  005160  174614          MOV     #1$,@DUTIV      ;SET UP TRAPCATCHER
 8427  005126  016777  011660  174610          MOV     DUPRT,@DUTIS    ;
 8428  005134  106427  000000                  MTPS    #0      ;ALLOW INTERRUPTS
 8429  005140  052777  000100  174560          BIS     #TXINTE,@TXCSR  ;ENABLE INTR ENABLE
 8430  005146  005000                          CLR     R0
 8431  005150  005200                          INC     R0
 8432  005152  001376                          BNE     .-2
 8433  005154  104004                          ERROR   4       ;INTERRUPT FAILED TO OCCUR
 8434  005156  000425                          BR      4$
 8435                                  ;THE FOLLOWING IS THE INTR SVC ROUTINE
 8436  005160  106427  000300          1$:     MTPS    #300    ;DON'T ALLOW ANYMORE INTR
 8437  005164  012716  005224                  MOV     #3$,(SP)        ;SET UP RETURN LOCATION
 8438  005170  012777  005200  174544          MOV     #2$,@DUTIV      ;SET UP TRAPCATCHER TO
 8439                                                          ;PROVE THAT THE INTERRUPT DOES NOT OCCUR
 8440                                                          ;TWICE (AFTER RTI 'ING FROM THIS
 8441                                                          ;SVC ROUTINE
 8442  005176  000002                          RTI
 8443                                  ;THE FOLLOWING INTERRUPT SVC ROUTINE WILL CATCH THE SECOND INTR
 8444  005200  106427  000300          2$:     MTPS    #300    ;DON'T ALLOW INTER
 8445  005204  012716  005232                  MOV     #4$,(SP)        ;SET UP RETURN LOCATION
 8446  005210  105777  174512                  TSTB    @TXCSR  ;TXDONE = 1?
```

```
 8447  005214  100401                          BMI     .+4
 8448  005216  104004                          ERROR   4       ;TXDONE SHOULD BE SET
 8449  005220  104004                          ERROR   4       ;THE INTERRUPT WAS TAKEN TWICE.....
 8450                                          ;CHECK OUT THE V2 FLIP/FLOP LOGIC
 8451                                          ;IN THE INTERRUPT CONTROL LOGIC
 8452  005222  000002                          RTI
 8453  005224  005000                  3$:     CLR     R0      ;ALLOW TIME TO CATCH SECOND
 8454  005226  005200                          INC     R0              ;IF IT WERE TO OCCUR
 8455  005230  001376                          BNE     .-2     ;
 8456  005232  016777  174506  174502  4$:     MOV     DUTIS,@DUTIV    ;RESTORE TRAPCATCHER
 8457  005240  012777  000000  174476          MOV     #0,@DUTIS       ;
 8458  005246  042777  000100  174452          BIC     #TXINTE,@TXCSR  ;CLR INTERRUPT ENABLE
 8459  005254  106427  000300                  MTPS    #300    ;RESTORE NO INTERRUPT STATUS
 8460
 8461
 8462                                  ;;THIS TEST VERIFYS THAT TWO INTERRUPTS THAT TRAP
 8463                                  ;;TO THE SAME VECTOR ARE BOTH EXECUTED
 8464                                  ;;INTERRUPT VECTOR:  DUTIV
 8465                                  ;;MODE:  SYNC EXTERNAL
 8466
 8467                                  ;;*****************************************************************
   (3)  005260  000004                  TST7:   SCOPE
   (3)
 8468
 8469  005262  052777  000400  174436          BIS     #MRESET,@TXCSR  ;MASTER RESET
   (1)  005270  012777  020000  174424          MOV     #SYNEXT,@PARCSR ;SET THE MODE
   (2)  005276  052777  000400  174422          BIS     #MRESET,@TXCSR  ;MASTER RESET
   (1)
   (1)                                  ;SET MAINTENANCE MODE & SEND
   (1)                                          ;NOTE:BIT WINDOW&CLK ARE CLEARED (MTDATA=0)
   (1)  005304  012777  004020  174414          MOV     #MINT!SEND,@TXCSR
   (1)
   (1)                                  ;SET MODE,# OF BITS,PARITY SENSE,& LOAD SYNC REG
   (1)  005312  012777  026026  174402          MOV     #SYNEXT!EIGHT!NOPAR!26,@PARCSR
 8470  005320  112777  000025  174404          MOVB    #25,@TXDBUF     ;LOAD CHARACTER
 8471  005326  012767  000010  173566          MOV     #8.,SHIFT
 8472                                  ;POKE CLK TO GET INTO SYNCRONIZATION
 8473  005334  052777  020000  174364          BIS     #CLK,@TXCSR     ;POKE CLK UP
   (1)  005342  042777  020000  174356          BIC     #CLK,@TXCSR     ;POKE CLK DOWN
 8474
 8475  005350                          1$:
   (1)  005350  052777  020000  174350          BIS     #CLK,@TXCSR     ;POKE CLK UP
   (1)  005356  042777  020000  174342          BIC     #CLK,@TXCSR     ;POKE CLK DOWN
 8476  005364  005367  173532                  DEC     SHIFT           ;LAST SHIFT?
 8477  005370  001367                          BNE     1$
 8478  005372  012777  005432  174342          MOV     #2$,@DUTIV      ;SET UP TRAPCATCHER
 8479  005400  016777  011406  174336          MOV     DUPRT,@DUTIS    ;
 8480  005406  106427  000000                  MTPS    #0      ;ALLOW INTERRUPTS
 8481  005412  052777  000140  174306          BIS     #TXINTE!DNAINTE,@TXCSR  ;ENABLE INTERRUPTS
 8482  005420  005000                          CLR     R0
 8483  005422  005200                          INC     R0              ;WAIT FOR INTERRUPT
 8484  005424  001376                          BNE     .-2             ;
 8485  005426  104004                          ERROR   4                       ;INTERRUPT FAILED TO OCCUR
 8486  005430  000461                          BR      3$      ;JUMP AROUND SVC ROUTINES
 8487
 8488                                  ;THE FOLLOWING IS THE 1ST INTERRUPT SVC ROUTINE
```

```
 8489  005432  106427  000300          2$:     MTPS    #300    ;DON'T ALLOW ANYMORE INTERRUPTS
 8490  005436  005777  174264                  TST     @TXCSR  ;DNA=0 ?
 8491  005442  100001                          BPL     .+4
 8492  005444  104004                          ERROR   4       ;DNA SHOULD NOT BE ASSERTED
 8493  005446  105777  174254                  TSTB    @TXCSR  ;TXDONE = 1?
 8494  005452  100401                          BMI     .+4
 8495  005454  104004                          ERROR   4               ;FALSE INTERRUPT
 8496  005456  012716  005616                  MOV     #4$,(SP)        ;SET UP RETURN LOCATION
 8497  005462  012777  005544  174252          MOV     #5$,@DUTIV      ;SET UP TRAPCATCHER
 8498                                          ;NOW POKE CLK TO BRING UP DNA
 8499  005470  052777  020000  174230          BIS     #CLK,@TXCSR     ;POKE CLK
 8500  005476  112777  000025  174226          MOVB    #25,@TXDBUF     ;JUST LOAD ANY CHAR TO CLR
 8501                                                  ;TXDONE TO ALLOW SECOND INTERRUPT
 8502  005504  106427  000000                  MTPS    #0      ;ALLOW INTERRUPTS
 8503  005510  005000                          CLR     R0
 8504  005512  005200                          INC     R0              ;WAIT FOR INTERRUPT
 8505  005514  001376                          BNE     .-2
 8506  005516  042777  000140  174202          BIC     #DNAINTE!TXINTE,@TXCSR  ;CLR INTR ENABLES
 8507  005524  104004                          ERROR   4                       ;2ND INTERRUPT FAILED TO OCCUR
 8508
 8509  005526  016777  174212  174206  6$:     MOV     DUTIS,@DUTIV    ;RESTORE TRAPCATCHER
 8510  005534  012777  000000  174202          MOV     #0,@DUTIS       ;
 8511  005542  000002                          RTI
 8512
 8513                                  ;THE FOLLOWING IS THE 2ND INTERRUPT SVC ROUTINE
 8514  005544  106427  000300          5$:     MTPS    #300
 8515  005550  005777  174152                  TST     @TXCSR          ;DNA
 8516  005554  100401                          BMI     .+4
 8517  005556  104004                          ERROR   4                       ;FALSE INTERRUPT
 8518  005560  042777  000140  174140          BIC     #DNAINTE!TXINTE,@TXCSR  ;CLR BOTH INTR ENABLES
 8519  005566  012716  005526                  MOV     #6$,(SP)                ;SETUP RETURN LOCATION
 8520  005572  000002                          RTI
 8521
 8522  005574  016777  174144  174140  3$:     MOV     DUTIS,@DUTIV    ;RESTORE TRAPCATCHER
 8523  005602  012777  000000  174134          MOV     #0,@DUTIS
 8524
 8525  005610  042777  000140  174110          BIC     #DNAINTE!TXINTE,@TXCSR ;CLR BOTH INTERRUPT
 8526                                                                         ;ENABLES
 8527  005616  106427  000300          4$:     MTPS    #300    ;RESTORE NO INTERRUPT STATUS
 8528
 8529
 8530
 8531                                  ;;THIS TEST VERIFYS CTP MODE (IE SYSTST MODE)
 8532                                  ;;IT BASICALLY CHECKS THE EXISTANCE OF
 8533                                  ;;THE FREE RUNNING OSCILLATOR
 8534                                  ;;MODE:  SYNEXT
 8535                                  ;;LENGTH:  EIGHT
 8536                                  ;;THIS TEST USES BOTH THE RECEIVER & TRANSMITTER LOGIC
 8537
 8538                                  ;;**************************************************************************
  (3)  005622  000004                  TST10:  SCOPE
  (3)
 8539                                  ;************************
 8540  005624  000167  000262                  JMP     1$      ;NOP THIS TEST
 8541                                  ;************************
 8542  005630  052777  000400  174070          BIS     #MRESET,@TXCSR  ;MASTER RESET
```

```
 8543  005636  012777  020000  174056          MOV     #SYNEXT,@PARCSR ;LOAD THE MODE
 8544  005644  052777  000400  174054          BIS     #MRESET,@TXCSR  ;MASTER RESET
 8545  005652  012777  026026  174042          MOV     #SYNEXT!EIGHT!NOPAR!26,@PARCSR  ;LOAD THE MODE,
 8546                                                  ;# OF BITS PER CHAR,PARITY SENSE(NO PARITY),
 8547                                                  ;&SYNC CHARACTER (26)
 8548  005660  112777  000025  174044          MOVB    #25,@TXDBUF     ;LOAD THE CHAR
 8549  005666  012777  005764  174042          MOV     #2$,@DURIV      ;SET UP TRAPCATCHER
 8550  005674  016777  011112  174036          MOV     DUPRT,@DURIS    ;
 8551  005702  106427  000000                  MTPS    #0      ;ALLOW INTERRUPTS
 8552  005706  016703  174004                  MOV     RXDBUF,R3       ;SET UP FOR ERROR MESSAGE
 8553  005712  012700  000025                  MOV     #25,R0          ;EXPECTED
 8554  005716  012777  014020  174002          MOV     #SYSTST!SEND,@TXCSR     ;OK  NOW LOAD SEND &
 8555                                                                  ;MAINT. MODE
 8556  005724  052777  000120  173760          BIS     #SYNSCH!RINTEN,@RXCSR   ;SET SEARCH SYNC &
 8557                                                                  ;RECEIVER INTERRUPT
 8558                                                                  ;ENABLE & WAIT FOR INTERRUPT
 8559  005732  005067  173552                  CLR     $TMP5
 8560  005736  005002                  3$:     CLR     R2
 8561  005740  005202                          INC     R2              ;WAIT FOR INTERRUPT
 8562  005742  001376                          BNE     .-2
 8563  005744  005267  173540                  INC     $TMP5
 8564  005750  022767  000003  173532          CMP     #3,$TMP5
 8565  005756  002367                          BGE     3$
 8566  005760  104004                          ERROR   4                       ;INTERRUPT DID NOT OCCUR
 8567  005762  000422                          BR      4$
 8568
 8569                                  ;THE FOLLOWING IS THE INTERRUPT SVC ROUTINE
 8570  005764  106427  000300          2$:     MTPS    #300    ;PREVENT INTERRUPTS
 8571  005770  017704  173716                  MOV     @RXCSR,R4       ;SAVE
 8572  005774  017701  173716                  MOV     @RXDBUF,R1      ;ACTUAL
 8573  006000  016777  173734  173730          MOV     DURIS,@DURIV    ;RESTORE TRAPCATCHER
 8574  006006  012777  000000  173724          MOV     #0,@DURIS       ;
 8575  006014  012716  006060                  MOV     #5$,(SP)        ;SET UP RETURN
 8576  006020  042777  000100  173664          BIC     #RINTEN,@RXCSR  ;CLR INTERRUPT ENABLE
 8577  006026  000002                          RTI
 8578
 8579  006030  042777  000100  173654  4$:     BIC     #RINTEN,@RXCSR  ;CLR INTERRUPT ENABLE
 8580  006036  106427  000300                  MTPS    #300    ;PREVENT INTERRUPTS
 8581  006042  016777  173672  173666          MOV     DURIS,@DURIV    ;RESTORE TRAPCATCHER
 8582  006050  012777  000000  173662          MOV     #0,@DURIS       ;
 8583  006056  000415                          BR      1$
 8584
 8585  006060  020001                  5$:     CMP     R0,R1
 8586  006062  001401                          BEQ     .+4
 8587  006064  104002                          ERROR   2               ;CHARACTERS DID NOT MATCH
 8588  006066  016703  173620                  MOV     RXCSR,R3        ;SETUP FOR ERROR MESSAGE
 8589  006072  012700  000200                  MOV     #200,R0         ;EXPECTED
 8590  006076  010401                          MOV     R4,R1           ;ACTUAL
 8591  006100  042701  177577                  BIC     #177577,R1      ;SAVE ONLY RXDONE
 8592  006104  020001                          CMP     R0,R1
 8593  006106  001401                          BEQ     .+4
 8594  006110  104001                          ERROR   1       ;FALSE INTERRUPT
 8595
 8596  006112                          1$:
 8597                                  ;;THIS TEST VERIFYS CTP MODE (IE SYSTST MODE)
 8598                                  ;;IT BASICALLY CHECKS THE EXISTANCE OF
```

```
                                        ;;THE FREE RUNNING OSCILLATOR
                                        ;;MODE: SYNINT
                                        ;;LENGTH: EIGHT
                                        ;;THIS TEST USES BOTH THE RECEIVER & TRANSMITTER LOGIC
                                        ;;
                                        ;;*****************************************************************
  (3)  006112  000004                   TST11:  SCOPE
  (3)
8605  006114  052777  000400  173604            BIS     #MRESET,@TXCSR  ;MASTER RESET
 (1)  006122  012777  030000  173572            MOV     #SYNINT,@PARCSR ;SET THE MODE
 (2)  006130  052777  000400  173570            BIS     #MRESET,@TXCSR  ;MASTER RESET
 (1)
 (1)                                    ;SET MAINTENANCE MODE & SEND
 (1)                                            ;NOTE:BIT WINDOW&CLK ARE CLEARED (MTDATA=0)
 (1)  006136  012777  014020  173562            MOV     #SYSTST!SEND,@TXCSR
 (1)
 (1)                                    ;SET MODE,# OF BITS,PARITY SENSE,& LOAD SYNC REG
 (1)  006144  012777  036026  173550            MOV     #SYNINT!EIGHT!NOPAR!26,@PARCSR
8606  006152  052777  000420  173532            BIS     #SYNSCH!STPSYN,@RXCSR   ;SET SEARCH SYNC &
8607                                                    ;STRIP SYNC SO THAT RXDONE ASSERTS
8608                                                    ;WHEN CHAR "25" ARRIVES AND NOT BEFORE...
8609                                                    ; ...THEREFORE,SET STRIP SYNC
8610                                            ;.............WAIT FOR SYNSCH TO BE
8611                                            ;CLOCKED IN BY SYSTST CLK
8612  006160  005067  173324                   CLR     $TMP5
8613  006164  005002                           CLR     R2
8614  006166  005202                           INC     R2      ;WAIT
8615  006170  001376                           BNE     .-2
8616  006172  005267  173312                  INC     $TMP5
8617  006176  022767  000003  173304          CMP     #3,$TMP5
8618  006204  002367                           BGE     .-20    ;GO BACK TO CLR R2 AND WAIT SOME MORE
8619  006206  012777  006422  173522          MOV     #2$,@DURIV      ;SET UP TRAPCATCHER
8620  006214  016777  010572  173_.6          MOV     DUPRT,@DURIS    ;
8621  006222  012777  006514  173512          MOV     #3$,@DUTIV      ;
8622  006230  016777  010556  173506          MOV     DUPRT,@DUTIS    ;
8623  006236  106427  000000                   MTPS    #0      ;ALLOW INTERRUPTS
8624  006242  016703  173450                  MOV     RXDBUF,R3       ;SET UP FOR ERROR MSG
8625  006246  012700  000025                  MOV     #25,R0  ;EXPECTED CHAR
8626  006252  012767  000002  172644          MOV     #2,COUNT        ;# OF SYNC CHARS TO GET INTO
8627                                                    ;SYNCRONIZATION
8628  006260  105767  172662                  TSTB    SYNCNO  ;TEST TO SEE HOW MANY SYNC CHARS NEEDED
8629  006264  100402                           BMI     9$
8630  006266  005367  172632                  DEC     COUNT   ;MAKE IT ONE LESS
8631  006272  052777  000100  173412  9$:     BIS     #RINTEN,@RXCSR  ;SET INTERRUPT ENABLES
8632  006300  052777  000100  173420          BIS     #TXINTE,@TXCSR  ;
8633  006306  000167  000012                  JMP     8$      ;THE FIRST XMIT INTERRUPT SHOULD COME
8634                                                    ;FROM TXDONE = 1 AFTER A MASTER RESET
8635  006312  112777  000026  173412  1$:     MOVB    #26,@TXDBUF     ;LOAD SYNC CHAR
8636  006320  005067  173164                  CLR     $TMP5
8637  006324  005002                   8$:     CLR     R2      ;WAIT FOR INTERRUPT
8638  006326  005202                           INC     R2
8639  006330  001376                           BNE     .-2     ;
8640  006332  005267  173152                  INC     $TMP5
8641  006336  022767  000003  173144          CMP     #3,$TMP5
8642  006344  002367                           BGE     8$
8643  006346  106427  000300                   MTPS    #300    ;PREVENT INTERRUPTS
```

```
 8644  006352  042777  000100  173346          BIC     #TXINTE,@TXCSR  ;CLR INTR ENABLES
 8645  006360  042777  000100  173324          BIC     #RINTEN,@RXCSR  ;
 8646  006366  016777  173346  173342          MOV     DURIS,@DURIV    ;RESTORE TRAPCATCHER
 8647  006374  012777  000000  173336          MOV     #0,@DURIS       ;
 8648  006402  016777  173336  173332          MOV     DUTIS,@DUTIV    ;
 8649  006410  012777  000000  173326          MOV     #0,@DUTIS       ;
 8650  006416  104004                          ERROR   4               ;TXDONE INTERRUPT FAILED TO OCCUR
 8651  006420  000540                          BR      7$              ;GET OUT OF THE TEST
 8652
 8653                                  ;THE FOLLOWING IS THE RECEIVER INTERRUPT SVC ROUTINE
 8654  006422  106427  000300          2$:     MTPS    #300    ;PREVENT INTERRUPTS
 8655  006426  017704  173260                  MOV     @RXCSR,R4       ;SAVE
 8656  006432  017701  173260                  MOV     @RXDBUF,R1      ;ACTUAL
 8657  006436  016777  173276  173272          MOV     DURIS,@DURIV    ;RESTORE TRAPCATCHER
 8658  006444  012777  000000  173266          MOV     #0,@DURIS       ;
 8659  006452  016777  173266  173262          MOV     DUTIS,@DUTIV    ;
 8660  006460  012777  000000  173256          MOV     #0,@DUTIS       ;
 8661  006466  012716  006646                  MOV     #4$,(SP)        ;SET UP RETURN LOCATION
 8662  006472  042777  000100  173212          BIC     #RINTEN,@RXCSR  ;CLR INTERRUPT ENABLES
 8663  006500  042777  000100  173220          BIC     #TXINTE,@TXCSR  ;
 8664  006506  016705  172412                  MOV     COUNT,R5        ;SAVE COUNT
 8665  006512  000002                          RTI
 8666                                  ;END OF RECEIVER INTERRUPT SVC ROUTINE
 8667                                  ;....THE FOLLOWING IS THE XMITTER INTERRUPT SVC ROUTINE
 8668  006514  005367  172404          3$:     DEC     COUNT
 8669  006520  100403                          BMI     5$
 8670  006522  012716  006312                  MOV     #1$,(SP)        ;SET UP RETURN LOCATION
 8671                                                          ;(LOAD SYNC CHARACTER AGAIN)
 8672  006526  000002                          RTI
 8673  006530  012716  006536          5$:     MOV     #6$,(SP)        ;SET UP RETURN LOCATION
 8674  006534  000002                          RTI
 8675                                  ;END OF XMITTER INTERRUPT SVC ROUTINE
 8676  006536  112777  000025  173166  6$:     MOVB    #25,@TXDBUF     ;LOAD CHARACTER
 8677  006544  042777  000100  173154          BIC     #TXINTE,@TXCSR  ;CLR INTR ENABLE
 8678  006552  005067  172732                  CLR     $TMP5
 8679  006556  005002                  10$:    CLR     R2      ;WAIT FOR INTERRUPT(RECEIVER)
 8680  006560  005202                          INC     R2
 8681  006562  001376                          BNE     .-2     ;
 8682  006564  005267  172720                  INC     $TMP5
 8683  006570  022767  000003  172712          CMP     #3,$TMP5
 8684  006576  002367                          BGE     10$
 8685  006600  106427  000300                  MTPS    #300    ;PREVENT INTERRUPTS
 8686  006604  042777  000100  173100          BIC     #RINTEN,@RXCSR  ;CLR INTR ENABLE
 8687  006612  016777  173122  173116          MOV     DURIS,@DURIV    ;RESTORE TRAPCATCHER
 8688  006620  012777  000000  173112          MOV     #0,@DURIS       ;
 8689  006626  016777  173112  173106          MOV     DUTIS,@DUTIV    ;
 8690  006634  012777  000000  173102          MOV     #0,@DUTIS       ;
 8691  006642  104004                          ERROR   4               ;RECEIVER INTR FAILED TO OCCUR
 8692  006644  000426                          BR      7$              ;GET OUT OF TEST
 8693  006646  020001                  4$:     CMP     R0,R1
 8694  006650  001401                          BEQ     .+4
 8695  006652  104002                          ERROR   2               ;CHARACTERS DID NOT MATCH
 8696  006654  016703  173032                  MOV     RXCSR,R3        ;SET UP FOR ERROR MSG
 8697  006660  012700  000200                  MOV     #200,R0 ;EXPECTED RXDONE
 8698  006664  010401                          MOV     R4,R1   ;ACTUAL
 8699  006666  042701  177577                  BIC     #177577,R1      ;SAVE ONLY RXDONE
```

```
 8700  006672  020001                          CMP     R0,R1
 8701  006674  001401                          BEQ     .+4
 8702  006676  104001                          ERROR   1       ;FALSE INTERRUPT
 8703  006700  020527  177777                  CMP     R5,#-1  ;WAS COUNT =-1   WHEN RECEIVER
 8704                                                          ;INTERRUPTED ?
 8705  006704  001401                          BEQ     .+4
 8706  006706  104004                          ERROR   4       ;IF R5 IS GREATER THAN -1.....
 8707                                          ;THEN EITHER THE # OF SYNC STRAP IS WRONG
 8708                                          ;OR RXDONE IS OCCURING TOO SOON
 8709  006710  026727  172210  177777          CMP     COUNT,#-1
 8710  006716  001401                          BEQ     .+4
 8711  006720  104004                          ERROR   4       ;IF THIS TEST FAILS,BUT THE ABOVE TEST
 8712                                          ;DOESN'T.....IT MAY BE THAT CLEARING
 8713                                          ;TXINTE IN THE RECEIVER SVC ROUTINE
 8714                                          ;IS NOT STOPPING TXDONE INTERRUPTS
 8715  006722  106427  000300          7$:     MTPS    #300    ;INHIBIT INTERRUPTS
 8716
 8717
 8718                                          ;;THIS TEST VERIFYS MATCH DETECT & DATA RDY
  (1)                                         ;;FLAGS FOR EVERY POSSIBLE MATCH CHARACTER
  (1)                                         ;;BY OBSERVING RECACT BIT
  (1)                                         ;;IT WILL TAKE TWO SYNC * CHARACTERS TO GET RECACT BIT
  (1)                                         ;;*:    DEPENDENT ON MONITOR .............
  (1)                                         ;;IF ONE SYNC STRAP IS SELECTED ,IT WILL
  (1)                                         ;;ONLY TAKE ONE SYNC CHARACTER BEFORE RECACT TO
  (1)                                         ;;ASSERT
  (1)                                         ;;MODE: SYNC INTERNAL
  (1)                                         ;;LENGTH: FIVE
  (1)                                         ;;SYNC CHARACTER FOR MATCH: B/C
  (1)                                         ;;THIS TEST USES THE TRANSMITTER AND RECEIVER CHIPS
  (1)                                         ;;
  (5)                                     ;;**********************************************************************
  (4)  006726  000004                      TST12:  SCOPE
  (4)
  (2)  006730  052777  000400  172770              BIS     #MRESET,@TXCSR  ;MASTER RESET
  (1)  006736  016703  172754                      MOV     RXDBUF,R3       ;SET UP FOR ERROR MESSAGE
  (1)                                     ;SET SYNC INTERNAL,FIVE,NO PARITY,0 SYNC REGISTER
  (1)  006742  012704  030000                      MOV     #SYNINT!FIVE!NOPAR,R4   ;CREATE PARAMETERS
  (1)  006746  012777  004020  172752  6$:         MOV     #MINT!SEND,@TXCSR       ;SET SEND & MAINT INTER
  (1)  006754  010477  172742                      MOV     R4,@PARCSR      ;LOAD CSR
  (1)  006760  052777  000020  172724              BIS     #SYNSCH,@RXCSR  ;SET SYNC SEARCH
  (1)                                     ;POKE CLK TO GET INTO SYNCRONIZATION
  (1)                                     ;BOTH THE LOGIC & RECEIVER
  (2)  006766  052777  020000  172732              BIS     #CLK,@TXCSR     ;POKE CLK UP
  (2)  006774  042777  020000  172724              BIC     #CLK,@TXCSR     ;POKE CLK DOWN
  (1)  007002  110477  172724                      MOVB    R4,@TXDBUF      ;LOAD DATA CHARACTER
  (1)                                     ;POKE CLK TO GET TRANSMITTER & RECEIVER INTO SYNCRONIZATION
  (2)  007006  052777  020000  172712              BIS     #CLK,@TXCSR     ;POKE CLK UP
  (2)  007014  042777  020000  172704              BIC     #CLK,@TXCSR     ;POKE CLK DOWN
  (1)  007022  032777  004000  172662              BIT     #RECACT,@RXCSR  ;RECACT ?
  (1)  007030  001401                              BEQ     .+4
  (1)  007032  104004                              ERROR   4       ;RECACT SHOULD NOT BE SET
  (1)  007034  000404                              BR      4$
  (1)  007036  010477  172660          5$:         MOV     R4,@PARCSR      ;LOAD PARCSR WITH PARAMETERS
  (1)  007042  110477  172664                      MOVB    R4,@TXDBUF      ;LOAD SYNC CHAR
  (1)  007046  012767  000002  172050  4$:         MOV     #2,COUNT        ;# OF SYNC CHARS
```

```
(1)  007054  005777  172646          2$:     TST     @TXCSR  ;DNA ?
(1)  007060  100001                          BPL     .+4     ;BR IF NOT SET
(1)  007062  104004                          ERROR   4       ;DNA SHOULD NOT BE SET OR....
(1)                                          ;IT SHOULD BE CLEARED FROM PREVIOUS READ
(1)  007064  012767  000005  172030          MOV     #5,SHIFT        ;# OF SHIFTS
(1)  007072                          1$:
(2)  007072  052777  020000  172626          BIS     #CLK,@TXCSR     ;POKE CLK UP
(2)  007100  042777  020000  172620          BIC     #CLK,@TXCSR     ;POKE CLK DOWN
(1)  007106  005367  172010                  DEC     SHIFT   ;# OF SHIFTS
(1)  007112  001367                          BNE     1$
(1)  007114  005367  172004                  DEC     COUNT   ;# OF SYNC CHARS
(1)  007120  001405                          BEQ     3$
(1)                                  ;TEST SYNCNO TO SEE HOW MANY SYNC CHARACTERS NEEDED
(1)  007122  105767  172020                  TSTB    SYNCNO
(1)  007126  100752                          BMI     2$      ;TWO SYNC CHARACTERS..
(1)  007130  032777  004000  172554  3$:     BIT     #RECACT,@RXCSR  ;RECACT ?
(1)  007136  001001                          BNE     .+4
(1)  007140  104004                          ERROR   4               ;RECACT FAILED TO SET,POSSIBLE
(1)                                                  ;THAT THE RECEIVER FAILED TO MATCH
(1)                                                  ;THE SYNC CHARACTER
(1)  007142  017701  172550                  MOV     @RXDBUF,R1      ;SAVE ACTUAL
(1)  007146  010400                          MOV     R4,R0           ;SAVE EXPECTED
(1)  007150  042700  177400                  BIC     #177400,R0      ;CLR UPPER BYTE
(1)  007154  020001                          CMP     R0,R1   ;DO THEY COMPARE ?
(1)  007156  001401                          BEQ     .+4
(1)  007160  104002                          ERROR   2       ;IF RECACT FAILED ALONG WITH THIS
(1)                                                  ;...IT PROBABLY IS A TRANSMITTER ERROR
(1)                                                  ;HOWEVER,...IF ONLY THIS FAILED IT
(1)                                                  ;PROBABLY IS A RECEIVER ERROR
(1)  007162  104405                          SCOP1
(1)                                  ;POKE CLK TO SEE DNA...DNA COMES UP ON THE FIRST
(1)                                  ;BIT OF THE NEXT CHARACTER IF NO CHARACTER IS LOADED INTO
(1)                                  ;TXDBUF
(1)  007164  052777  020000  172534          BIS     #CLK,@TXCSR     ;POKE CLK UP
(1)  007172  005777  172530                  TST     @TXCSR  ;DNA?
(1)  007176  100401                          BMI     .+4
(1)  007200  104004                          ERROR   4       ;DNA DID NOT ASSERT
(1)                                  ;SET UP CONDITIONS FOR NEXT SYNC CHARACTER MATCH
(2)  007202  052777  000400  172516          BIS     #MRESET,@TXCSR  ;MASTER RESET
(1)  007210  032777  000020  172474          BIT     #SYNSCH,@RXCSR  ;SYNC SEARCH = 0 ?
(1)  007216  001401                          BEQ     .+4
(1)  007220  104004                          ERROR   4       ;SYNC SEARCH SHOULD BE NOT SET
(1)  007222  005204                          INC     R4
(1)  007224  122704  000040                  CMPB    #40,R4  ;IS THIS THE LAST CHARACTER ?
(1)  007230  001246                          BNE     6$      ;NO
(1)
8719                                         ;;THIS TEST VERIFYS MATCH DETECT & DATA RDY
(1)                                          ;;FLAGS FOR EVERY POSSIBLE MATCH CHARACTER
(1)                                          ;;BY OBSERVING RECACT BIT
(1)                                          ;;IT WILL TAKE TWO SYNC * CHARACTERS TO GET RECACT BIT
(1)                                          ;;*:    DEPENDENT ON MONITOR .............
(1)                                          ;;IF ONE SYNC STRAP IS SELECTED ,IT WILL
(1)                                          ;;ONLY TAKE ONE SYNC CHARACTER BEFORE RECACT TO
(1)                                          ;;ASSERT
(1)                                          ;;MODE: SYNC INTERNAL
(1)                                          ;;LENGTH: SIX
```

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(1)                                     ;;SYNC CHARACTER FOR MATCH: B/C
(1)                                     ;;THIS TEST USES THE TRANSMITTER AND RECEIVER CHIPS
(1)                                     ;;
(5)                                     ;;*************************************************************
(4)  007232  000004                     TST13:  SCOPE
(4)
(2)  007234  052777  000400  172464             BIS     #MRESET,@TXCSR  ;MASTER RESET
(1)  007242  016703  172450             MOV     RXDBUF,R3       ;SET UP FOR ERROR MESSAGE
(1)                                     ;SET SYNC INTERNAL,SIX,NO PARITY,0 SYNC REGISTER
(1)  007246  012704  032000             MOV     #SYNINT!SIX!NOPAR,R4    ;CREATE PARAMETERS
(1)  007252  012777  004020  172446  6$:MOV     #MINT!SEND,@TXCSR       ;SET SEND & MAINT INTER
(1)  007260  010477  172436             MOV     R4,@PARCSR      ;LOAD CSR
(1)  007264  052777  000020  172420             BIS     #SYNSCH,@RXCSR  ;SET SYNC SEARCH
(1)                                     ;POKE CLK TO GET INTO SYNCRONIZATION
(1)                                     ;BOTH THE LOGIC & RECEIVER
(2)  007272  052777  020000  172426             BIS     #CLK,@TXCSR     ;POKE CLK UP
(2)  007300  042777  020000  172420             BIC     #CLK,@TXCSR     ;POKE CLK DOWN
(1)  007306  110477  172420             MOVB    R4,@TXDBUF      ;LOAD DATA CHARACTER
(1)                                     ;POKE CLK TO GET TRANSMITTER & RECEIVER INTO SYNCRONIZATION
(2)  007312  052777  020000  172406             BIS     #CLK,@TXCSR     ;POKE CLK UP
(2)  007320  042777  020000  172400             BIC     #CLK,@TXCSR     ;POKE CLK DOWN
(1)  007326  032777  004000  172356             BIT     #RECACT,@RXCSR  ;RECACT ?
(1)  007334  001401                     BEQ     .+4
(1)  007336  104004                     ERROR   4       ;RECACT SHOULD NOT BE SET
(1)  007340  000404                     BR      4$
(1)  007342  010477  172354             5$:     MOV     R4,@PARCSR      ;LOAD PARCSR WITH PARAMETERS
(1)  007346  110477  172360             MOVB    R4,@TXDBUF      ;LOAD SYNC CHAR
(1)  007352  012767  000002  171544  4$:MOV     #2,COUNT        ;# OF SYNC CHARS
(1)  007360  005777  172342             2$:     TST     @TXCSR  ;DNA ?
(1)  007364  100001                     BPL     .+4     ;BR IF NOT SET
(1)  007366  104004                     ERROR   4       ;DNA SHOULD NOT BE SET OR....
(1)                                     ;IT SHOULD BE CLEARED FROM PREVIOUS READ
(1)  007370  012767  000006  171524             MOV     #6,SHIFT        ;# OF SHIFTS
(1)  007376                             1$:
(2)  007376  052777  020000  172322             BIS     #CLK,@TXCSR     ;POKE CLK UP
(2)  007404  042777  020000  172314             BIC     #CLK,@TXCSR     ;POKE CLK DOWN
(1)  007412  005367  171504             DEC     SHIFT   ;# OF SHIFTS
(1)  007416  001367                     BNE     1$
(1)  007420  005367  171500             DEC     COUNT   ;# OF SYNC CHARS
(1)  007424  001403                     BEQ     3$
(1)                                     ;TEST SYNCNO TO SEE HOW MANY SYNC CHARACTERS NEEDED
(1)  007426  105767  171514             TSTB    SYNCNO
(1)  007432  100752                     BMI     2$      ;TWO SYNC CHARACTERS..
(1)  007434  032777  004000  172250  3$:BIT     #RECACT,@RXCSR  ;RECACT ?
(1)  007442  001001                     BNE     .+4
(1)  007444  104004                     ERROR   4               ;RECACT FAILED TO SET,POSSIBLE
(1)                                                     ;THAT THE RECEIVER FAILED TO MATCH
(1)                                                     ;THE SYNC CHARACTER
(1)  007446  017701  172244             MOV     @RXDBUF,R1      ;SAVE ACTUAL
(1)  007452  010400                     MOV     R4,R0           ;SAVE EXPECTED
(1)  007454  042700  177400             BIC     #177400,R0      ;CLR UPPER BYTE
(1)  007460  020001                     CMP     R0,R1   ;DO THEY COMPARE ?
(1)  007462  001401                     BEQ     .+4
(1)  007464  104002                     ERROR   2       ;IF RECACT FAILED ALONG WITH THIS
(1)                                                     ;...IT PROBABLY IS A TRANSMITTER ERROR
(1)                                                     ;HOWEVER,...IF ONLY THIS FAILED IT
```

```
(1)                                                     ;PROBABLY IS A RECEIVER ERROR
(1)  007466  104405                             SCOP1
(1)                                     ;POKE CLK TO SEE DNA...DNA COMES UP ON THE FIRST
(1)                                     ;BIT OF THE NEXT CHARACTER IF NO CHARACTER IS LOADED INTO
(1)                                     ;TXDBUF
(1)  007470  052777  020000  172230             BIS     #CLK,@TXCSR     ;POKE CLK UP
(1)  007476  005777  172224                     TST     @TXCSR  ;DNA?
(1)  007502  100401                             BMI     .+4
(1)  007504  104004                             ERROR   4       ;DNA DID NOT ASSERT
(1)                                             ;SET UP CONDITIONS FOR NEXT SYNC CHARACTER MATCH
(2)  007506  052777  000400  172212             BIS     #MRESET,@TXCSR  ;MASTER RESET
(1)  007514  032777  000020  172170             BIT     #SYNSCH,@RXCSR  ;SYNC SEARCH = 0 ?
(1)  007522  001401                             BEQ     .+4
(1)  007524  104004                             ERROR   4       ;SYNC SEARCH SHOULD BE NOT SET
(1)  007526  005204                             INC     R4
(1)  007530  122704  000100                     CMPB    #100,R4 ;IS THIS THE LAST CHARACTER ?
(1)  007534  001246                             BNE     6$      ;NO
(1)
8720                                            ;;THIS TEST VERIFYS MATCH DETECT & DATA RDY
(1)                                             ;;FLAGS FOR EVERY POSSIBLE MATCH CHARACTER
(1)                                             ;;BY OBSERVING RECACT BIT
(1)                                             ;;IT WILL TAKE TWO SYNC * CHARACTERS TO GET RECACT BIT
(1)                                             ;;*:    DEPENDENT ON MONITOR .............
(1)                                             ;;IF ONE SYNC STRAP IS SELECTED ,IT WILL
(1)                                             ;;ONLY TAKE ONE SYNC CHARACTER BEFORE RECACT TO
(1)                                             ;;ASSERT
(1)                                             ;;MODE: SYNC INTERNAL
(1)                                             ;;LENGTH: SEVEN
(1)                                             ;;SYNC CHARACTER FOR MATCH: B/C
(1)                                             ;;THIS TEST USES THE TRANSMITTER AND RECEIVER CHIPS
(1)                                             ;;
(5)                                     ;;**************************************************************
(4)  007536  000004                     TST14:  SCOPE
(4)
(2)  007540  052777  000400  172160             BIS     #MRESET,@TXCSR  ;MASTER RESET
(1)  007546  016703  172144                     MOV     RXDBUF,R3       ;SET UP FOR ERROR MESSAGE
(1)                                     ;SET SYNC INTERNAL,SEVEN,NO PARITY,0 SYNC REGISTER
(1)  007552  012704  034000                     MOV     #SYNINT!SEVEN!NOPAR,R4  ;CREATE PARAMETERS
(1)  007556  012777  004020  172142     6$:     MOV     #MINT!SEND,@TXCSR       ;SET SEND & MAINT INTER
(1)  007564  010477  172132                     MOV     R4,@PARCSR      ;LOAD CSR
(1)  007570  052777  000020  172114             BIS     #SYNSCH,@RXCSR  ;SET SYNC SEARCH
(1)                                     ;POKE CLK TO GET INTO SYNCRONIZATION
(1)                                     ;BOTH THE LOGIC & RECEIVER
(2)  007576  052777  020000  172122             BIS     #CLK,@TXCSR     ;POKE CLK UP
(2)  007604  042777  020000  172114             BIC     #CLK,@TXCSR     ;POKE CLK DOWN
(1)  007612  110477  172114                     MOVB    R4,@TXDBUF      ;LOAD DATA CHARACTER
(1)                                     ;POKE CLK TO GET TRANSMITTER & RECEIVER INTO SYNCRONIZATION
(2)  007616  052777  020000  172102             BIS     #CLK,@TXCSR     ;POKE CLK UP
(2)  007624  042777  020000  172074             BIC     #CLK,@TXCSR     ;POKE CLK DOWN
(1)  007632  032777  004000  172052             BIT     #RECACT,@RXCSR  ;RECACT ?
(1)  007640  001401                             BEQ     .+4
(1)  007642  104004                             ERROR   4       ;RECACT SHOULD NOT BE SET
(1)  007644  000404                             BR      4$
(1)  007646  010477  172050             5$:     MOV     R4,@PARCSR      ;LOAD PARCSR WITH PARAMETERS
(1)  007652  110477  172054                     MOVB    R4,@TXDBUF      ;LOAD SYNC CHAR
(1)  007656  012767  000002  171240     4$:     MOV     #2,COUNT        ;# OF SYNC CHARS
```

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CNDUV-A MACY11 30(1046)  14-DEC-82  10:03  PAGE 61-33
CNDUVA.M11    30-OCT-82 12:45          INITIALIZE THE COMMON TAGS                                    SEQ 0047

    (1)  007664  005777  172036          2$:     TST     @TXCSR  ;DNA ?
    (1)  007670  100001                          BPL     .+4     ;BR IF NOT SET
    (1)  007672  104004                          ERROR   4       ;DNA SHOULD NOT BE SET OR....
    (1)                                          ;IT SHOULD BE CLEARED FROM PREVIOUS READ
    (1)  007674  012767  000007  171220          MOV     #7,SHIFT        ;# OF SHIFTS
    (1)  007702                          1$:
    (2)  007702  052777  020000  172016          BIS     #CLK,@TXCSR     ;POKE CLK UP
    (2)  007710  042777  020000  172010          BIC     #CLK,@TXCSR     ;POKE CLK DOWN
    (1)  007716  005367  171200                  DEC     SHIFT   ;# OF SHIFTS
    (1)  007722  001367                          BNE     1$
    (1)  007724  005367  171174                  DEC     COUNT   ;# OF SYNC CHARS
    (1)  007730  001403                          BEQ     3$
    (1)                                  ;TEST SYNCNO TO SEE HOW MANY SYNC CHARACTERS NEEDED
    (1)  007732  105767  171210                  TSTB    SYNCNO
    (1)  007736  100752                          BMI     2$      ;TWO SYNC CHARACTERS..
    (1)  007740  032777  004000  171744  3$:     BIT     #RECACT,@RXCSR  ;RECACT ?
    (1)  007746  001001                          BNE     .+4
    (1)  007750  104004                          ERROR   4               ;RECACT FAILED TO SET,POSSIBLE
    (1)                                                  ;THAT THE RECEIVER FAILED TO MATCH
    (1)                                                  ;THE SYNC CHARACTER
    (1)  007752  017701  171740                  MOV     @RXDBUF,R1      ;SAVE ACTUAL
    (1)  007756  010400                          MOV     R4,R0           ;SAVE EXPECTED
    (1)  007760  042700  177400                  BIC     #177400,R0      ;CLR UPPER BYTE
    (1)  007764  020001                          CMP     R0,R1   ;DO THEY COMPARE ?
    (1)  007766  001401                          BEQ     .+4
    (1)  007770  104002                          ERROR   2       ;IF RECACT FAILED ALONG WITH THIS
    (1)                                                  ;...IT PROBABLY IS A TRANSMITTER ERROR
    (1)                                                  ;HOWEVER,...IF ONLY THIS FAILED IT
    (1)                                                  ;PROBABLY IS A RECEIVER ERROR
    (1)  007772  104405                          SCOP1
    (1)                                  ;POKE CLK TO SEE DNA...DNA COMES UP ON THE FIRST
    (1)                                  ;BIT OF THE NEXT CHARACTER IF NO CHARACTER IS LOADED INTO
    (1)                                  ;TXDBUF
    (1)  007774  052777  020000  171724          BIS     #CLK,@TXCSR     ;POKE CLK UP
    (1)  010002  005777  171720                  TST     @TXCSR  ;DNA?
    (1)  010006  100401                          BMI     .+4
    (1)  010010  104004                          ERROR   4       ;DNA DID NOT ASSERT
    (1)                                  ;SET UP CONDITIONS FOR NEXT SYNC CHARACTER MATCH
    (2)  010012  052777  000400  171706          BIS     #MRESET,@TXCSR  ;MASTER RESET
    (1)  010020  032777  000020  171664          BIT     #SYNSCH,@RXCSR  ;SYNC SEARCH = 0 ?
    (1)  010026  001401                          BEQ     .+4
    (1)  010030  104004                          ERROR   4       ;SYNC SEARCH SHOULD BE NOT SET
    (1)  010032  005204                          INC     R4
    (1)  010034  122704  000200                  CMPB    #200,R4 ;IS THIS THE LAST CHARACTER ?
    (1)  010040  001246                          BNE     6$      ;NO
    (1)
 8721                                            ;;THIS TEST VERIFYS MATCH DETECT & DATA RDY
    (1)                                          ;;FLAGS FOR EVERY POSSIBLE MATCH CHARACTER
    (1)                                          ;;BY OBSERVING RECACT BIT
    (1)                                          ;;IT WILL TAKE TWO SYNC * CHARACTERS TO GET RECACT BIT
    (1)                                          ;;*:    DEPENDENT ON MONITOR .............
    (1)                                          ;;IF ONE SYNC STRAP IS SELECTED ,IT WILL
    (1)                                          ;;ONLY TAKE ONE SYNC CHARACTER BEFORE RECACT TO
    (1)                                          ;;ASSERT
    (1)                                          ;;MODE: SYNC INTERNAL
    (1)                                          ;;LENGTH: EIGHT
```

```
(1)                                             ;;SYNC CHARACTER FOR MATCH: B/C
(1)                                             ;;THIS TEST USES THE TRANSMITTER AND RECEIVER CHIPS
(1)                                             ;;
(5)                                     ;;**************************************************************
(4)  010042  000004                     TST15:  SCOPE
(4)
(2)  010044  052777  000400  171654             BIS     #MRESET,@TXCSR  ;MASTER RESET
(1)  010052  016703  171640                     MOV     RXDBUF,R3       ;SET UP FOR ERROR MESSAGE
(1)                                     ;SET SYNC INTERNAL,EIGHT,NO PARITY,0 SYNC REGISTER
(1)  010056  012704  036000                     MOV     #SYNINT!EIGHT!NOPAR,R4  ;CREATE PARAMETERS
(1)  010062  012777  004020  171636  6$:      MOV     #MINT!SEND,@TXCSR       ;SET SEND & MAINT INTER
(1)  010070  010477  171626                     MOV     R4,@PARCSR      ;LOAD CSR
(1)  010074  052777  000020  171610             BIS     #SYNSCH,@RXCSR  ;SET SYNC SEARCH
(1)                                     ;POKE CLK TO GET INTO SYNCRONIZATION
(1)                                     ;BOTH THE LOGIC & RECEIVER
(2)  010102  052777  020000  171616             BIS     #CLK,@TXCSR     ;POKE CLK UP
(2)  010110  042777  020000  171610             BIC     #CLK,@TXCSR     ;POKE CLK DOWN
(1)  010116  110477  171610                     MOVB    R4,@TXDBUF      ;LOAD DATA CHARACTER
(1)                                     ;POKE CLK TO GET TRANSMITTER & RECEIVER INTO SYNCRONIZATION
(2)  010122  052777  020000  171576             BIS     #CLK,@TXCSR     ;POKE CLK UP
(2)  010130  042777  020000  171570             BIC     #CLK,@TXCSR     ;POKE CLK DOWN
(1)  010136  032777  004000  171546             BIT     #RECACT,@RXCSR  ;RECACT ?
(1)  010144  001401                             BEQ     .+4
(1)  010146  104004                             ERROR   4       ;RECACT SHOULD NOT BE SET
(1)  010150  000404                             BR      4$
(1)  010152  010477  171544             5$:     MOV     R4,@PARCSR      ;LOAD PARCSR WITH PARAMETERS
(1)  010156  110477  171550                     MOVB    R4,@TXDBUF      ;LOAD SYNC CHAR
(1)  010162  012767  000002  170734  4$:      MOV     #2,COUNT        ;# OF SYNC CHARS
(1)  010170  005777  171532             2$:     TST     @TXCSR  ;DNA ?
(1)  010174  100001                             BPL     .+4     ;BR IF NOT SET
(1)  010176  104004                             ERROR   4       ;DNA SHOULD NOT BE SET OR....
(1)                                             ;IT SHOULD BE CLEARED FROM PREVIOUS READ
(1)  010200  012767  000010  170714             MOV     #8.,SHIFT       ;# OF SHIFTS
(1)  010206                             1$:
(2)  010206  052777  020000  171512             BIS     #CLK,@TXCSR     ;POKE CLK UP
(2)  010214  042777  020000  171504             BIC     #CLK,@TXCSR     ;POKE CLK DOWN
(1)  010222  005367  170674                     DEC     SHIFT   ;# OF SHIFTS
(1)  010226  001367                             BNE     1$
(1)  010230  005367  170670                     DEC     COUNT   ;# OF SYNC CHARS
(1)  010234  001403                             BEQ     3$
(1)                                     ;TEST SYNCNO TO SEE HOW MANY SYNC CHARACTERS NEEDED
(1)  010236  105767  170704                     TSTB    SYNCNO
(1)  010242  100752                             BMI     2$      ;TWO SYNC CHARACTERS..
(1)  010244  032777  004000  171440  3$:      BIT     #RECACT,@RXCSR  ;RECACT ?
(1)  010252  001001                             BNE     .+4
(1)  010254  104004                             ERPOR   4               ;RECACT FAILED TO SET,POSSIBLE
(1)                                                     ;THAT THE RECEIVER FAILED TO MATCH
(1)                                                     ;THE SYNC CHARACTER
(1)  010256  017701  171434                     MOV     @RXDBUF,R1      ;SAVE ACTUAL
(1)  010262  010400                             MOV     R4,R0           ;SAVE EXPECTED
(1)  010264  042700  177400                     BIC     #177400,R0      ;CLR UPPER BYTE
(1)  010270  020001                             CMP     R0,R1   ;DO THEY COMPARE ?
(1)  010272  001401                             BEQ     .+4
(1)  010274  104002                             ERROR   2       ;IF RECACT FAILED ALONG WITH THIS
(1)                                                     ;...IT PROBABLY IS A TRANSMITTER ERROR
(1)                                                     ;HOWEVER,...IF ONLY THIS FAILED IT
```

```
                                                ;PROBABLY IS A RECEIVER ERROR
010276  104405                          SCOP1
                                    ;POKE CLK TO SEE DNA...DNA COMES UP ON THE FIRST
                                    ;BIT OF THE NEXT CHARACTER IF NO CHARACTER IS LOADED INTO
                                    ;TXDBUF
010300  052777  020000  171420          BIS     #CLK,@TXCSR     ;POKE CLK UP
010306  005777  171414                  TST     @TXCSR  ;DNA?
010312  100401                          BMI     .+4
010314  104004                          ERROR   4       ;DNA DID NOT ASSERT
                                        ;SET UP CONDITIONS FOR NEXT SYNC CHARACTER MATCH
010316  052777  000400  171402          BIS     #MRESET,@TXCSR  ;MASTER RESET
010324  032777  000020  171360          BIT     #SYNSCH,@RXCSR  ;SYNC SEARCH = 0 ?
010332  001401                          BEQ     .+4
010334  104004                          ERROR   4       ;SYNC SEARCH SHOULD BE NOT SET
010336  005204                          INC     R4
010340  122704  000000                  CMPB    #0,R4   ;IS THIS THE LAST CHARACTER ?
010344  001246                          BNE     6$      ;NO

                                        ;;THIS TEST PERFORMS A BINARY COUNT DATA PATTERN ON
                                        ;;BOTH THE TRANSMITTER AND RECEIVER LOGIC
                                        ;;MODE:SYNC EXTERNAL (SYNEXT)
                                        ;;LENGTH:EIGHT PLUS PARITY
                                        ;;PARITY:EVEPAR
                                        ;;MAINT. MODE:MINT
                                        ;;
                                    ;;*****************************************************************
010346  000004                      TST16:  SCOPE

010350  052777  000400  171350          BIS     #MRESET,@TXCSR  ;MASTER RESET
010356  012777  020000  171336          MOV     #SYNEXT,@PARCSR ;SET THE MODE
010364  052777  000400  171334          BIS     #MRESET,@TXCSR  ;MASTER RESET

                                    ;SET MAINTENANCE MODE & SEND
                                        ;NOTE:BIT WINDOW&CLK ARE CLEARED (MTDATA=0)
010372  012777  004020  171326          MOV     #MINT!SEND,@TXCSR

                                    ;SET MODE,# OF BITS,PARITY SENSE,& LOAD SYNC REG
010400  012777  027426  171314          MOV     #SYNEXT!EIGHT!EVEPAR!26,@PARCSR
010406  016703  171304                  MOV     RXDBUF,R3       ;SETUP FOR ERROR MSG
010412  005004                          CLR     R4      ;FOR DATA CHAR CREATION
010414  110477  171312                  MOVB    R4,@TXDBUF      ;LOAD CHARACTER
010420  052777  000020  171264          BIS     #SYNSCH,@RXCSR  ;SET SEARCH SYNC
                                    ;GET INTO SYNCRONIZATION
010426  052777  020000  171272          BIS     #CLK,@TXCSR     ;POKE CLK UP
010434  042777  020000  171264          BIC     #CLK,@TXCSR     ;POKE CLK DOWN
010442  012767  000011  170452  1$:     MOV     #9.,SHIFT       ;# OF SHIFTS
010450  010400                          MOV     R4,R0   ;EXPECTED
010452                              2$:
010452  052777  020000  171246          BIS     #CLK,@TXCSR     ;POKE CLK UP
010460  042777  020000  171240          BIC     #CLK,@TXCSR     ;POKE CLK DOWN
010466  005367  170430                  DEC     SHIFT   ;# OF SHIFTS
010472  022767  000003  170422          CMP     #3,SHIFT        ;TIME TO LOAD NEXT CHAR ?
010500  001003                          BNE     3$      ;NO ?
010502  005204                          INC     R4      ;GENERATE NEXT CHAR
010504  110477  171222                  MOVB    R4,@TXDBUF      ;LOAD NEXT CHARACTER
010510  005767  170406          3$:     TST     SHIFT   ;IS IT 0 ?
```

```
                        INITIALIZE THE COMMON TAGS                                                    SEQ 0050

(1)  010514  001356                          BNE     2$
(1)  010516  105777  171170                 TSTB    @RXCSR  ;RXDONE = 1 ?
(1)  010522  100401                          BMI     .+4
(1)  010524  104004                          ERROR   4       ;RXDONE SHOULD BE SET
(1)  010526  017701  171164                 MOV     @RXDBUF,R1      ;ACTUAL
(1)  010532  020001                          CMP     R0,R1   ;COMPARE EXP VS ACT
(1)  010534  001401                          BEQ     .+4
(1)  010536  104002                          ERROR   2       ;CHARACTERS SHOULD COMPARE
(1)  010540  105704                          TSTB    R4      ;LAST CHARACTER ?
(1)  010542  001337                          BNE     1$      ;NO
(1)  010544                          4$:
8723                                         ;;THIS TEST PERFORMS A BINARY COUNT DATA PATTERN ON
(1)                                          ;;BOTH THE TRANSMITTER AND RECEIVER LOGIC
(1)                                          ;;MODE:SYNC EXTERNAL (SYNEXT)
(1)                                          ;;LENGTH:EIGHT PLUS PARITY
(1)                                          ;;PARITY:ODDPAR
(1)                                          ;;MAINT. MODE:MINT
(1)                                          ;;
(5)                                  ;;**************************************************************
(4)  010544  000004                  TST17:  SCOPE
(4)
(3)  010546  052777  000400  171152          BIS     #MRESET,@TXCSR  ;MASTER RESET
(2)  010554  012777  020000  171140          MOV     #SYNEXT,@PARCSR ;SET THE MODE
(3)  010562  052777  000400  171136          BIS     #MRESET,@TXCSR  ;MASTER RESET
(2)
(2)                                  ;SET MAINTENANCE MODE & SEND
(2)                                          ;NOTE:BIT WINDOW&CLK ARE CLEARED (MTDATA=0)
(2)  010570  012777  004020  171130          MOV     #MINT!SEND,@TXCSR
(2)
(2)                                  ;SET MODE,# OF BITS,PARITY SENSE,& LOAD SYNC REG
(2)  010576  012777  027026  171116          MOV     #SYNEXT!EIGHT!ODDPAR!26,@PARCSR
(1)  010604  016703  171106                  MOV     RXDBUF,R3       ;SETUP FOR ERROR MSG
(1)  010610  005004                          CLR     R4      ;FOR DATA CHAR CREATION
(1)  010612  110477  171114                  MOVB    R4,@TXDBUF      ;LOAD CHARACTER
(1)  010616  052777  000020  171066          BIS     #SYNSCH,@RXCSR  ;SET SEARCH SYNC
(1)                                  ;GET INTO SYNCRONIZATION
(2)  010624  052777  020000  171074          BIS     #CLK,@TXCSR     ;POKE CLK UP
(2)  010632  042777  020000  171066          BIC     #CLK,@TXCSR     ;POKE CLK DOWN
(1)  010640  012767  000011  170254  1$:     MOV     #9.,SHIFT       ;# OF SHIFTS
(1)  010646  010400                          MOV     R4,R0   ;EXPECTED
(1)  010650                          2$:
(2)  010650  052777  020000  171050          BIS     #CLK,@TXCSR     ;POKE CLK UP
(2)  010656  042777  020000  171042          BIC     #CLK,@TXCSR     ;POKE CLK DOWN
(1)  010664  005367  170232                  DEC     SHIFT   ;# OF SHIFTS
(1)  010670  022767  000003  170224          CMP     #3,SHIFT        ;TIME TO LOAD NEXT CHAR ?
(1)  010676  001003                          BNE     3$      ;NO ?
(1)  010700  005204                          INC     R4      ;GENERATE NEXT CHAR
(1)  010702  110477  171024                  MOVB    R4,@TXDBUF      ;LOAD NEXT CHARACTER
(1)  010706  005767  170210          3$:     TST     SHIFT   ;IS IT 0 ?
(1)  010712  001356                          BNE     2$
(1)  010714  105777  170772                  TSTB    @RXCSR  ;RXDONE = 1 ?
(1)  010720  100401                          BMI     .+4
(1)  010722  104004                          ERROR   4       ;RXDONE SHOULD BE SET
(1)  010724  017701  170766                  MOV     @RXDBUF,R1      ;ACTUAL
(1)  010730  020001                          CMP     R0,R1   ;COMPARE EXP VS ACT
(1)  010732  001401                          BEQ     .+4
```

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                        INITIALIZE THE COMMON TAGS                                                    SEQ 0051

   (1)  010734  104002                          ERROR   2       ;CHARACTERS SHOULD COMPARE
   (1)  010736  105704                          TSTB    R4      ;LAST CHARACTER ?
   (1)  010740  001337                          BNE     1$      ;NO
   (1)  010742                          4$:
  8724                                          ;;THIS TEST PERFORMS A BINARY COUNT DATA PATTERN ON
   (1)                                          ;;BOTH THE TRANSMITTER AND RECEIVER LOGIC
   (1)                                          ;;MODE:SYNC EXTERNAL (SYNEXT)
   (1)                                          ;;LENGTH:EIGHT PLUS PARITY
   (1)                                          ;;PARITY:EVEPAR
   (1)                                          ;;MAINT. MODE:MEXT
   (1)                                          ;;
   (5)                                  ;;**************************************************************
   (4)  010742  000004                  TST20:  SCOPE
   (4)
   (1)  010744  105767  170203                  TSTB    JMRBY   ;JUMP AROUND TEST ?
   (1)  010750  100116                          BPL     4$      ;YES ?
   (3)  010752  052777  000400  170746          BIS     #MRESET,@TXCSR  ;MASTER RESET
   (2)  010760  012777  020000  170734          MOV     #SYNEXT,@PARCSR ;SET THE MODE
   (3)  010766  052777  000400  170732          BIS     #MRESET,@TXCSR  ;MASTER RESET
   (2)
   (2)                                  ;SET MAINTENANCE MODE & SEND
   (2)                                          ;NOTE:BIT WINDOW&CLK ARE CLEARED (MTDATA=0)
   (2)  010774  012777  010020  170724          MOV     #MEXT!SEND,@TXCSR
   (2)
   (2)                                  ;SET MODE,# OF BITS,PARITY SENSE,& LOAD SYNC REG
   (2)  011002  012777  027426  170712          MOV     #SYNEXT!EIGHT!EVEPAR!26,@PARCSR
   (1)  011010  016703  170702                  MOV     RXDBUF,R3       ;SETUP FOR ERROR MSG
   (1)  011014  005004                          CLR     R4      ;FOR DATA CHAR CREATION
   (1)  011016  110477  170710                  MOVB    R4,@TXDBUF      ;LOAD CHARACTER
   (1)  011022  052777  000020  170662          BIS     #SYNSCH,@RXCSR  ;SET SEARCH SYNC
   (1)                                  ;GET INTO SYNCRONIZATION
   (2)  011030  052777  020000  170670          BIS     #CLK,@TXCSR     ;POKE CLK UP
   (2)                                          ;WAIT FOR CABLE & DRIVER DELAYS
   (2)  011036  016702  170056                  MOV     HOLD,R2 ;WAIT THIS AMT
   (2)  011042  005302                          DEC     R2      ;WAIT
   (2)  011044  001376                          BNE     .-2
   (2)                                          ;EXIT...
   (2)  011046  042777  020000  170652          BIC     #CLK,@TXCSR     ;POKE CLK DOWN
   (2)                                          ;WAIT FOR CABLE & DRIVER DELAYS
   (2)  011054  016702  170040                  MOV     HOLD,R2 ;WAIT THIS AMT
   (2)  011060  005302                          DEC     R2      ;WAIT
   (2)  011062  001376                          BNE     .-2
   (2)                                          ;EXIT...
   (1)  011064  012767  000011  170030  1$:     MOV     #9.,SHIFT       ;# OF SHIFTS
   (1)  011072  010400                          MOV     R4,R0   ;EXPECTED
   (1)  011074                          2$:
   (2)  011074  052777  020000  170624          BIS     #CLK,@TXCSR     ;POKE CLK UP
   (2)                                          ;WAIT FOR CABLE & DRIVER DELAYS
   (2)  011102  016702  170012                  MOV     HOLD,R2 ;WAIT THIS AMT
   (2)  011106  005302                          DEC     R2      ;WAIT
   (2)  011110  001376                          BNE     .-2
   (2)                                          ;EXIT...
   (2)  011112  042777  020000  170606          BIC     #CLK,@TXCSR     ;POKE CLK DOWN
   (2)                                          ;WAIT FOR CABLE & DRIVER DELAYS
   (2)  011120  016702  167774                  MOV     HOLD,R2 ;WAIT THIS AMT
   (2)  011124  005302                          DEC     R2      ;WAIT
```

INITIALIZE THE COMMON TAGS SEQ 0052

```
(2)  011126  001376                        BNE     .-2
(2)                                        ;EXIT...
(1)  011130  005367  167766                DEC     SHIFT   ;# OF SHIFTS
(1)  011134  022767  000003  167760        CMP     #3,SHIFT        ;TIME TO LOAD NEXT CHAR ?
(1)  011142  001003                        BNE     3$      ;NO ?
(1)  011144  005204                        INC     R4      ;GENERATE NEXT CHAR
(1)  011146  110477  170560                MOVB    R4,@TXDBUF      ;LOAD NEXT CHARACTER
(1)  011152  005767  167744          3$:   TST     SHIFT   ;IS IT 0 ?
(1)  011156  001346                        BNE     2$
(1)  011160  105777  170526                TSTB    @RXCSR  ;RXDONE = 1 ?
(1)  011164  100401                        BMI     .+4
(1)  011166  104004                        ERROR   4       ;RXDONE SHOULD BE SET
(1)  011170  017701  170522                MOV     @RXDBUF,R1      ;ACTUAL
(1)  011174  020001                        CMP     R0,R1   ;COMPARE EXP VS ACT
(1)  011176  001401                        BEQ     .+4
(1)  011200  104002                        ERROR   2       ;CHARACTERS SHOULD COMPARE
(1)                                        ;CHECK OUT MODEM BYPASS JUMPER
(1)  011202  105704                        TSTB    R4      ;LAST CHARACTER ?
(1)  011204  001327                        BNE     1$      ;NO
(1)  011206                          4$:
8725                                       ;;THIS TEST PERFORMS A BINARY COUNT DATA PATTERN ON
(1)                                        ;;BOTH THE TRANSMITTER AND RECEIVER LOGIC
(1)                                        ;;MODE:SYNC EXTERNAL (SYNEXT)
(1)                                        ;;LENGTH:EIGHT PLUS PARITY
(1)                                        ;;PARITY:ODDPAR
(1)                                        ;;MAINT. MODE:MEXT
(1)                                        ;;
(5)                                        ;;**************************************************************
(4)  011206  000004                  TST21:  SCOPE
(4)
(1)  011210  105767  167737                TSTB    JMRBY   ;JUMP AROUND TEST ?
(1)  011214  100116                        BPL     4$      ;YES ?
(3)  011216  052777  000400  170502        BIS     #MRESET,@TXCSR  ;MASTER RESET
(2)  011224  012777  020000  170470        MOV     #SYNEXT,@PARCSR ;SET THE MODE
(3)  011232  052777  000400  170466        BIS     #MRESET,@TXCSR  ;MASTER RESET
(2)
(2)                                  ;SET MAINTENANCE MODE & SEND
(2)                                        ;NOTE:BIT WINDOW&CLK ARE CLEARED (MTDATA=0)
(2)  011240  012777  010020  170460        MOV     #MEXT!SEND,@TXCSR
(2)
(2)                                  ;SET MODE,# OF BITS,PARITY SENSE,& LOAD SYNC REG
(2)  011246  012777  027026  170446        MOV     #SYNEXT!EIGHT!ODDPAR!26,@PARCSR
(1)  011254  016703  170436                MOV     RXDBUF,R3       ;SETUP FOR ERROR MSG
(1)  011260  005004                        CLR     R4      ;FOR DATA CHAR CREATION
(1)  011262  110477  170444                MOVB    R4,@TXDBUF      ;LOAD CHARACTER
(1)  011266  052777  000020  170416        BIS     #SYNSCH,@RXCSR  ;SET SEARCH SYNC
(1)                                  ;GET INTO SYNCRONIZATION
(2)  011274  052777  020000  170424        BIS     #CLK,@TXCSR     ;POKE CLK UP
(2)                                        ;WAIT FOR CABLE & DRIVER DELAYS
(2)  011302  016702  167612                MOV     HOLD,R2 ;WAIT THIS AMT
(2)  011306  005302                        DEC     R2      ;WAIT
(2)  011310  001376                        BNE     .-2
(2)                                        ;EXIT...
(2)  011312  042777  020000  170406        BIC     #CLK,@TXCSR     ;POKE CLK DOWN
(2)                                        ;WAIT FOR CABLE & DRIVER DELAYS
(2)  011320  016702  167574                MOV     HOLD,R2 ;WAIT THIS AMT
```

```
  (2)  011324  005302                          DEC     R2      ;WAIT
  (2)  011326  001376                          BNE     .-2
  (2)                                          ;EXIT...
  (1)  011330  012767  000011  167564  1$:     MOV     #9.,SHIFT       ;# OF SHIFTS
  (1)  011336  010400                          MOV     R4,R0   ;EXPECTED
  (1)  011340                          2$:
  (2)  011340  052777  020000  170360          BIS     #CLK,@TXCSR     ;POKE CLK UP
  (2)                                          ;WAIT FOR CABLE & DRIVER DELAYS
  (2)  011346  016702  167546                  MOV     HOLD,R2 ;WAIT THIS AMT
  (2)  011352  005302                          DEC     R2      ;WAIT
  (2)  011354  001376                          BNE     .-2
  (2)                                          ;EXIT...
  (2)  011356  042777  020000  170342          BIC     #CLK,@TXCSR     ;POKE CLK DOWN
  (2)                                          ;WAIT FOR CABLE & DRIVER DELAYS
  (2)  011364  016702  167530                  MOV     HOLD,R2 ;WAIT THIS AMT
  (2)  011370  005302                          DEC     R2      ;WAIT
  (2)  011372  001376                          BNE     .-2
  (2)                                          ;EXIT...
  (1)  011374  005367  167522                  DEC     SHIFT   ;# OF SHIFTS
  (1)  011400  022767  000003  167514          CMP     #3,SHIFT        ;TIME TO LOAD NEXT CHAR ?
  (1)  011406  001003                          BNE     3$      ;NO ?
  (1)  011410  005204                          INC     R4      ;GENERATE NEXT CHAR
  (1)  011412  110477  170314                  MOVB    R4,@TXDBUF      ;LOAD NEXT CHARACTER
  (1)  011416  005767  167500          3$:     TST     SHIFT   ;IS IT 0 ?
  (1)  011422  001346                          BNE     2$
  (1)  011424  105777  170262                  TSTB    @RXCSR  ;RXDONE = 1 ?
  (1)  011430  100401                          BMI     .+4
  (1)  011432  104004                          ERROR   4       ;RXDONE SHOULD BE SET
  (1)  011434  017701  170256                  MOV     @RXDBUF,R1      ;ACTUAL
  (1)  011440  020001                          CMP     R0,R1   ;COMPARE EXP VS ACT
  (1)  011442  001401                          BEQ     .+4
  (1)  011444  104002                          ERROR   2       ;CHARACTERS SHOULD COMPARE
  (1)                                          ;CHECK OUT MODEM BYPASS JUMPER
  (1)  011446  105704                          TSTB    R4      ;LAST CHARACTER ?
  (1)  011450  001327                          BNE     1$      ;NO
  (1)  011452                          4$:
8726                                           ;;THIS TEST VERIFYS WORD LENGTH SELECT OF THE
  (1)                                          ;;RECEIVER SECTION,IT USES THE ERROR FLAGS
  (1)                                          ;;TO DETERMINE THAT IT WAS SELECTED CORRECTLY
  (1)                                          ;;(OVRRUN,RXERR)
  (1)                                          ;;MODE:ISYMOD
  (1)                                          ;;LENGTH:FIVE
  (1)                                          ;;CHAR:12
  (1)                                          ;;
  (5)                                  ;;**************************************************************
  (4)  011452  000004                  TST22:  SCOPE
  (4)
  (3)  011454  052777  000400  170244          BIS     #MRESET,@TXCSR  ;MASTER RESET
  (2)  011462  012777  000000  170232          MOV     #ISYMOD,@PARCSR ;SET THE MODE
  (3)  011470  052777  000400  170230          BIS     #MRESET,@TXCSR  ;MASTER RESET
  (2)
  (2)                                  ;SET MAINT DATA,CLK,BREAK,&MAINTENANCE MODE
  (2)  011476  012777  064001  170222          MOV     #MTDATA!CLK!MINT!BREAK,@TXCSR
  (2)
  (2)                                  ;SET MODE ,# OF BITS,PARITY SENSE,&LOAD SYNC REG
  (2)  011504  012777  000000  170210          MOV     #ISYMOD!FIVE!NOPAR!0,@PARCSR
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   (2)  011512  052777  000020  170172          BIS     #SYNSCH,@PXCSR  ;SET SYNC SEARCH
   (2)                                          ;POKE CLK TO GET RECEIVER INTO SYNCROIZATION....
   (2)  011520  042777  020000  170200          BIC     #CLK,@TXCSR     ;POKE CLK DOWN
   (2)  011526  052777  020000  170172          BIS     #CLK,@TXCSR     ;POKE CLK UP
   (2)                                  ;POKE CLK TO GET LOGIC INTO SYNCRONIZATION
   (2)  011534  042777  020000  170164          BIC     #CLK,@TXCSR     ;POKE CLK DOWN
   (2)  011542  052777  020000  170156          BIS     #CLK,@TXCSR     ;POKE CLK UP
   (1)  011550  016703  170142                  MOV     RXDBUF,R3       ;SET UP FOR ERROR MESSAGE
   (1)  011554  012700  000012                  MOV     #12,R0  ;EXPECTED
   (1)  011560  012767  000007  167334          MOV     #7,SHIFT        ;# OF SHIFTS
   (1)  011566  012767  000124  167704          MOV     #124,$TMP1      ;DATA CHAR
   (1)  011574  004767  005352                  JSR     PC,RPOKE        ;SHIFT IN THIS CHAR
   (1)  011600  105777  170106                  TSTB    @RXCSR  ;RXDONE ?
   (1)  011604  100401                          BMI     .+4
   (1)  011606  104004                          ERROR   4       ;RXDONE SHOULD BE SET
   (1)  011610  017701  170102                  MOV     @RXDBUF,R1      ;ACTUAL
   (1)  011614  020001                          CMP     R0,R1   ;COMPARE EXPECTED VS. ACTUAL
   (1)  011616  001401                          BEQ     .+4
   (1)  011620  104002                          ERROR   2       ;RECEIVED DATA DID NOT MATCH
   (1)                                                          ;EXPECTED DATA - CHECK MAINT DATA
   (1)                                                          ;OR RECEIVER LOGIC
   (1)  011622  012767  000007  167272          MOV     #7,SHIFT        ;# OF SHIFTS
   (1)  011630  012767  000124  167642          MOV     #124,$TMP1      ;DATA CHAR
   (1)  011636  004767  005310                  JSR     PC,RPOKE        ;SHIFT IN THIS CHAR
   (1)                                  ;NOW SHIFT IN A SECOND CHARACTER WITHOUT READING RXDBUF
   (1)  011642  012767  000007  167252          MOV     #7,SHIFT        ;# OF SHIFTS
   (1)  011650  012767  000124  167622          MOV     #124,$TMP1      ;DATA CHAR
   (1)  011656  004767  005270                  JSR     PC,RPOKE        ;SHIFT IN THIS CHAR
   (1)  011662  012700  140012                  MOV     #140000!12,R0   ;EXPECTED DATA PLUS
   (1)                                                          ;RXERR & OVRRUN
   (1)  011666  017701  170024                  MOV     @RXDBUF,R1      ;ACTUAL
   (1)  011672  020001                          CMP     R0,R1   ;COMPARE EXP VS. ACT
   (1)  011674  001401                          BEQ     .+4
   (1)  011676  104002                          ERROR   2       ;SPECIFICALLY LOOK AT RXERR &
   (1)                                                          ;OVRRUN BITS...THEY BOTH SHOULD BE SET
   (1)
 8727                                           ;;THIS TEST VERIFYS WORD LENGTH SELECT OF THE
   (1)                                          ;;RECEIVER SECTION,IT USES THE ERROR FLAGS
   (1)                                          ;;TO DETERMINE THAT IT WAS SELECTED CORRECTLY
   (1)                                          ;;(OVRRUN,RXERR)
   (1)                                          ;;MODE:ISYMOD
   (1)                                          ;;LENGTH:FIVE
   (1)                                          ;;CHAR:37
   (1)                                          ;;
   (5)                                  ;;**************************************************************
   (4)  011700  000004                  TST23:  SCOPE
   (4)
   (3)  011702  052777  000400  170016          BIS     #MRESET,@TXCSR  ;MASTER RESET
   (2)  011710  012777  000000  170004          MOV     #ISYMOD,@PARCSR ;SET THE MODE
   (3)  011716  052777  000400  170002          BIS     #MRESET,@TXCSR  ;MASTER RESET
   (2)
   (2)                                  ;SET MAINT DATA,CLK,BREAK,&MAINTENANCE MODE
   (2)  011724  012777  064001  167774          MOV     #MTDATA!CLK!MINT!BREAK,@TXCSR
   (2)
   (2)                                  ;SET MODE ,# OF BITS,PARITY SENSE,&LOAD SYNC REG
   (2)  011732  012777  000000  167762          MOV     #ISYMOD!FIVE!NOPAR!0,@PARCSR
```

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   (2)  011740  052777  000020  167744          BIS     #SYNSCH,@RXCSR  ;SET SYNC SEARCH
   (2)                                          ;POKE CLK TO GET RECEIVER INTO SYNCROIZATION....
   (2)  011746  042777  020000  167752          BIC     #CLK,@TXCSR     ;POKE CLK DOWN
   (2)  011754  052777  020000  167744          BIS     #CLK,@TXCSR     ;POKE CLK UP
   (2)                                  ;POKE CLK TO GET LOGIC INTO SYNCRONIZATION
   (2)  011762  042777  020000  167736          BIC     #CLK,@TXCSR     ;POKE CLK DOWN
   (2)  011770  052777  020000  167730          BIS     #CLK,@TXCSR     ;POKE CLK UP
   (1)  011776  016703  167714                  MOV     RXDBUF,R3       ;SET UP FOR ERROR MESSAGE
   (1)  012002  012700  000037                  MOV     #37,R0  ;EXPECTED
   (1)  012006  012767  000007  167106          MOV     #7,SHIFT        ;# OF SHIFTS
   (1)  012014  012767  000176  167456          MOV     #176,$TMP1      ;DATA CHAR
   (1)  012022  004767  005124                  JSR     PC,RPOKE        ;SHIFT IN THIS CHAR
   (1)  012026  105777  167660                  TSTB    @RXCSR  ;RXDONE ?
   (1)  012032  100401                          BMI     .+4
   (1)  012034  104004                          ERROR   4       ;RXDONE SHOULD BE SET
   (1)  012036  017701  167654                  MOV     @RXDBUF,R1      ;ACTUAL
   (1)  012042  020001                          CMP     R0,R1   ;COMPARE EXPECTED VS. ACTUAL
   (1)  012044  001401                          BEQ     .+4
   (1)  012046  104002                          ERROR   2       ;RECEIVED DATA DID NOT MATCH
   (1)                                                          ;EXPECTED DATA - CHECK MAINT DATA
   (1)                                                          ;OR RECEIVER LOGIC
   (1)  012050  012767  000007  167044          MOV     #7,SHIFT        ;# OF SHIFTS
   (1)  012056  012767  000176  167414          MOV     #176,$TMP1      ;DATA CHAR
   (1)  012064  004767  005062                  JSR     PC,RPOKE        ;SHIFT IN THIS CHAR
   (1)                                  ;NOW SHIFT IN A SECOND CHARACTER WITHOUT READING RXDBUF
   (1)  012070  012767  000007  167024          MOV     #7,SHIFT        ;# OF SHIFTS
   (1)  012076  012767  000176  167374          MOV     #176,$TMP1      ;DATA CHAR
   (1)  012104  004767  005042                  JSR     PC,RPOKE        ;SHIFT IN THIS CHAR
   (1)  012110  012700  140037                  MOV     #140000!37,R0   ;EXPECTED DATA PLUS
   (1)                                                          ;RXERR & OVRRUN
   (1)  012114  017701  167576                  MOV     @RXDBUF,R1      ;ACTUAL
   (1)  012120  020001                          CMP     R0,R1   ;COMPARE EXP VS. ACT
   (1)  012122  001401                          BEQ     .+4
   (1)  012124  104002                          ERROR   2       ;SPECIFICALLY LOOK AT RXERR &
   (1)                                                          ;OVRRUN BITS...THEY BOTH SHOULD BE SET
   (1)
 8728                                           ;;THIS TEST VERIFYS WORD LENGTH SELECT OF THE
   (1)                                          ;;RECEIVER SECTION,IT USES THE ERROR FLAGS
   (1)                                          ;;TO DETERMINE THAT IT WAS SELECTED CORRECTLY
   (1)                                          ;;(OVRRUN,RXERR)
   (1)                                          ;;MODE:ISYMOD
   (1)                                          ;;LENGTH:FIVE
   (1)                                          ;;CHAR:0
   (1)                                          ;;
   (5)                                  ;;**************************************************************
   (4)  012126  000004                  TST24:  SCOPE
   (4)
   (3)  012130  052777  000400  167570          BIS     #MRESET,@TXCSR  ;MASTER RESET
   (2)  012136  012777  000000  167556          MOV     #ISYMOD,@PARCSR ;SET THE MODE
   (3)  012144  052777  000400  167554          BIS     #MRESET,@TXCSR  ;MASTER RESET
   (2)
   (2)                                  ;SET MAINT DATA,CLK,BREAK,&MAINTENANCE MODE
   (2)  01215.  012777  064001  167546          MOV     #MTDATA!CLK!MINT!BREAK,@TXCSR
   (2)
   (2)                                  ;SET MODE ,# OF BITS,PARITY SENSE,&LOAD SYNC REG
   (2)  012160  012777  000000  167534          MOV     #ISYMOD!FIVE!NOPAR!0,@PARCSR
```

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   (2)  012166  052777  000020  167516          BIS     #SYNSCH,@RXCSR  ;SET SYNC SEARCH
   (2)                                          ;POKE CLK TO GET RECEIVER INTO SYNCROIZATION....
   (2)  012174  042777  020000  167524          BIC     #CLK,@TXCSR     ;POKE CLK DOWN
   (2)  012202  052777  020000  167516          BIS     #CLK,@TXCSR     ;POKE CLK UP
   (2)                                  ;POKE CLK TO GET LOGIC INTO SYNCRONIZATION
   (2)  012210  042777  020000  167510          BIC     #CLK,@TXCSR     ;POKE CLK DOWN
   (2)  012216  052777  020000  167502          BIS     #CLK,@TXCSR     ;POKE CLK UP
   (1)  012224  016703  167466                  MOV     RXDBUF,R3       ;SET UP FOR ERROR MESSAGE
   (1)  012230  012700  000000                  MOV     #0,R0   ;EXPECTED
   (1)  012234  012767  000007  166660          MOV     #7,SHIFT        ;# OF SHIFTS
   (1)  012242  012767  000100  167230          MOV     #100,$TMP1      ;DATA CHAR
   (1)  012250  004767  004676                  JSR     PC,RPOKE        ;SHIFT IN THIS CHAR
   (1)  012254  105777  167432                  TSTB    @RXCSR  ;RXDONE ?
   (1)  012260  100401                          BMI     .+4
   (1)  012262  104004                          ERROR   4       ;RXDONE SHOULD BE SET
   (1)  012264  017701  167426                  MOV     @RXDBUF,R1      ;ACTUAL
   (1)  012270  020001                          CMP     R0,R1   ;COMPARE EXPECTED VS. ACTUAL
   (1)  012272  001401                          BEQ     .+4
   (1)  012274  104002                          ERROR   2       ;RECEIVED DATA DID NOT MATCH
   (1)                                                          ;EXPECTED DATA - CHECK MAINT DATA
   (1)                                                          ;OR RECEIVER LOGIC
   (1)  012276  012767  000007  166616          MOV     #7,SHIFT        ;# OF SHIFTS
   (1)  012304  012767  000100  167166          MOV     #100,$TMP1      ;DATA CHAR
   (1)  012312  004767  004634                  JSR     PC,RPOKE        ;SHIFT IN THIS CHAR
   (1)                                  ;NOW SHIFT IN A SECOND CHARACTER WITHOUT READING RXDBUF
   (1)  012316  012767  000007  166576          MOV     #7,SHIFT        ;# OF SHIFTS
   (1)  012324  012767  000100  167146          MOV     #100,$TMP1      ;DATA CHAR
   (1)  012332  004767  004614                  JSR     PC,RPOKE        ;SHIFT IN THIS CHAR
   (1)  012336  012700  140000                  MOV     #140000!0,R0    ;EXPECTED DATA PLUS
   (1)                                                          ;RXERR & OVRRUN
   (1)  012342  017701  167350                  MOV     @RXDBUF,R1      ;ACTUAL
   (1)  012346  020001                          CMP     R0,R1   ;COMPARE EXP VS. ACT
   (1)  012350  001401                          BEQ     .+4
   (1)  012352  104002                          ERROR   2       ;SPECIFICALLY LOOK AT RXERR &
   (1)                                                          ;OVRRUN BITS...THEY BOTH SHOULD BE SET
   (1)
  8729
   (2)                                          ;END OF PASS
   (2)                                          ;TYPE NAME OF TEST
   (2)                                          ;UPDATE PASS COUNT
   (2)                                          ;CHECK FOR EXIT TO ACT-11
   (2)                                          ;RESTART TEST
   (2)
   (2)  012354  000004                  .EOP:   SCOPE
   (2)  012356  004767  000340                  JSR     PC,CKSWR
   (2)  012362  104401                          TYPE                                    ,TYPE NAME OF TEST
   (2)  012364  015512                          MEPASS
   (2)  012366  104413  012620                  CONVRT  ,OUTCRY
   (2)  012372  104401  015331                  TYPE    ,DEVICE
   (2)  012376  105767  166550                  TSTB    MULTD   ;ARE YOU RUNNING MULTIPLE DEVICES ?
   (2)  012402  001511                          BEQ     CCC     ;NO,JUMP AROUND
   (2)  012404  005767  166556                  TST     ACTREG  ;ARE ANY DEVICES ACTIVE ?
   (2)  012410  001007                          BNE     RUNIT   ;YES
   (2)  012412  104401  015343                  TYPE    ,MCOW   ;NO
   (2)  012416  016700  166544                  MOV     ACTREG,R0       ;DISPLAY ACTREG
   (2)  012422  000000                          HALT            ;SELECT SOMETHING TO RUN @ ACTREG:
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(2)                                                 ;SELECT SWITCHES & HIT CONTINUE (PUT SW00 =1)
(2)  012424  000167  167522                         JMP     .START  ;START OVER AGAIN.....YOU DESELECTED EVERYTHING
(2)  012430  062767  000010  166516  RUNIT:  ADD     #10,BASEADD     ;NEXT BLOCK (ADDRESSES)
(2)  012436  062767  000010  166516  ZERO:   ADD     #10,BASEIV      ;NEXT BLOCK (VECTORS)
(2)  012444  000241                         CLC
(2)  012446  006167  166516                         ROL     ROTADD  ;UP DATE ROTATING POINTER
(2)  012452  103410                         BCS     2$      ;IS IT THE LAST DEVICE
(2)                                                 ;TO BE TESTED IN THIS PASS ?
(2)  012454  036767  166510  166504         BIT     ROTADD,ACTREG   ;TEST THIS DEVICE FOR ACTIVE STATUS
(2)  012462  001762                         BEQ     RUNIT   ;IF NOT ACTIVE, TRY NEXT ADDRESS
(2)  012464  004767  000034                 JSR     PC,REPLAY       ;CALCULATE NEW PARAMETERS
(2)  012470  000167  000210                 JMP     RESTRT  ;YES IT WAS ACTIVE,TEST THIS DEVICE
(2)  012474  012767  000001  166466  2$:     MOV     #1,ROTADD       ;OK!,NOW SET UP  ROTATING
(2)                                                 ;POINTER FOR NEXT MULTIPLE PASS
(2)  012502  016767  166450  166444         MOV     KEEPADD,BASEADD ;RESTORE BASE ADDRESS
(2)  012510  016767  166450  166444         MOV     KEEPIV,BASEIV   ;RESTORE BASE INTERRUPT VECTO ?
(2)  012516  004767  000002                 JSR     PC,REPLAY       ;CALC NEW PARAMETERS
(2)  012522  000441                         BR      CCC     ;JUMP AROUND REPLAY
(2)  012524  016767  166424  004416  REPLAY: MOV     BASEADD,DUBASE  ;SET UP FOR NEW ADDRESSES
(2)  012532  004767  004260                 JSR     PC,DUADDR       ;CREATE NEW ADDRESSES
(2)  012536  016767  166420  167172         MOV     BASEIV,DURIV    ;CREATE DURIV
(2)  012544  062767  000002  166410         ADD     #2,BASEIV
(2)  012552  016767  166404  167160         MOV     BASEIV,DURIS    ;CREATE DURIS
(2)  012560  062767  000002  166374         ADD     #2,BASEIV
(2)  012566  016767  166370  167146         MOV     BASEIV,DUTIV    ;CREATE DUTIV
(2)  012574  062767  000002  166360         ADD     #2,BASEIV
(2)  012602  016767  166354  167134         MOV     BASEIV,DUTIS    ;CREATE DUTIS
(2)  012610  016767  167122  166344         MOV     DURIV,BASEIV    ;RESTORE
(2)  012616  000207                         RTS     PC
(2)
(2)  012620  000001                 OUTCRY: 1
(2)  012622     006     002                 .BYTE   6,2
(2)  012624  001712                         RXCSR
(2)
(2)  012626                         CLC:
(2)  012626  005067  166550                 CLR     $TSTNM                  ;CLEAR TEST NUMBER
(2)  012632  005067  166560                 CLR     $ERRPC                  ;CLEAR LAST ERROR PC
(2)  012636  005067  166541                 CLR     $ERFLG                  ;CLEAR ERROR FLAG
(2)  012642  005267  166244                 INC     PASCNT                  ;UPDATE PASS COUNT
(2)  012646  016767  166240  166226         MOV     PASCNT,LIGHTS           ;DISPLAY PASS COUNT
(2)  012654  016767  166232  166652         MOV     PASCNT,$PASS            ;PASS COUNT TO APT
(2)  012662  013701  000042                 MOV     @#42,R1                 ;CHECK FOR ACT-11 OR DDP
(2)  012666  001406                         BEQ     RESTRT          ;IF NO CONTINUE TESTING
(2)  012670  000005                         RESET
(2)  012672  000005                         RESET
(2)  012674  004711                 $ENDAD: JSR     PC,(R1)
(2)  012676  000240                         NOP
(2)  012700  000240                         NOP
(2)  012702  000240                         NOP
(2)  012704                         RESTRT:
(2)  012704  012767  003376  166474         MOV     #TST1+2,$LPADR  ;LOAD LAST ADDR
(2)  012712  004767  000004                 JSR     PC,CKSWR
(2)  012716  000167  170366                 JMP     .BEGIN
(2)
(2)                                                 ;CHECK SWITCH REGISTER ROUTINE.
(2)                                                 ;CHECKS TO ALLOW FOR <^G> TO ALLOW
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(2)                                             ;THE CHANGING OF LOCATION 176
(2)
(2)  012722  005737  000042          CKSWR:  TST     @#42
(2)  012726  001040                          BNE     OUT
(2)  012730  022767  000176  166502          CMP     #SWREG,SWR      ;SOFTWARE SWR PRESENT?
(2)  012736  001034                          BNE     OUT             ;NO--LEAVE
(2)  012740  105777  166500                  TSTB    @$TKS           ;CHECK TTY READY
(2)  012744  100031                          BPL     OUT             ;NO--LEAVE
(2)  012746  017767  166474  000422          MOV     @$TKB,.MSG      ;GET CHARACTER
(2)  012754  042767  177600  000414          BIC     #177600,.MSG    ;STRIP JUNK
(2)  012762  122767  000007  000406          CMPB    #7,.MSG         ;IS IT <^G> ?
(2)  012770  001017                          BNE     OUT             ;NO
(2)  012772  104401  016117                  TYPE    ,MCNTG
(2)  012776  005137  013036          CNTLU:  COM     @#RDSW
(2)  013002  104401  016127                  TYPE    ,MMSWR
(2)  013006  104413                          CONVRT
(2)  013010  013040                          SWREGL
(2)  013012  104406  016170                  INSTR,MMNEW
(2)  013016  104410                          PARAM
(2)  013020  000000                          0
(2)  013022  177777                          177777
(2)  013024  000176                          SWREG
(2)  013026     000     001          .BYTE   0,1
(2)  013030  005037  013036          OUT:    CLR     @#RDSW
(2)  013034  000207                          RTS     PC
(2)  013036  000000                  RDSW:   .WORD   0
(2)  013040  000001                  SWREGL: 1
(2)  013042     006     002                  .BYTE   6,2
(2)  013044  000176                          SWREG
(2)
(1)  013046  000005                          5
(2)
(2)                                             ;CHECK FOR FREEZE ON CURRENT DATA
(2)
(2)  013050  004767  177646          .SCOP1: JSR     PC,CKSWR
(2)  013054  032777  001000  166356          BIT     #SW09,@SWR
(2)  013062  001402                          BEQ     1$
(2)  013064  016716  166020                  MOV     LOCK,(SP)
(2)  013070  000002                  1$:     RTI
(2)                                   .SBTTL  TYPE ROUTINE
(2)
(3)                                   ;;*****************************************************************
(2)                                   ;*ROUTINE TO TYPE ASCIZ MESSAGE. MESSAGE MUST TERMINATE WITH A 0 BYTE.
(2)                                   ;*THE ROUTINE WILL INSERT A NUMBER OF NULL CHARACTERS AFTER A LINE FEED.
(2)                                   ;*NOTE1:        $NULL CONTAINS THE CHARACTER TO BE USED AS THE FILLER CHARACTER.
(2)                                   ;*NOTE2:        $FILLS CONTAINS THE NUMBER OF FILLER CHARACTERS REQUIRED.
(2)                                   ;*NOTE3:        $FILLC CONTAINS THE CHARACTER TO FILL AFTER.
(2)                                   ;*
(2)                                   ;*CALL:
(2)                                   ;*1) USING A TRAP INSTRUCTION
(2)                                   ;*      TYPE    ,MESADR         ;;MESADR IS FIRST ADDRESS OF AN ASCIZ STRING
(2)                                   ;*OR
(2)                                   ;*      TYPE
(2)                                   ;*      MESADR
(2)                                   ;*
(2)
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(2)  013072  105767  166361          $TYPE:  TSTB    $TPFLG          ;;IS THERE A TERMINAL?
(2)  013076  100002                          BPL     1$              ;;BR IF YES
(2)  013100  000000                          HALT                    ;;HALT HERE IF NO TERMINAL
(2)  013102  000430                          BR      3$              ;;LEAVE
(2)  013104  010046                  1$:     MOV     R0,-(SP)        ;;SAVE R0
(2)  013106  017600  000002                  MOV     @2(SP),R0       ;;GET ADDRESS OF ASCIZ STRING
(2)  013112  122767  000001  166426          CMPB    #APTENV,$ENV    ;;RUNNING IN APT MODE
(2)  013120  001011                          BNE     62$             ;;NO,GO CHECK FOR APT CONSOLE
(2)  013122  132767  000100  166417          BITB    #APTSPOOL,$ENVM ;;SPOOL MESSAGE TO APT
(2)  013130  001405                          BEQ     62$             ;;NO,GO CHECK FOR CONSOLE
(2)  013132  010067  000004                  MOV     R0,61$          ;;SETUP MESSAGE ADDRESS FOR APT
(2)  013136  004767  164644                  JSR     PC,$ATY3        ;;SPOOL MESSAGE TO APT
(2)  013142  000000                  61$:    .WORD   0               ;;MESSAGE ADDRESS
(2)  013144  132767  000040  166375  62$:    BITB    #APTCSUP,$ENVM  ;;APT CONSOLE SUPPRESSED
(2)  013152  001003                          BNE     60$             ;;YES,SKIP TYPE OUT
(2)  013154  112046                  2$:     MOVB    (R0)+,-(SP)     ;;PUSH CHARACTER TO BE TYPED ONTO STACK
(2)  013156  001005                          BNE     4$              ;;BR IF IT ISN'T THE TERMINATOR
(2)  013160  005726                          TST     (SP)+           ;;IF TERMINATOR POP IT OFF THE STACK
(2)  013162  012600                  60$:    MOV     (SP)+,R0        ;;RESTORE R0
(2)  013164  062716  000002          3$:     ADD     #2,(SP)         ;;ADJUST RETURN PC
(2)  013170  000002                          RTI                     ;;RETURN
(2)  013172  122716  000011          4$:     CMPB    #HT,(SP)        ;;BRANCH IF <HT>
(2)  013176  001430                          BEQ     8$
(2)  013200  122716  000200                  CMPB    #CRLF,(SP)      ;;BRANCH IF NOT <CRLF>
(2)  013204  001006                          BNE     5$
(2)  013206  005726                          TST     (SP)+           ;;POP  <CR><LF> EQUIV
(2)  013210  104401                          TYPE                    ;;TYPE A CR AND LF
(2)  013212  001523                          $CRLF
(2)  013214  105067  000130                  CLRB    $CHARCNT        ;;CLEAR CHARACTER COUNT
(2)  013220  000755                          BR      2$              ;;GET NEXT CHARACTER
(2)  013222  004767  000056          5$:     JSR     PC,$TYPEC       ;;GO TYPE THIS CHARACTER
(2)  013226  126726  166224          6$:     CMPB    $FILLC,(SP)+    ;;IS IT TIME FOR FILLER CHARS.?
(2)  013232  001350                          BNE     2$              ;;IF NO GO GET NEXT CHAR.
(2)  013234  016746  166214                  MOV     $NULL,-(SP)     ;;GET # OF FILLER CHARS. NEEDED
(2)                                                                  ;;AND THE NULL CHAR.
(2)  013240  105366  000001          7$:     DECB    1(SP)           ;;DOES A NULL NEED TO BE TYPED?
(2)  013244  002770                          BLT     6$              ;;BR IF NO--GO POP THE NULL OFF OF STACK
(2)  013246  004767  000032                  JSR     PC,$TYPEC       ;;GO TYPE A NULL
(2)  013252  105367  000072                  DECB    $CHARCNT        ;;DO NOT COUNT AS A COUNT
(2)  013256  000770                          BR      7$              ;;LOOP
(2)
(2)                                  ;HORIZONTAL TAB PROCESSOR
(2)
(2)  013260  112716  000040          8$:     MOVB    #' ,(SP)        ;;REPLACE TAB WITH SPACE
(2)  013264  004767  000014          9$:     JSR     PC,$TYPEC       ;;TYPE A SPACE
(2)  013270  132767  000007  000052          BITB    #7,$CHARCNT     ;;BRANCH IF NOT AT
(2)  013276  001372                          BNE     9$              ;;TAB STOP
(2)  013300  005726                          TST     (SP)+           ;;POP SPACE OFF STACK
(2)  013302  000724                          BR      2$              ;;GET NEXT CHARACTER
(2)  013304  105777  166140          $TYPEC: TSTB    @$TPS           ;;WAIT UNTIL PRINTER IS READY
(2)  013310  100375                          BPL     $TYPEC
(2)  013312  116677  000002  166132          MOVB    2(SP),@$TPB     ;;LOAD CHAR TO BE TYPED INTO DATA REG.
(2)
(2)  013320  122766  000015  000002  CMPB    #CR,2(SP)       ;;IS CHARACTER A CARRIAGE RETURN?
(2)  013326  001003                          BNE     1$              ;;BRANCH IF NO
(2)  013330  105067  000014                  CLRB    $CHARCNT        ;;YES--CLEAR CHARACTER COUNT
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(2)  013334  000406                          BR      $TYPEX          ;;EXIT
(2)  013336  122766  000012  000002  1$:     CMPB    #LF,2(SP)       ;;IS CHARACTER A LINE FEED?
(2)  013344  001402                          BEQ     $TYPEX          ;;BRANCH IF YES
(2)  013346  105227                          INCB    (PC)+           ;;COUNT THE CHARACTER
(2)  013350  000000                $CHARCNT:.WORD  0               ;;CHARACTER COUNT STORAGE
(2)  013352  000207                $TYPEX: RTS     PC
(2)
(2)
(2)
(2)
(2)                                          ;ASCII STRING INPUT ROUTINE
(2)
(2)  013354  017667  000000  000014  .INSTR: MOV     @(SP),.MSG      ;PICK UP MESSAGE
(2)  013362  062716  000002                  ADD     #2,(SP)         ;JUMP AROUND MESSAGE FOR RTI
(2)  013366  105767  166154                  TSTB    $ENV            ;APT CONTROL
(2)  013372  001036                          BNE     INSTR2          ;YES NO TYPE
(2)  013374  104401                .INST1: TYPE
(2)  013376  000000                .MSG:   0
(2)  013400  012704  016152                  MOV     #INBUF,R4       ;GET STARTING LOC OF INBUF
(2)  013404  012703  000007                  MOV     #7,R3           ;MAX # OF CHARS
(2)  013410  105777  166030          1$:     TSTB    @$TKS   ;TTY FLAG
(2)  013414  100375                          BPL     1$
(2)  013416  117714  166024                  MOVB    @$TKB,(R4)      ;TAKE CHAR
(2)  013422  142714  000200                  BICB    #200,(R4)       ;STRIP
(2)  013426  121427  000025                  CMPB    (R4),#25        ;IS IT <^G>
(2)  013432  001760                          BEQ     .INST1
(2)  013434  122427  000015                  CMPB    (R4)+,#15       ;CHECK FOR CR
(2)  013440  001413                          BEQ     INSTR2
(2)  013442  105777  166002          2$:     TSTB    @$TPS   ;TEST FLAG
(2)  013446  100375                          BPL     2$
(2)  013450  117777  165772  165774          MOVB    @$TKB,@$TPB     ;ECHO CHARACTER
(2)  013456  005303                          DEC     R3      ;DID YOU TYPE TOO MANY CHARS ?
(2)  013460  001353                          BNE     1$
(2)  013462  104401                .INSTE: TYPE
(2)  013464  015437                          MQM     ;?
(2)  013466  000742                          BR      .INST1  ;RETRY
(2)  013470  000002                INSTR2: RTI
(2)
(2)                                          ;CONVERT ASCII STRING TO OCTAL
(2)
(2)  013472  011605                .PARAM: MOV     (SP),R5 ;PUT CONTENTS OF SP INTO R5
(2)  013474  012567  000162                  MOV     (R5)+,LOLIM     ;PUT LOW LIMIT INTO LOLIM
(2)  013500  012567  000160                  MOV     (R5)+,HILIM     ;PUT HIGH LIMIT INTO HILIM
(2)  013504  012567  000156                  MOV     (R5)+,DEVADR    ;PUT STORE LOC INTO DEVADR
(2)  013510  112567  000154                  MOVB    (R5)+,LOBITS    ;PUT MASK INTO LOBITS
(2)  013514  112567  000151                  MOVB    (R5)+,ADRCNT    ;PUT COUNT INTO ADRCNT
(2)  013520  010516                          MOV     R5,(SP) ;RESTORE RETURN ADDR ON STACK FOR RTI
(2)  013522  005005                PARAM1: CLR     R5
(2)  013524  012704  016152                  MOV     #INBUF,R4
(2)  013530  122714  000015                  CMPB    #15,(R4)        ;CR ?
(2)  013534  001420                          BEQ     PARERR  ;YOU TYPED CR TOO SOON !
(2)  013536  121427  000060          1$:     CMPB    (R4),#60        ;LOW LIMIT ASCII 0
(2)  013542  002415                          BLT     PARERR
(2)  013544  121427  000067                  CMPB    (R4),#67        ;HIGH LIMIT ASCII 7
(2)  013550  003012                          BGT     PARERR
(2)  013552  142714  000060                  BICB    #60,(R4)        ;CONVERT TO OCTAL
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(2)  013556  152405                          BISB    (R4)+,R5        ;STORE AWAY ITS AN OK CHAR
(2)  013560  122714  000015                  CMPB    #15,(R4)        ;CR ?
(2)  013564  001414                          BEQ     LIMITS  ;NOW CHECK FOR HIGH &LOW LIMIT CONDS
(2)  013566  006305                          ASL     R5      ;ALLOCATE ROOM FOR NEXT CHAR
(2)  013570  006305                          ASL     R5
(2)  013572  006305                          ASL     R5
(2)  013574  000760                          BR      1$
(2)  013576  122714  000015          PARERR: CMPB    #15,(R4)        ;CR?
(2)  013602  001003                          BNE     120$
(2)  013604  005737  013036                  TST     @#RDSW          ;CK SWR USED
(2)  013610  001023                          BNE     PARTI
(2)  013612  104407                  120$:   INSTER  ;RETRY
(2)  013614  000742                          BR      PARAM1
(2)
(2)                                          ;TEST TO SEE IF NUMBER IS WITHIN LIMITS
(2)
(2)  013616  020567  000042          LIMITS: CMP     R5,HILIM
(2)  013622  101365                          BHI     PARERR  ;THE # IS TOO HIGH
(2)  013624  020567  000032                  CMP     R5,LOLIM
(2)  013630  103762                          BLO     PARERR  ;THE # IS TOO LOW
(2)  013632  136705  000032                  BITB    LOBITS,R5       ;TEST BY MASKINGTHE #
(2)  013636  001357                          BNE     PARERR
(2)
(2)                                          ;STORE NUMBER AT SPECIFIED ADDRESS
(2)
(2)  013640  016704  000022                  MOV     DEVADR,R4       ;GET STARTING ADDR OF
(2)  013644  010524                  1$:     MOV     R5,(R4)+        ;STORE AT THIS ADDR
(2)  013646  062705  000002                  ADD     #2,R5
(2)  013652  105367  000013                  DECB    ADRCNT  ;HOW MANY TIMES * 2 ?
(2)  013656  001372                          BNE     1$
(2)  013660  000002                  PARTI:  RTI
(2)  013662  000000                  LOLIM:  0
(2)  013664  000000                  HILIM:  0
(2)  013666  000000                  DEVADR: 0
(2)  013670  000000                  LOBITS: 0
(2)          013671                  ADRCNT=LOBITS+1
(2)
(2)                                          ;SAVE PC OF TEST THAT FAILED AND R0-R5
(2)
(2)  013672  016667  000004  165226  .SAV05: MOV     4(SP),SAVPC
(2)
(2)                                          ;SAVE R0-R5
(2)
(2)  013700  010567  165570          SV05:   MOV     R5,$REG5
(2)  013704  010467  165562                  MOV     R4,$REG4
(2)  013710  010367  165554                  MOV     R3,$REG3
(2)  013714  010267  165546                  MOV     R2,$REG2
(2)  013720  010167  165540                  MOV     R1,$REG1
(2)  013724  010067  165532                  MOV     R0,$REG0
(2)  013730  000002                          RTI
(2)
(2)                                          ;RESTORE R0-R5
(2)
(2)  013732  016700  165524          .RES05: MOV     $REG0,R0
(2)  013736  016701  165522                  MOV     $REG1,R1
(2)  013742  016702  165520                  MOV     $REG2,R2
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(2)  013746  016703  165516                MOV     $REG3,R3
(2)  013752  016704  165514                MOV     $REG4,R4
(2)  013756  016705  165512                MOV     $REG5,R5
(2)  013762  000002                        RTI
(2)
(2)                                        ;CONVERT OCTAL NUMBER TO ASCII AND OUTPUT TO TELEPRINTER
(2)
(2)  013764  104401              .CONVR:   TYPE
(2)  013766  015443                        MCRLF   ;CR  LF
(2)  013770  017601  000000                MOV     @(SP),R1        ;PICK UP DATA POINTER
(2)  013774  062716  000002                ADD     #2,(SP) ;SET UP SP FOR RTI
(2)  014000  012167  000130                MOV     (R1)+,WRDCNT    ;PICK UP # OF WORDS FROM TABLE
(2)  014004  112167  000126        1$:     MOVB    (R1)+,CHRCNT    ;PICK UP # OF CHARS FROM TABLE
(2)  014010  112167  000123                MOVB    (R1)+,SPACNT    ;PICK UP # OF SPACES FROM TABLE
(2)  014014  013167  000120                MOV     @(R1)+,BINWRD   ;PICK UP ADDRESS OF  MSG
(2)                                                                ;FROM TABLE
(2)  014020  016704  000114        2$:     MOV     BINWRD,R4       ;SAVE
(2)  014024  116705  000106                MOVB    CHRCNT,R5       ;SAVE
(2)  014030  012700  016214                MOV     #TEMP,R0        ;STARTING ADDRESS OF TEMP BLOCK
(2)  014034  010403                3$:     MOV     R4,R3           ;SAVE
(2)  014036  042703  177770                BIC     #177770,R3      ;CLR OUT UPPER BITS .. SAVE CHAR
(2)  014042  062703  000260                ADD     #260,R3 ;CONVERT TO ASCII
(2)  014046  110320                        MOVB    R3,(R0)+        ;STORE AWAY
(2)  014050  006204                        ASR     R4      ;SHIFT FOR NEXT #
(2)  014052  006204                        ASR     R4      ;DITTO
(2)  014054  006204                        ASR     R4      ;DITTO
(2)  014056  005305                        DEC     R5      ;DEC CHAR COUNT
(2)  014060  001365                        BNE     3$      ;DO IT AGAIN ?
(2)  014062  012703  016256                MOV     #MDATA,R3       ;STARTING ADDRESS OF MDATA BLOCK
(2)  014066  114023                4$:     MOVB    -(R0),(R3)+     ;REVERSE THE ORDER OF NUMBERS
(2)  014070  105367  000042                DECB    CHRCNT  ;DEC CHAR COUNT
(2)  014074  001374                        BNE     4$      ;DO IT AGAIN ?
(2)  014076  105767  000035                TSTB    SPACNT  ;HOW MANY SPACES ?
(2)  014102  001405                        BEQ     6$      ;TYPE # IF BR =0
(2)  014104  112723  000240        5$:     MOVB    #240,(R3)+      ;"SPACE" IN ASCII
(2)  014110  105367  000023                DECB    SPACNT  ;DEC # OF SPACE COUNT
(2)  014114  001373                        BNE     5$      ;DO IT AGAIN ?
(2)  014116  105013                6$:     CLRB    (R3)    ;INSERT "0" FOR TTY OUTPUT ROUTINE
(2)  014120  104401                        TYPE
(2)  014122  016256                        MDATA   ;THIS MESSAGE
(2)  014124  005367  000004                DEC     WRDCNT  ;HOW MANY #'S ?
(2)  014130  001325                        BNE     1$      ;DO THIS ROUTINE AGAIN IF NOT EQUAL TO 0
(2)  014132  000002                        RTI     ;RETURN TO PROGRAM
(2)  014134  000000              WRDCNT:   0
(2)  014136  000000              CHRCNT:   0
(2)          014137              SPACNT=CHRCNT+1
(2)  014140  000000              BINWRD:   0
(2)
(2)                                        ;COMPARE THE FIRST CHARACTER IN THE TELETYPE INPUT
(2)                                        ;BUFFER TO THE CHARACTERS "N" AND "Y".
(2)                                        ;IF THE CHARACTER IS "N" CLEAR THE FLAG
(2)                                        ;IF THE CHARACTER IS "Y" SET THE FLAG
(2)
(2)  014142  017605  000000      .SETFLG:MOV     @(SP),R5
(2)  014146  122767  000116  001776        CMPB    #'N,INBUF       ;IS IT "N" ?
(2)  014154  001002                        BNE     1$
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(2)  014156  105015                          CLRB    (R5)    ;000
(2)  014160  000406                          BR      2$
(2)  014162  122767  000131  001762  1$:     CMPB    #'Y,INBUF       ;IS IT 'Y' ?
(2)  014170  001005                          BNE     3$
(2)  014172  112715  177777                  MOVB    #-1,(R5)        ;377
(2)  014176  062716  000002          2$:     ADD     #2,(SP)
(2)  014202  000002                          RTI
(2)  014204  104407                  3$:     INSTER  ;RETRY
(2)  014206  000755                          BR      .SETFLG
(2)                                  .SBTTL  ERROR HANDLER ROUTINE
(2)
(3)                                  ;;*****************************************************************
(2)                                  ;*THIS ROUTINE WILL INCREMENT THE ERROR FLAG AND THE ERROR COUNT,
(2)                                  ;*SAVE THE ERROR ITEM NUMBER AND THE ADDRESS OF THE ERROR CALL
(2)                                  ;*AND GO TO SAVIT ON ERROR
(2)                                  ;*THE SWITCH OPTIONS PROVIDED BY THIS ROUTINE ARE:
(2)                                  ;*SW15=1        HALT ON ERROR
(2)                                  ;*SW13=1        INHIBIT ERROR TYPEOUTS
(2)                                  ;*SW10=1        BELL ON ERROR
(2)                                  ;*SW09=1        LOOP ON ERROR
(2)                                  ;*CALL
(2)                                  ;*      ERROR   N       ;;ERROR=EMT AND N=ERROR ITEM NUMBER
(2)
(2)  014210                          $ERROR:
(2)  014210  105267  165167          7$:     INCB    $ERFLG          ;;SET THE ERROR FLAG
(2)  014214  001775                          BEQ     7$              ;;DON'T LET THE FLAG GO TO ZERO
(2)  014216  016777  165160  165216          MOV     $TSTNM,@DISPLAY ;;DISPLAY TEST NUMBER AND ERROR FLAG
(2)  014224  032777  002000  165206          BIT     #BIT10,@SWR     ;;BELL ON ERROR?
(2)  014232  001402                          BEQ     1$              ;;NO - SKIP
(2)  014234  104401  001516                  TYPE    ,$BELL          ;;RING BELL
(2)  014240  005267  165146          1$:     INC     $ERTTL          ;;COUNT THE NUMBER OF ERRORS
(2)  014244  011667  165146                  MOV     (SP),$ERRPC     ;;GET ADDRESS OF ERROR INSTRUCTION
(2)  014250  162767  000002  165140          SUB     #2,$ERRPC
(2)  014256  117767  165134  165130          MOVB    @$ERRPC,$ITEMB  ;;STRIP AND SAVE THE ERROR ITEM CODE
(2)  014264  032777  020000  165146          BIT     #BIT13,@SWR     ;;SKIP TYPEOUT IF SET
(2)  014272  001004                          BNE     20$             ;;SKIP TYPEOUTS
(2)  014274  004767  000072                  JSR     PC,SAVIT        ;;GO TO USER ERROR ROUTINE
(2)  014300  104401  001523                  TYPE    ,$CRLF
(2)  014304                          20$:
(2)  014304  122767  000001  165234          CMPB    #APTENV,$ENV    ;;RUNNING IN APT MODE
(2)  014312  001007                          BNE     2$              ;;NO,SKIP APT ERROR REPORT
(2)  014314  116767  165074  000004          MOVB    $ITEMB,21$      ;;SET ITEM NUMBER AS ERROR NUMBER
(2)  014322  004767  163470                  JSR     PC,$ATY4        ;;REPORT FATAL ERROR TO APT
(2)  014326     000                  21$:    .BYTE   0
(2)  014327     000                          .BYTE   0
(2)  014330  000777                  22$:    BR      22$             ;;APT ERROR LOOP
(2)  014332  005777  165102          2$:     TST     @SWR            ;;HALT ON ERROR
(2)  014336  100001                          BPL     3$              ;;SKIP IF CONTINUE
(2)  014340  000000                          HALT                    ;;HALT ON ERROR!
(2)  014342  032777  001000  165070  3$:     BIT     #BIT09,@SWR     ;;LOOP ON ERROR SWITCH SET?
(2)  014350  001402                          BEQ     4$              ;;BR IF NO
(2)  014352  016716  165032                  MOV     $LPERR,(SP)     ;;FUDGE RETURN FOR LOOPING
(2)  014356  005767  165132          4$:     TST     $ESCAPE         ;;CHECK FOR AN ESCAPE ADDRESS
(2)  014362  001402                          BEQ     5$              ;;BR IF NONE
(2)  014364  016716  165124                  MOV     $ESCAPE,(SP)    ;;FUDGE RETURN ADDRESS FOR ESCAPE
(2)  014370                          5$:
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(2)  014370  000002                          RTI                         ;;RETURN
(2)  014372  010067  164532          SAVIT:  MOV     R0,HLD0
(2)  014376  010167  164530                  MOV     R1,HLD1
(2)  014402  010267  164526                  MOV     R2,HLD2
(2)  014406  010367  164524                  MOV     R3,HLD3
(2)  014412  010467  164522                  MOV     R4,HLD4
(2)  014416  010567  164520                  MOV     R5,HLD5
(2)  014422  016767  164754  164514          MOV     $TSTNM,HLD6
(2)
(3)                                  .SBTTL  ERROR MESSAGE TYPEOUT ROUTINE
(3)
(4)                                  ;;**********************************************************************
(3)                                  ;*THIS ROUTINE USES THE "ITEM CONTROL BYTE" ($ITEMB) TO DETERMINE WHICH
(3)                                  ;*ERROR IS TO BE REPORTED. IT THEN OBTAINS, FROM THE "ERROR TABLE" ($ERRTB),
(3)                                  ;*AND REPORTS THE APPROPRIATE INFORMATION CONCERNING THE ERROR.
(3)
(3)  014430                          $ERRTYP:
(3)  014430  104401  001523                  TYPE    ,$CRLF              ;;"CARRIAGE RETURN" & "LINE FEED"
(3)  014434  010046                          MOV     R0,-(SP)            ;;SAVE R0
(3)  014436  005000                          CLR     R0                  ;;PICKUP THE ITEM INDEX
(3)  014440  153700  001414                  BISB    @#$ITEMB,R0
(3)  014444  001004                          BNE     1$                  ;;IF ITEM NUMBER IS ZERO, JUST
(3)                                                                      ;;TYPE THE PC OF THE ERROR
(4)  014446  016746  164744                  MOV     $ERRPC,-(SP)        ;;SAVE $ERRPC FOR TYPEOUT
(4)                                                                      ;;ERROR ADDRESS
(4)  014452  104402                          TYPOC                       ;;GO TYPE--OCTAL ASCII(ALL DIGITS)
(3)  014454  000426                          BR      6$                  ;;GET OUT
(3)  014456  005300                  1$:     DEC     R0                  ;;ADJUST THE INDEX SO THAT IT WILL
(3)  014460  006300                          ASL     R0                  ;;      WORK FOR THE ERROR TABLE
(3)  014462  006300                          ASL     R0
(3)  014464  006300                          ASL     R0
(3)  014466  062700  001652                  ADD     #$ERRTB,R0          ;;FORM TABLE POINTER
(3)  014472  012067  000004                  MOV     (R0)+,2$            ;;PICKUP "ERROR MESSAGE" POINTER
(3)  014476  001404                          BEQ     3$                  ;;SKIP TYPEOUT IF NO POINTER
(3;  014500  104401                          TYPE                        ;;TYPE THE "ERRCR MESSAGE"
(3)  014502  000000                  2$:     .WORD   0                   ;;"ERROR MESSAGE" POINTER GOES HERE
(3)  014504  104401  001523                  TYPE    ,$CRLF              ;;"CARRIAGE RETURN" & "LINE FEED"
(3)  014510  012067  000004          3$:     MOV     (R0)+,4$            ;;PICKUP "DATA HEADER" POINTER
(3)  014514  001404                          BEQ     5$                  ;;SKIP TYPEOUT IF 0
(3)  014516  104401                          TYPE                        ;;TYPE THE "DATA HEADER"
(3)  014520  000000                  4$:     .WORD   0                   ;;"DATA HEADER" POINTER GOES HERE
(3)  014522  104401  001523                  TYPE    ,$CRLF              ;;"CARRIAGE RETURN" & "LINE FEED"
(3)  014526  011000                  5$:     MOV     (R0),R0             ;;PICKUP "DATA TABLE" POINTER
(3)  014530  001004                          BNE     7$                  ;;GO TYPE THE DATA
(3)  014532  012600                  6$:     MOV     (SP)+,R0            ;;RESTORE R0
(3)
(3)  014534  104401  001523                  TYPE    ,$CRLF              ;;"CARRIAGE RETURN" & "LINE FEED"
(3)  014540  000207                          RTS     PC                  ;;RETURN
(3)  014542                          7$:
(4)  014542  013046                          MOV     @(R0)+,-(SP)        ;;SAVE @(R0)+ FOR TYPEOUT
(4)  014544  104402                          TYPOC                       ;;GO TYPE--OCTAL ASCII(ALL DIGITS)
(3)  014546  005710                          TST     (R0)                ;;IS THERE ANOTHER NUMBER?
(3)  014550  001770                          BEQ     6$                  ;;BR IF NO
(3)  014552  104401  014560                  TYPE    ,8$                 ;;TYPE TWO(2) SPACES
(3)  014556  000771                          BR      7$                  ;;LOOP
(3)  014560  020040     000          8$:     .ASCIZ  /  /                ;;TWO(2) SPACES
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(3)          014564                          .EVEN
(2)                                  .SBTTL  BINARY TO OCTAL (ASCII) AND TYPE
(2)
(3)                                  ;;*****************************************************************
(2)                                  ;*THIS ROUTINE IS USED TO CHANGE A 16-BIT BINARY NUMBER TO A 6-DIGIT
(2)                                  ;*OCTAL (ASCII) NUMBER AND TYPE IT.
(2)                                  ;*$TYPOS---ENTER HERE TO SETUP SUPPRESS ZEROS AND NUMBER OF DIGITS TO TYPE
(2)                                  ;*CALL:
(2)                                  ;*      MOV     NUM,-(SP)       ;;NUMBER TO BE TYPED
(2)                                  ;*      TYPOS                   ;;CALL FOR TYPEOUT
(2)                                  ;*      .BYTE   N               ;;N=1 TO 6 FOR NUMBER OF DIGITS TO TYPE
(2)                                  ;*      .BYTE   M               ;;M=1 OR 0
(2)                                  ;*                                      ;;1=TYPE LEADING ZEROS
(2)                                  ;*                                      ;;0=SUPPRESS LEADING ZEROS
(2)                                  ;*
(2)                                  ;*$TYPON----ENTER HERE TO TYPE OUT WITH THE SAME PARAMETERS AS THE LAST
(2)                                  ;*$TYPOS OR $TYPOC
(2)                                  ;*CALL:
(2)                                  ;*      MOV     NUM,-(SP)       ;;NUMBER TO BE TYPED
(2)                                  ;*      TYPON                   ;;CALL FOR TYPEOUT
(2)                                  ;*
(2)                                  ;*$TYPOC---ENTER HERE FOR TYPEOUT OF A 16 BIT NUMBER
(2)                                  ;*CALL:
(2)                                  ;*      MOV     NUM,-(SP)       ;;NUMBER TO BE TYPED
(2)                                  ;*      TYPOC                   ;;CALL FOR TYPEOUT
(2)
(2)  014564  017646  000000          $TYPOS: MOV     @(SP),-(SP)     ;;PICKUP THE MODE
(2)  014570  116667  000001  000211          MOVB    1(SP),$OFILL    ;;LOAD ZERO FILL SWITCH
(2)  014576  112667  000207                  MOVB    (SP)+,$OMODE+1  ;;NUMBER OF DIGITS TO TYPE
(2)  014602  062716  000002                  ADD     #2,(SP)         ;;ADJUST RETURN ADDRESS
(2)  014606  000406                          BR      $TYPON
(2)  014610  112767  000001  000171  $TYPOC: MOVB    #1,$OFILL       ;;SET THE ZERO FILL SWITCH
(2)  014616  112767  000006  000165          MOVB    #6,$OMODE+1     ;;SET FOR SIX(6) DIGITS
(2)  014624  112767  000005  000154  $TYPON: MOVB    #5,$OCNT        ;;SET THE ITERATION COUNT
(2)  014632  010346                          MOV     R3,-(SP)        ;;SAVE R3
(2)  014634  010446                          MOV     R4,-(SP)        ;;SAVE R4
(2)  014636  010546                          MOV     R5,-(SP)        ;;SAVE R5
(2)  014640  116704  000145                  MOVB    $OMODE+1,R4     ;;GET THE NUMBER OF DIGITS TO TYPE
(2)  014644  005404                          NEG     R4
(2)  014646  062704  000006                  ADD     #6,R4           ;;SUBTRACT IT FOR MAX. ALLOWED
(2)  014652  110467  000132                  MOVB    R4,$OMODE       ;;SAVE IT FOR USE
(2)  014656  116704  000125                  MOVB    $OFILL,R4       ;;GET THE ZERO FILL SWITCH
(2)  014662  016605  000012                  MOV     12(SP),R5       ;;PICKUP THE INPUT NUMBER
(2)  014666  005003                          CLR     R3              ;;CLEAR THE OUTPUT WORD
(2)  014670  006105                  1$:     ROL     R5              ;;ROTATE MSB INTO "C"
(2)  014672  000404                          BR      3$              ;;GO DO MSB
(2)  014674  006105                  2$:     ROL     R5              ;;FORM THIS DIGIT
(2)  014676  006105                          ROL     R5
(2)  014700  006105                          ROL     R5
(2)  014702  010503                          MOV     R5,R3
(2)  014704  006103                  3$:     ROL     R3              ;;GET LSB OF THIS DIGIT
(2)  014706  105367  000076                  DECB    $OMODE          ;;TYPE THIS DIGIT?
(2)  014712  100016                          BPL     7$              ;;BR IF NO
(2)  014714  042703  177770                  BIC     #177770,R3      ;;GET RID OF JUNK
(2)  014720  001002                          BNE     4$              ;;TEST FOR 0
(2)  014722  005704                          TST     R4              ;;SUPPRESS THIS 0?
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(2)  014724  001403                    BEQ     5$              ;;BR IF YES
(2)  014726  005204              4$:    INC     R4              ;;DON'T SUPPRESS ANYMORE 0'S
(2)  014730  052703  000060           BIS     #'0,R3          ;;MAKE THIS DIGIT ASCII
(2)  014734  052703  000040      5$:  BIS     #' ,R3          ;;MAKE ASCII IF NOT ALREADY
(2)  014740  110367  000040           MOVB    R3,8$           ;;SAVE FOR TYPING
(2)  014744  104401  015004           TYPE    ,8$             ;;GO TYPE THIS DIGIT
(2)  014750  105367  000032      7$:  DECB    $OCNT           ;;COUNT BY 1
(2)  014754  003347                    BGT     2$              ;;BR IF MORE TO DO
(2)  014756  002402                    BLT     6$              ;;BR IF DONE
(2)  014760  005204                    INC     R4              ;;INSURE LAST DIGIT ISN'T A BLANK
(2)  014762  000744                    BR      2$              ;;GO DO THE LAST DIGIT
(2)  014764  012605              6$:   MOV     (SP)+,R5        ;;RESTORE R5
(2)  014766  012604                    MOV     (SP)+,R4        ;;RESTORE R4
(2)  014770  012603                    MOV     (SP)+,R3        ;;RESTORE R3
(2)  014772  016666  000002  000004    MOV     2(SP),4(SP)     ;;SET THE STACK FOR RETURNING
(2)  015000  012616                    MOV     (SP)+,(SP)
(2)  015002  000002                    RTI                     ;;RETURN
(2)  015004     000              8$:   .BYTE   0               ;;STORAGE FOR ASCII DIGIT
(2)  015005     000                    .BYTE   0               ;;TERMINATOR FOR TYPE ROUTINE
(2)  015006     000              $OCNT: .BYTE   0              ;;OCTAL DIGIT COUNTER
(2)  015007     000              $OFILL:.BYTE   0              ;;ZERO FILL SWITCH
(2)  015010  000000              $OMODE:.WORD   0              ;;NUMBER OF DIGITS TO TYPE
(2)                                     ;ENTER HERE ON POWER FAILURE
(2)
(2)
(2)  015012                      $PWRDN:
(2)  015012  010046              .PFAIL: MOV    R0,-(SP)              ;SAVE R0-R5 ON PROCESSOR STACK
(2)  015014  010146                      MOV    R1,-(SP)
(2)  015016  010246                      MOV    R2,-(SP)
(2)  015020  010346                      MOV    R3,-(SP)
(2)  015022  010446                      MOV    R4,-(SP)
(2)  015024  010546                      MOV    R5,-(SP)
(2)  015026  016746  162772              MOV    24,-(SP)
(2)  015032  010667  164060              MOV    SP,SAVSP              ;SAVE STACK POINTER
(2)  015036  012767  015050  162760      MOV    #RESTART,24           ;SET UP FOR POWER UP TRAP
(2)  015044  000000                      HALT                         ;HALT ON POWER DOWN NORMAL
(2)  015046  000777                      BR     .
(2)
(2)                                     ;PROCESSOR WILL TRAP HERE WHEN POWER IS RESTORED
(2)
(2)  015050  016706  164042      RESTAR: MOV    SAVSP,SP              ;RESTORE STACK POINTER
(2)  015054  012605                      MOV    (SP)+,R5              ;RESTORE R0-R5
(2)  015056  012604                      MOV    (SP)+,R4
(2)  015060  012603                      MOV    (SP)+,R3
(2)  015062  012602                      MOV    (SP)+,R2
(2)  015064  012601                      MOV    (SP)+,R1
(2)  015066  012600                      MOV    (SP)+,R0
(2)  015070  012767  015012  162726      MOV    #.PFAIL,24            ;SET UP FOR POWER FAILURE
(2)  015076  106427  000300              MTPS   #300
(2)  015102  012706  001100              MOV    #STACK,SP
(2)  015106  005067  001102              CLR    TEMP
(2)  015112  005267  001076              INC    TEMP
(2)  015116  001375                      BNE    .-4
(2)  015120  104413                      CONVRT
(2)  015122  015144                      PFTAB
(2)  015124  104401                      TYPE
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(2)  015126  015446                          MPFAIL
(2)  015130  005067  164247                  CLR     $ERFLG
(2)  015134  005067  164256                  CLR     $ERRPC
(2)  015140  000177  163740                  JMP     @RETURN
(2)  015144  000001                  PFTAB:  1
(2)  015146     006     002                  .BYTE   6,2
(2)  015150  000207                          RETURN
(2)  015152  005015  042012  053125  MTITLE: .ASCIZ  <15><12><12>/DUV11 CNDUV-A TAPE F /<15><12>
(2)  015160  030461  041440  042116
(2)  015166  053125  040455  052040
(2)  015174  050101  020105  020106
(2)  015202  005015     000
(2)  015205     015  053012  041505  MVECTO: .ASCIZ  <15><12>/VEC ADD-/
(2)  015212  040440  042104  000055
(2)  015220  005015  051461  020124  MREGAD: .ASCIZ  <15><12>/1ST DEV: REC CSR ADD-/
(2)  015226  042504  035126  051040
(2)  015234  041505  041440  051123
(2)  015242  040440  042104  000055
(2)  015250  005015  052515  052114  MMULT:  .ASCIZ  <15><12>/MULT DEV ? (Y OR N)-/
(2)  015256  042040  053105  037440
(2)  015264  024040  020131  051117
(2)  015272  047040  026451     000
(2)  015277     015  046012  051501  MLASTD: .ASCIZ  <15><12>/LAST DEV: REC CSR ADDR-/
(2)  015304  020124  042504  035126
(2)  015312  051040  041505  041440
(2)  015320  051123  040440  042104
(2)  015326  026522     000
(2)  015331     075  042504  044526  DEVICE: .ASCIZ  /=DEVICE  /
(2)  015336  042503  020040     000
(2)  015343     015  051412  046105  MCOW:   .ASCIZ  <15><12>/SELECT TO RUN @ACTREG/
(2)  015350  041505  020124  047524
(2)  015356  051040  047125  040040
(2)  015364  041501  051124  043505
(2)  015372     000
(2)  015373     015  047412  043126  MRANGE: .ASCIZ  <15><12>/OVFLO:RETYPE LAST DEV RXCSR ADDS-/
(2)  015400  047514  051072  052105
(2)  015406  050131  020105  040514
(2)  015414  052123  042040  053105
(2)  015422  051040  041530  051123
(2)  015430  040440  042104  026523
(2)  015436     000
(2)  015437     040  037440     000  MQM:    .ASCIZ  /  ?/
(2)  015443     015  000012          MCRLF:  .ASCIZ   <15><12>
(2)  015446  043120  044501  026114  MPFAIL: .ASCIZ  /PFAIL,  RESTART AT TEST IN PROGRESS/
(2)  015454  020040  042522  052123
(2)  015462  051101  020124  052101
(2)  015470  052040  051505  020124
(2)  015476  047111  050040  047522
(2)  015504  051107  051505  000123
(2)  015512  005015  047105  020104  MEPASS: .ASCIZ  <15><12>/END OF PASS TAPE F/
(2)  015520  043117  050040  051501
(2)  015526  020123  040524  042520
(2)  015534  043040     000
(2)  015537     015  051012     000  MR:     .ASCIZ  <15><12>/R/
(2)  015543     015  052012  051505  MTSTPC: .ASCIZ  <15><12>/TEST PC-/
(2)  015550  020124  041520  000055
```

```
(2)  015556  005015  047514  045503  MLOCK:  .ASCIZ  <15><12>/LOCK ON  TEST? (Y OR N)-/
(2)  015564  047440  020116  052040
(2)  015572  051505  037524  024040
(2)  015600  020131  051117  047040
(2)  015606  026451     000
(2)  015611     015  021412  047440  MSYNC:  .ASCIZ  <15><12>/# OF SYNC CHARS SELECTED ( 1 OR 2)-/
(2)  015616  020106  054523  041516
(2)  015624  041440  040510  051522
(2)  015632  051440  046105  041505
(2)  015640  042524  020104  020050
(2)  015646  020061  051117  031040
(2)  015654  026451     000
(2)  015657     015  044412  020123  MWIRE6: .ASCIZ  <15><12>/IS SEC XMIT SWITCH E55-2 IN? (Y OR N)-/
(2)  015664  042523  020103  046530
(2)  015672  052111  051440  044527
(2)  015700  041524  020110  032505
(2)  015706  026465  020062  047111
(2)  015714  020077  054450  047440
(2)  015722  020122  024516  000055
(2)  015730  005015  051511  051440  MWIRE5: .ASCIZ  <15><12>/IS SEC REC SWITCH E55-3 IN? (Y OR N)-/
(2)  015736  041505  051040  041505
(2)  015744  051440  044527  041524
(2)  015752  020110  032505  026465
(2)  015760  020063  047111  020077
(2)  015766  054450  047440  020122
(2)  015774  024516  000055
(2)  016000  005015  051511  047440  MWIRE4: .ASCIZ  <15><12>/IS OPT CLR ENABLE SWITCH E55-1 IN? (Y OR N)-/
(2)  016006  052120  041440  051114
(2)  016014  042440  040516  046102
(2)  016022  020105  053523  052111
(2)  016030  044103  042440  032465
(2)  016036  030455  044440  037516
(2)  016044  024040  020131  051117
(2)  016052  047040  026451     000
(2)  016057     015  005012  031510  MEXTJ:  .ASCIZ  <15><12><12>/H315 CONNECTOR ON ?(Y OR N)-/
(2)  016064  032461  041440  047117
(2)  016072  042516  052103  051117
(2)  016100  047440  020116  024077
(2)  016106  020131  051117  047040
(2)  016114  026451     000
(2)  016117     015  020012  043536  MCNTG:  .ASCIZ  <15><12>/ ^G  /
(2)  016124  020040     000
(2)  016127     040  053523  036522  MMSWR:  .ASCIZ  / SWR=   /
(2)  016134  020040  000040
(2)  016140  020040  047040  053505  MMNEW:  .ASCIZ  /   NEW=  /
(2)  016146  020075  000040
(2)                                  .EVEN
(2)
(2)                                          ;BUFFERS FOR INPUT-OUTPUT
(2)
(2)  016152  000000                  INBUF:  0
(2)          016214                  .=.+40
(2)  016214  000000                  TEMP:   0
(2)          016256                  .=.+40
(2)  016256  000000                  MDATA:  0
(2)          016320                  .=.+40
```

```
(3)                                     .SBTTL  SCOPE HANDLER ROUTINESTARS
(3)                                     ;*THIS ROUTINE CONTROLS THE LOOPING OF SUBTESTS. IT WILL INCREMENT
(3)                                     ;*AND LOAD THE TEST NUMBER($TSTNM) INTO THE DISPLAY REG.(DISPLAY<7:0>)
(3)                                     ;*AND LOAD THE ERROR FLAG ($ERFLG) INTO DISPLAY<15:08>
(3)                                     ;*THE SWITCH OPTIONS PROVIDED BY THIS ROUTINE ARE:
(3)                                     ;*SW14=1        LOOP ON TEST
(3)                                     ;*SW11=1        INHIBIT ITERATIONS
(3)                                     ;*SW09=1        LOOP ON ERROR
(3)                                     ;*SW08=1        LOOP ON TEST IN SWR<7:0>
(3)                                     ;*CALL
(3)                                     ;*      SCOPE           ;;SCOPE=IOT
(3)
(3)  016320                             $SCOPE:
(5)
(5)                                             ;SCOPE LOOP AND INTERATION HANDLER
(5)
(5)  016320                             .SCOPE:
(5)  016320  004767  174376                     JSR     PC,CKSWR
(5)  016324  005067  163066                     CLR     $ERRPC          ;CLEAR LAST ERROR PC
(5)  016330  022716  003376                     CMP     #TST1+2,(SP)    ;IS SCOPE AT BEGINING OF TEST 1?
(5)  016334  001422                             BEQ     $XTSTR          ;YES NO LOOP.
(5)
(5)  016336  032777  040000  163074  TTST:     BIT     #BIT14,@SWR     ;THIS CODE IS FOR TESTING FOR BIT 14
(5)  016344  001412                             BEQ     1$              ;ON LSI WHICH SYSMAC CANNOT HANDLE
(5)  016346  016767  163030  163032            MOV     $TSTNM,$LPADR
(5)  016354  000406                             BR      1$
(5)  016356  105777  163062                     TSTB    @$TKS           ;KEYBOARD DONE?
(5)  016362  100123                             BPL     $OVER           ;BR IF NO
(5)  016364  017766  163056  177776            MOV     @$TKB,-2(SP)    ;CLEAR DONE BIT
(3)  016372  032777  040000  163040  1$:       BIT     #BIT14,@SWR     ;;LOOP ON PRESENT TEST?
(3)  016400  001114                             BNE     $OVER           ;;YES IF SW14=1
(3)                                     ;#####START OF CODE FOR THE XOR TESTER#####
(3)  016402  000416                     $XTSTR: BR      6$              ;;IF RUNNING ON THE "XOR" TESTER CHANGE
(3)                                                                     ;;THIS INSTRUCTION TO A "NOP" (NOP=240)
(3)  016404  013746  000004                     MOV     @#ERRVEC,-(SP)  ;;SAVE THE CONTENTS OF THE ERROR VECTOR
(3)  016410  012737  016430  000004             MOV     #5$,@#ERRVEC    ;;SET FOR TIMEOUT
(3)  016416  005737  177060                     TST     @#177060        ;;TIME OUT ON XOR?
(3)  016422  012637  000004                     MOV     (SP)+,@#ERRVEC  ;;RESTORE THE ERROR VECTOR
(3)  016426  000463                             BR      $SVLAD          ;;GO TO THE NEXT TEST
(3)  016430  022626                     5$:     CMP     (SP)+,(SP)+     ;;CLEAR THE STACK AFTER A TIME OUT
(3)  016432  012637  000004                     MOV     (SP)+,@#ERRVEC  ;;RESTORE THE ERROP VECTOR
(3)  016436  000423                             BR      7$              ;;LOOP ON THE PRESENT TEST
(3)  016440                             6$:;#####END OF CODE FOR THE XOR TESTER#####
(3)  016440  032777  000400  162772             BIT     #BIT08,@SWR     ;;LOOP ON SPEC. TEST?
(3)  016446  001404                             BEQ     2$              ;;BR IF NO
(3)  016450  127767  162764  162724             CMPB    @SWR,$TSTNM     ;;ON THE RIGHT TEST?    SWR<7:0>
(3)  016456  001465                             BEQ     $OVER           ;;BR IF YES
(3)  016460  105767  162717             2$:     TSTB    $ERFLG          ;;HAS AN ERROR OCCURRED?
(3)  016464  001421                             BEQ     3$              ;;BR IF NO
(3)  016466  126767  162723  162707             CMPB    $ERMAX,$ERFLG   ;;MAX. ERRORS FOR THIS TEST OCCURRED?
(3)  016474  101015                             BHI     3$              ;;BR IF NO
(3)  016476  032777  001000  162734             BIT     #BIT09,@SWR     ;;LOOP ON ERROR?
(3)  016504  001404                             BEQ     4$              ;;BR IF NO
(3)  016506  016767  162676  162672  7$:       MOV     $LPERR,$LPADR   ;;SET LOOP ADDRESS TO LAST SCOPE
(3)  016514  000446                             BR      $OVER
(3)  016516  105067  162661             4$:     CLRB    $ERFLG          ;;ZERO THE ERROR FLAG
```

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    (3)  016522  005067  162764                 CLR     $TIMES          ;;CLEAR THE NUMBER OF ITERATIONS TO MAKE
    (3)  016526  000415                         BR      1$              ;;ESCAPE TO THE NEXT TEST
    (3)  016530  032777  004000  162702  3$:    BIT     #BIT11,@SWR     ;;INHIBIT ITERATIONS?
    (3)  016536  001011                         BNE     1$              ;;BR IF YES
    (3)  016540  005767  162770                 TST     $PASS           ;;IF FIRST PASS OF PROGRAM
    (3)  016544  001406                         BEQ     1$              ;;      INHIBIT ITERATIONS
    (3)  016546  005267  162632                 INC     $ICNT           ;;INCREMENT ITERATION COUNT
    (3)  016552  026767  162734  162624         CMP     $TIMES,$ICNT    ;;CHECK THE NUMBER OF ITERATIONS MADE
    (3)  016560  002024                         BGE     $OVER           ;;BR IF MORE ITERATION REQUIRED
    (3)  016562  012767  000001  162614  1$:    MOV     #1,$ICNT        ;;REINITIALIZE THE ITERATION COUNTER
    (3)  016570  016767  000056  162714         MOV     $MXCNT,$TIMES   ;;SET NUMBER OF ITERATIONS TO DO
    (3)  016576  105267  162600          $SVLAD: INCB    $TSTNM          ;;COUNT TEST NUMBERS
    (3)  016602  116767  162574  162722         MOVB    $TSTNM,$TESTN   ;;SET TEST NUMBER IN APT MAILBOX
    (3)  016610  011667  162572                 MOV     (SP),$LPADR     ;;SAVE SCOPE LOOP ADDRESS
    (3)  016614  011667  162570                 MOV     (SP),$LPERR     ;;SAVE ERROR LOOP ADDRESS
    (3)  016620  005067  162670                 CLR     $ESCAPE         ;;CLEAR THE ESCAPE FROM ERROR ADDRESS
    (3)  016624  112767  000001  162563         MOVB    #1,$ERMAX       ;;ONLY ALLOW ONE(1) ERROR ON NEXT TEST
    (3)  016632  016777  162544  162602  $OVER:  MOV     $TSTNM,@DISPLAY ;;DISPLAY TEST NUMBER
    (3)  016640  016716  162542                 MOV     $LPADR,(SP)     ;;FUDGE RETURN ADDRESS
    (5)  016644  000002                  4$:    RTI
    (5)  016646  001407                  BRW:   1407
    (5)  016650  000432                  BRX:   432
    (3)  016652  000005                  $MXCNT: 5                       ;;MAX. NUMBER OF ITERATIONS
    (2)                                  .SBTTL  TRAP DECODER
    (2)
    (3)                                  ;;*****************************************************************
    (2)                                  ;*THIS ROUTINE WILL PICKUP THE LOWER BYTE OF THE "TRAP" INSTRUCTION
    (2)                                  ;*AND USE IT TO INDEX THROUGH THE TRAP TABLE FOR THE STARTING ADDRESS
    (2)                                  ;*OF THE DESIRED ROUTINE. THEN USING THE ADDRESS OBTAINED IT WILL
    (2)                                  ;*GO TO THAT ROUTINE.
    (2)
    (2)  016654  010046                  $TRAP:  MOV     R0,-(SP)        ;;SAVE R0
    (2)  016656  016600  000002                  MOV     2(SP),R0        ;;GET TRAP ADDRESS
    (2)  016662  005740                          TST     -(R0)           ;;BACKUP BY 2
    (2)  016664  111000                          MOVB    (R0),R0         ;;GET RIGHT BYTE OF TRAP
    (2)  016666  006300                          ASL     R0              ;;POSITION FOR INDEXING
    (2)  016670  016000  016710                  MOV     $TRPAD(R0),R0   ;;INDEX TO TABLE
    (2)  016674  000200                          RTS     R0              ;;GO TO ROUTINE
    (2)
    (2)
    (2)                                  ;;THIS IS USE TO HANDLE THE "GETPRI" MACRO
    (2)
    (2)  016676  011646                  $TRAP2: MOV     (SP),-(SP)      ;;MOVE THE PC DOWN
    (2)  016700  016666  000004  000002         MOV     4(SP),2(SP)     ;;MOVE THE PSW DOWN
    (2)  016706  000002                          RTI                     ;;RESTORE THE PSW
    (2)
    (4)                                  .SBTTL  TRAP TABLE
    (4)
    (4)                                  ;*THIS TABLE CONTAINS THE STARTING ADDRESSES OF THE ROUTINES CALLED
    (4)                                  ;*BY THE "TRAP" INSTRUCTION.
    (4)
    (4)                                  ;       ROUTINE
    (4)                                  ;       -------
    (4)  016710  016676                  $TRPAD: .WORD   $TRAP2
    (4)  016712  013072                          $TYPE   ;;CALL=TYPE     TRAP+1(104401)  TTY TYPEOUT ROUTINE
    (4)  016714  014610                          $TYPOC  ;;CALL=TYPOC    TRAP+2(104402)  TYPE OCTAL NUMBER (WITH LEADING ZEROS)
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   (4)  016716  014564                          $TYPOS  ;;CALL=TYPOS    TRAP+3(104403)  TYPE OCTAL NUMBER (NO LEADING ZEROS)
   (4)  016720  014624                          $TYPON  ;;CALL=TYPON    TRAP+4(104404)  TYPE OCTAL NUMBER (AS PER LAST CALL)
   (2)
   (2)
   (3)  016722  013050                          .SCOP1  ;;CALL=SCOP1    TRAP+5(104405)
   (3)  016724  013354                          .INSTR  ;;CALL=INSTR    TRAP+6(104406)
   (3)  016726  013462                          .INSTER ;;CALL=INSTER   TRAP+7(104407)
   (3)  016730  013472                          .PARAM  ;;CALL=PARAM    TRAP+10(104410)
   (3)  016732  013672                          .SAV05  ;;CALL=SAV05    TRAP+11(104411)
   (3)  016734  013732                          .RES05  ;;CALL=RES05    TRAP+12(104412)
   (3)  016736  013764                          .CONVRT ;;CALL=CONVRT   TRAP+13(104413)
   (3)  016740  014142                          .SETFLG ;;CALL=SETFLG   TRAP+14(104414)
 8730                                   ;*************************************************************
 8731                                   ;UTILITIES
 8732                                   ;*************************************************************
 8733
 8734                                   ;THIS UTILITY CALCULATES PRIORITY LEVEL
 8735  016742  006367  000044           DULEV:  ASL     DUPRT   ;SHIFT LEFT
 8736  016746  006367  000040                   ASL     DUPRT   ;
 8737  016752  006367  000034                   ASL     DUPRT   ;
 8738  016756  006367  000030                   ASL     DUPRT   ;
 8739  016762  006367  000024                   ASL     DUPRT   ;
 8740  016766  016767  000020  000020          MOV     DUPRT,LESS1     ;MOVE THIS TO LESS1
 8741  016774  162767  000001  000012          SUB     #1,LESS1        ;CREATE LESS1
 8742  017002  042767  000037  000004          BIC     #37,LESS1       ;CLEAR TNZVC
 8743  017010  000207                          RTS     PC
 8744  017012  000240                   DUPRT:  PR5
 8745  017014  000200                   LESS1:  PR4     ;LEVEL TO ALLOW INTERRUPTS
 8746
 8747                                   ;NEW DU ADDRESSES
 8748  017016  016767  000126  162666   DUADDR: MOV     DUBASE,RXCSR    ;XXX0
 8749  017024  005267  000120                   INC     DUBASE
 8750  017030  016767  000114  162656          MOV     DUBASE,HRXCSR   ;XXX1
 8751  017036  005267  000106                   INC     DUBASE
 8752  017042  016767  000102  162646          MOV     DUBASE,RXDBUF   ;XXX2
 8753  017050  016767  000074  162644          MOV     DUBASE,PARCSR   ;XXX2
 8754  017056  005267  000066                   INC     DUBASE
 8755  017062  016767  000062  162630          MOV     DUBASE,HRXDBUF  ;XXX3
 8756  017070  016767  000054  162626          MOV     DUBASE,HPARCSR  ;XXX3
 8757  017076  005267  000046                   INC     DUBASE
 8758  017102  016767  000042  162616          MOV     DUBASE,TXCSR    ;XXX4
 8759  017110  005267  000034                   INC     DUBASE
 8760  017114  016767  000030  162606          MOV     DUBASE,HTXCSR   ;XXX5
 8761  017122  005267  000022                   INC     DUBASE
 8762  017126  016767  000016  162576          MOV     DUBASE,TXDBUF   ;XXX6
 8763  017134  005267  000010                   INC     DUBASE
 8764  017140  016767  000004  162566          MOV     DUBASE,HTXDBUF  ;XXX7
 8765  017146  000207                          RTS     PC
 8766  017150  000000                   DUBASE: 0
 8767
 8768                                   ;THIS UTILITY POKES THE MAINT DATA BASED UPON THE
 8769                                   ;INFORMATION CONTAINED IN $TMP1 AND IT IS
 8770                                   ;SHIFTED IN BY THE CONTENTS OF SHIFT
 8771  017152  042777  040000  162546   RPOKE:  BIC     #MTDATA,@TXCSR
 8772  017160  005067  162316                   CLR     $TMP2
 8773  017164  006067  162310                   ROR     $TMP1   ;FORCE CARRY
```

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 8774  017170  006067  162306                    ROR     $TMP2   ;PICK UP CARRY IN BIT 15
 8775  017174  006267  162302                    ASR     $TMP2   ;SHIFT INTO BIT 14
 8776  017200  042767  100000  162274            BIC     #BIT15,$TMP2    ;CLR BIT 15
 8777  017206  056777  162270  162512            BIS     $TMP2,@TXCSR    ;POKE MAINT DATA
 8778  017214  042777  020000  162504            BIC     #CLK,@TXCSR     ;POKE CLK
 8779  017222  052777  020000  162476            BIS     #CLK,@TXCSR     ;
 8780  017230  005367  161666                    DEC     SHIFT
 8781  017234  001346                            BNE     RPOKE
 8782  017236  000207                            RTS     PC
 8783
 8784                                            ;THIS ROUTINE CALCULATES ODD PARITY FOR AN 8 BIT CHAR
 8785  017240  016767  162234  162234  ODD8:     MOV     $TMP1,$TMP2     ;SAVE TEMP1
 8786  017246  005067  162232                    CLR     $TMP3
 8787  017252  012727  000010                    MOV     #8.,(PC)+
 8788  017256  000000                    4$:     0
 8789  017260  006067  162216            1$:     ROR     $TMP2
 8790  017264  005567  162214                    ADC     $TMP3
 8791  017270  005367  177762                    DEC     4$
 8792  017274  001371                            BNE     1$
 8793  017276  006067  162202                    ROR     $TMP3
 8794  017302  103404                            BCS     2$
 8795  017304  052767  000400  162166            BIS     #BIT8,$TMP1     ;SET ODD PARITY
 8796  017312  000403                            BR      3$
 8797  017314  042767  000400  162156  2$:       BIC     #BIT8,$TMP1     ;CLR EVEN PARITY
 8798                                            ;$TMP1 NOW HAS ODD PARITY CHARACTER
 8799  017322  000207                    3$:     RTS     PC
 8800
 8801                                            ;THIS ROUTINE CALCULATES EVEN PARITY FOR AN 8 BIT CHARACTER
 8802  017324  016767  162150  162150  EVEN8:    MOV     $TMP1,$TMP2     ;SAVE TEMP1
 8803  017332  005067  162146                    CLR     $TMP3
 8804  017336  012727  000010                    MOV     #8.,(PC)+
 8805  017342  000000                    4$:     0
 8806  017344  006067  162132            1$:     ROR     $TMP2
 8807  017350  005567  162130                    ADC     $TMP3
 8808  017354  005367  177762                    DEC     4$
 8809  017360  001371                            BNE     1$
 8810  017362  006067  162116                    ROR     $TMP3
 8811  017366  103004                            BCC     2$
 8812  017370  052767  000400  162102            BIS     #BIT8,$TMP1     ;SET EVEN PARITY
 8813  017376  000403                            BR      3$
 8814  017400  042767  000400  162072  2$:       BIC     #BIT8,$TMP1     ;CLR ODD PARITY
 8815                                            ;$TMP1 NOW HAS EVEN PARITY CHARACTER
 8816  017406  000207                    3$:     RTS     PC
 8817  017410  062716  000002            TRPREG: ADD     #2,(SP) ;ALLOW IT TO "CRUNCH" INTO HLT BACK
 8818                                                            ;IN MAIN PART OF THE PROGRAM
 8819  017414  000002                            RTI
 8820          017416                    POINT=.                 ;SAVE POINTER
  (1)          000100                    .=100
  (1)  000100  017416                    $CLKVEC                 ;LKVEC  HANDLER
  (1)  000102  000300                    300                     ;INTERRUPT HANDLER PRI
  (1)          000140                    .=140                   ;BRKVEC
  (1)  000140  170000                    170000                  ;ODT START ADDRESS
  (1)  000142  000300                    300                     ;PRIORITY
  (1)          017416                    .=POINT                 ;RESTORE POINTER
  (1)  017416  104401  017424            $CLKVEC:        TYPE,CLKMES
  (1)  017422  000000                                    HALT
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CNDUV-A MACY11 30(1046)  14-DEC-82  10:03  PAGE 61-59
CNDUVA.M11    30-OCT-82 12:45           TRAP TABLE                                                    SEQ 0073

   (1)  017424  005015  045514  042526  CLKMES:  .ASCIZ <15><12>/LKVEC INTERRUPT - DISCONNECT LTC /
   (1)  017432  020103  047111  042524
   (1)  017440  051122  050125  020124
   (1)  017446  020055  044504  041523
   (1)  017454  047117  042516  052103
   (1)  017462  046040  041524  000040
  8821          000001                  .END
```

```
AAA     003200          8154#
ABASE = 000000          8154
ACDW1 = 000000          8154
ACDW2 = 000000          8154
ACPUOP= 000000          8154
ACTREG  001166          8154#*  8729
ADDW0 = 000000          8154
ADDW1 = 000000          8154
ADDW10= 000000          8154
ADDW11= 000000          8154
ADDW12= 000000          8154
ADDW13= 000000          8154
ADDW14= 000000          8154
ADDW15= 000000          8154
ADDW2 = 000000          8154
ADDW3 = 000000          8154
ADDW4 = 000000          8154
ADDW5 = 000000          8154
ADDW6 = 000000          8154
ADDW7 = 000000          8154
ADDW8 = 000000          8154
ADDW9 = 000000          8154
ADEVCT= 000000          8154
ADEVM = 000000          8154
ADRCNT= 013671          8729#*
AENV  = 000000          8154
AENVM = 000000          8154
AFATAL= 000000          8154
AMADR1= 000000          8154
AMADR2= 000000          8154
AMADR3= 000000          8154
AMADR4= 000000          8154
AMAMS1= 000000          8154
AMAMS2= 000000          8154
AMAMS3= 000000          8154
AMAMS4= 000000          8154
AMSGAD= 000000          8154
AMSGLG= 000000          8154
AMSGTY= 000000          8154
AMTYP1= 000000          8154
AMTYP2= 000000          8154
AMTYP3= 000000          8154
AMTYP4= 000000          8154
APASS = 000000          8154
APRIOR= 000000          8154
APTCSU= 000040          7013#   8729
APTENV= 000001          7013#   8729
APTSIZ= 000200          7013#   8154
APTSPO= 000100          7013#   8729
ASWREG= 000000          8154
ATESTN= 000000          8154
AUNIT = 000000          8154
AUSWR = 000000          8154
AVECT1= 000000          8154
AVECT2= 000000          8154
BASEAD  001154          8154#*  8729*
```

```
BASEIV  001162           8154#* 8729*
BBB     003026           8154#
BINWRD  014140           8729#*
BITW  = 002000           8154#
BIT0  = 000001           8154#
BIT00 = 000001           8154#
BIT01 = 000002           8154#
BIT02 = 000004           8154#
BIT03 = 000010           8154#
BIT04 = 000020           8154#
BIT05 = 000040           8154#
BIT06 = 000100           8154#
BIT07 = 000200           8154#
BIT08 = 000400           8154#   8729
BIT09 = 001000           8154#   8729
BIT1  = 000002           8154#
BIT10 = 002000           8154#   8729
BIT11 = 004000           8154#   8729
BIT12 = 010000           8154#
BIT13 = 020000           8154#   8729
BIT14 = 040000           8154#   8729
BIT15 = 100000           8154#   8776
BIT2  = 000004           8154#
BIT3  = 000010           8154#
BIT4  = 000020           8154#
BIT5  = 000040           8154#
BIT6  = 000100           8154#
BIT7  = 000200           8154#
BIT8  = 000400           8154#   8795    8797    8812    8814
BIT9  = 001000           8154#
BPTVEC= 000014           8154#
BREAK = 000001           8154#   8163    8225    8726    8727    8728
BRKVEC= 000140           8154#
BRW     016646           8729#
BRX     016650           8729#
CARDET= 010000           8154#
CCC     012626           8729#
CHRCNT  014136           8729#*
CKSWR   012722           8729#
CLK   = 020000           8154#   8163    8165    8193    8194    8225    8227    8275    8276    8307    8309    8317    8473
                         8475    8499    8718    8719    8720    8721    8722    8723    8724    8725    8726    8727    8728
                         8778    8779
CLKMES  017424           8820#
CNTLU   012776           8154    8729#
CONVRT= 104413           8729#
COUNT   001124           8154#   8626*   8630*   8664    8668*   8709    8718*   8719*   8720*   8721*
CR    = 000015           8154#   8729
CRLF  = 000200           8154#   8729
CTS   = 020000           8154#
DDISP = 177570           8154#
DEVADR  013666           8729#*
DEVICE  015331           8729#
DF1     002132           8154#
DH1     002067           8154#
DISPLA  001442           8154#*  8729*
DISPRE  000174           8154#
```

```
DNA    = 100000           8154#
DNAINT= 000040            8154#   8315    8328    8337    8481    8506    8518    8525
DSC    = 100000           8154#
DSINTE= 000040            8154#   8248    8260    8264    8288
DSR    = 001000           8154#
DSWR   = 177570           8154#
DTR    = 000002           8154#   8241
DT1      002116           8154#
DT4      002126           8154#
DUADDR  017016            8154    8729    8748#
DUBASE  017150            8154    8729*   8748    8749*   8750    8751*   8752    8753    8754*   8755    8756    8757*   8758
                          8759*   8760    8761*   8762    8763*   8764    8766#
DULEV   016742            8154    8735#
DUPRT   017012            8154*   8167    8229    8313    8349    8385    8427    8479    8550    8620    8622    8735*   8736*
                          8737*   8738*   8739*   8740    8744#
DURIS   001740            8154#   8167*   8177    8178*   8201    8202*   8229*   8251    8252*   8283    8284*   8550*   8573
                          8574*   8581    8582*   8620*   8646    8647*   8657    8658*   8687    8688*   8729*
DURIV   001736            8154#   8166*   8177*   8201*   8228*   8239*   8251*   8283*   8549*   8573*   8581*   8619*   8646*
                          8657*   8687*   8729*
DUTIS   001744            8154#   8313*   8330    8331*   8334    8335*   8349*   8366    8367*   8370    8371*   8385*   8393
                          8394*   8401    8402*   8427*   8456    8457*   8479*   8509    8510*   8522    8523*   8622*   8648
                          8649*   8659    8660*   8689    8690*   8729*
DUTIV   001742            8154#   8312*   8330*   8334*   8348*   8366*   8370*   8384*   8393*   8401*   8426*   8438*   8456*
                          8478*   8497*   8509*   8522*   8621*   8648*   8659*   8689*   8729*
EIGHT  = 006000           8154#   8163    8225    8303    8469    8545    8605    8721    8722    8723    8724    8725
EMTVEC= 000030            8154#*
EM1     001762            8154#
EM2     002022            8154#
EM3     002043            8154#
EM4     001746            8154#
ERRCNT  001114            8154#
ERRVEC= 000004            8154#*  8729*
EVEN8   017324            8802#
EVEPAR= 001400            8154#   8722    8724
EVPAR  = 000400           8154#
FIVE   = 000000           8154#   8718    8726    8727    8728
FRMERR= 020000            8154#
GNS    = ****** U         8729
HDXEN  = 000010           8154#
HILIM   013664            8729#*
HLD0    001130            8154#   8729*
HLD1    001132            8154#   8729*
HLD2    001134            8154#   8729*
HLD3    001136            8154#   8729*
HLD4    001140            8154#   8729*
HLD5    001142            8154#   8729*
HLD6    001144            8154#   8729*
HOLD    001120            8154#   8724    8725
HPARCS  001724            8154#   8756*
HRXCSR  001714            8154#   8750*
HRXDBU  001720            8154#   8755*
HT     = 000011           8154#   8729
HTXCSR  001730            8154#   8760*
HTXDBU  001734            8154#   8764*
INBUF   016152            8154    8729#
INIFLG  001172            8154#*
```

```
INSTER= 104407           8154    8729#
INSTR = 104406           8154    8729#
INSTR2  013470           8729#
IOTVEC= 000020           8154#*
ISYMOD= 000000           8154#   8726    8727    8728
JMRBY   001153           8154#*  8222    8724    8725
KEEPAD  001156           8154#*  8729
KEEPIV  001164           8154#*  8729
LASTAD  001160           8154#
LESS1   017014           8740*   8741*   8742*   8745#
LF    = 000012           8154#   8729
LIGHTS  001102           8154#   8729*
LIMITS  013616           8729#
LKVEC = 000100           8154#
LOBITS  013670           8729#*
LOCK    001110           8154#   8729
LOKFLG  001174           8154#
LOLIM   013662           8729#*
MCNTG   016117           8729#
MCOW    015343           8729#
MCRLF   015443           8729#
MDATA   016256           8729#
MEPASS  015512           8729#
MEXT  = 010000           8154#   8724    8725
MEXTJ   016057           8154    8729#
MINT  = 004000           8154#   8163    8225    8303    8469    8718    8719    8720    8721    8722    8723    8726    8727
                         8728
MLASTD  015277           8154    8729#
MLOCK   015556           8729#
MMNEW   016140           8729#
MMSWR   016127           8729#
MMULT   015250           8154    8729#
MPFAIL  015446           8729#
MQM     015437           8729#
MR      015537           8154    8729#
MRANGE  015373           8154    8729#
MREGAD  015220           8154    8729#
MRESET= 000400           8154#   8163    8225    8303    8347    8383    8425    8469    8542    8544    8605    8718    8719
                         8720    8721    8722    8723    8724    8725    8726    8727    8728
MSYNC   015611           8154    8729#
MTDATA= 040000           8154#   8163    8188    8192    8225    8270    8274    8726    8727    8728    8771
MTITLE  015152           8154    8729#
MTSTPC  015543           8154    8729#
MULTD   001152           8154#   8729
MVECTO  015205           8154    8729#
MWIRE4  016000           8154    8729#
MWIRE5  015730           8154    8729#
MWIRE6  015657           8154    8729#
NEXT    001106           8154#
NOPAR = 000000           8154#   8163    8225    8303    8469    8545    8605    8718    8719    8720    8721    8726    8727
                         8728
ODDPAR= 001000           8154#   8723    8725
ODD8    017240           8785#
ODTST = 170000           8154#
ONCE    002610           8154#
OPTCLR  001151           8154#
```

```
OUT     013030          8729#
OUTCRY  012620          8729#
OUTMUL  003166          8154#
OVRRUN= 040000          8154#
PARAM = 104410          8154    8729#
PARAM1  013522          8729#
PARCSR  001722          8154#   8163*   8225*   8303*   8469*   8543*   8545*   8605*   8718*   8719*   8720*   8721*   8722*
                        8723*   8724*   8725*   8726*   8727*   8728*   8753*
PAREN = 001000          8154#
PARER = 010000          8154#
PARERR  013576          8729#
PARTI   013660          8729#
PASCNT  001112          8154#*  8729*
PFTAB   015144          8729#
PIRQ  = 177772          8154#
PIRQVE= 000240          8154#
POINT = 017416          8820#
POPR0 = 012600          8154#
POP1SP= 005726          8154#
POP2SP= 022626          8154#
PR0   = 000000          8154#
PR1   = 000040          8154#
PR2   = 000100          8154#
PR3   = 000140          8154#
PR4   = 000200          8154#   8745
PR5   = 000240          8154#   8744
PR6   = 000300          8154#
PR7   = 000340          8154#
PS    = 177776          8154#
PSW   = 177776          8154#
PUSHR0= 010046          8154#
PUSH1S= 005746          8154#
PUSH2S= 024646          8154#
PWRVEC= 000024          8154#*
RDSW    013036          8729#*
RECACT= 004000          8154#   8718    8719    8720    8721
REPLAY  012524          8729#
RESTAR  015050          8729#
RESTRT  012704          8729#
RESVEC= 000010          8154#
RES05 = 104412          8729#
RETURN  001104          8154#*  8729
RING  = 040000          8154#
RINTEN= 000100          8154#   8172    8182    8206    8248    8260    8264    8288    8556    8576    8579    8631    8645
                        8662    8686
ROTADD  001170          8154#*  8729*
RPOKE   017152          8726    8727    8728    8771#   8781
RTS   = 000004          8154#
RUNA  = ****** U        5678    5862    6003    6417
RUNB  = ****** U        5703    5871    6010    6426
RUNC  = ****** U        5728    5879    6017    6435
RUND  = ****** U        5753    5888    6024    6444
RUNE  = ****** U        5778    5898    6031    6453
RUNF  = 000000          5676#   5803    5908    6038    6462
RUNIT   012430          8729#
RXCSR   001712          8154#   8164*   8172*   8173    8182*   8206*   8226*   8235    8241*   8248*   8257    8260*   8264*
```

```
                           8288*  8556*  8571   8576*  8579*  8588   8606*  8631*  8645*  8655   8662*  8686*  8696
                           8718*  8719*  8720*  8721*  8722*  8723*  8724*  8725*  8726*  8727*  8728*  8729   8748*
RXDBUF  001716             8154#  8179   8203   8205   8242   8285   8287   8552   8572   8624   8656   8718   8719
                           8720   8721   8722   8723   8724   8725   8726   8727   8728   8752*
RXDONE= 000200             8154#
RXERR = 100000             8154#
SAVIT   014372             8729#
SAVPC   001126             8154#  8729*
SAVSP   001116             8154#  8729*
SAV05 = 104411             8729#
SCOP1 = 104405             8718   8719   8720   8721   8729#
SEND  = 000020             8154#  8303   8469   8554   8605   8718   8719   8720   8721   8722   8723   8724   8725
SEREC   001150             8154#
SETFLG= 104414             8154   8729#
SEVEN = 004000             8154#  8720
SEXMIT  001147             8154#
SHIFT   001122             8154#  8183*  8195*  8265*  8277*  8305*  8310*  8471*  8476*  8718*  8719*  8720*  8721*
                           8722*  8723*  8724*  8725*  8726*  8727*  8728*  8780*
SIX   = 002000             8154#  8719
SPACNT= 014137             8729#*
SRD   = 002000             8154#
STACK = 001100             8154#  8729
STD   = 000010             8154#
STFLG   001173             8154#*
STKLMT= 177774             8154#
STPSYN= 000400             8154#  8606
SV05    013700             8729#
SWR     001440             8154#* 8729
SWREG   000176             8154#  8729
SWREGL  013040             8729#
SW0   = 000001             8154#
SW00  = 000001             8154#
SW01  = 000002             8154#
SW02  = 000004             8154#
SW03  = 000010             8154#
SW04  = 000020             8154#
SW05  = 000040             8154#
SW06  = 000100             8154#
SW07  = 000200             8154#
SW08  = 000400             8154#
SW09  = 001000             8154#  8729
SW1   = 000002             8154#
SW10  = 002000             8154#
SW11  = 004000             8154#
SW12  = 010000             8154#
SW13  = 020000             8154#
SW14  = 040000             8154#
SW15  = 100000             8154#
SW2   = 000004             8154#
SW3   = 000010             8154#
SW4   = 000020             8154#
SW5   = 000040             8154#
SW6   = 000100             8154#
SW7   = 000200             8154#
SW8   = 000400             8154#
SW9   = 001000             8154#
```

```
SYNCNO  001146          8154#* 8628   8718   8719   8720   8721
SYNEXT= 020000          8154#  8163   8225   8303   8469   8543   8545   8722   8723   8724   8725
SYNINT= 030000          8154#  8605   8718   8719   8720   8721
SYNSCH= 000020          8154#  8164   8226   8556   8606   8718   8719   8720   8721   8722   8723   8724   8725
                        8726   8727   8728
SYSTST= 014000          8154#  8554   8605
TBITVE= 000014          8154#
TEMP    016214          8729#*
TKVEC = 000060          8154#
TPVEC = 000064          8154#
TRAPVE= 000034          8154#*
TRPREG  017410          8817#
TRTVEC= 000014          8154#
TST1    003374          8154   8161#  8729
TST10   005622          8538#
TST11   006112          8604#
TST12   006726          8718#
TST13   007232          8719#
TST14   007536          8720#
TST15   010042          8721#
TST16   010346          8722#
TST17   010544          8723#
TST2    003720          8221#
TST20   010742          8724#
TST21   011206          8725#
TST22   011452          8726#
TST23   011700          8727#
TST24   012126          8728#
TST3    004336          8301#
TST4    004610          8345#
TST5    004752          8382#
TST6    005110          8424#
TST7    005260          8467#
TTST    016336          8729#
TXCSR   001726          8154#  8163*  8165*  8188*  8192*  8193*  8194*  8225*  8227*  8270*  8274*  8275*  8276*
                        8303*  8307*  8309*  8315*  8317*  8325   8328*  8337*  8347*  8351*  8355*  8361*  8362
                        8383*  8387*  8391*  8398*  8425*  8429*  8446   8458*  8469*  8473*  8475*  8481*  8490
                        8493   8499*  8506*  8515   8518*  8525*  8542*  8544*  8554*  8605*  8632*  8644*  8663*
                        8677*  8718*  8719*  8720*  8721*  8722*  8723*  8724*  8725*  8726*  8727*  8728*  8758*
                        8771*  8777*  8778*  8779*
TXDBUF  001732          8154#  8304*  8470*  8500*  8548*  8635*  8676*  8718*  8719*  8720*  8721*  8722*  8723*
                        8724*  8725*  8762*
TXDONE= 000200          8154#
TXINTE= 000100          8154#  8351   8355   8361   8387   8391   8398   8429   8458   8481   8506   8518   8525
                        8632   8644   8663   8677
TYPE  = 104401          815    8729#  8820
TYPOC = 104402          872*#
TYPON = 104404          8729#
TYPOS = 104403          8729#
USER  = 000000          8154#
VOID  = 000001          8154#
WRDCNT  014134          8729#*
ZERO    012436          8729#
$APTHD  002136          8154#
$ASTAT= ****** U        7013
$ATYC   000024          7013#
```

```
$ATY1   000000           7013#
$ATY3   000006           7013#   8729
$ATY4   000016           7013#   8729
$AUTOB  001434           8154#
$BASE   001602           8154#
$BDADR  001422           8154#
$BDDAT  001426           8154#
$BELL   001516           8154#   8729
$CDW1   001606           8154#
$CDW2   001610           8154#
$CHARC  013350           8729#*
$CKSWR= ****** U         8729
$CLKVE  017416           8820#
$CMTAG  001400           8154#
$CM1   = 000006          8154#
$CM2   = 000014          8154#
$CM3   = 000006          8154#
$CM4   = 000006          8154#
$CPUOP  001554           8154#
$CRLF   001523           8154#   8729
$DDW0   001612           8154#
$DDW1   001614           8154#
$DDW10  001636           8154#
$DDW11  001640           8154#
$DDW12  001642           8154#
$DDW13  001644           8154#
$DDW14  001646           8154#
$DDW15  001650           8154#
$DDW2   001616           8154#
$DDW3   001620           8154#
$DDW4   001622           8154#
$DDW5   001624           8154#
$DDW6   001626           8154#
$DDW7   001630           8154#
$DDW8   001632           8154#
$DDW9   001634           8154#
$DEVCT  001536           8154#
$DEVM   001604           8154#
$E     = 000002          6841#
$ENDAD  012674           8154    8729#
$ENV    001546           7013    8154#   8729
$ENVM   001547           7013    8154#   8729
$ERFLG  001403           8154#*  8729*
$ERMAX  001415           8154#*  8729*
$ERROR  014210           8154    8729#
$ERRPC  001416           8154#*  8729*
$ERRTB  001652           8154#   8729
$ERRTY  014430           8729#
$ERTTL  001412           8154#*  8729*
$ESCAP  001514           8154#*  8729*
$ETABL  001546           8154#
$ETEND  001652           8154#
$FATAL  001530           7013*   8154#
$FFLG   000244           7013#*
$FILLC  001456           8154#   8729
$FILLS  001455           8154#   8729
```

```
$GDADR  001420           8154#
$GDDAT  001424           8154#
$GTSWR= ****** U         8729
$HIBTS  002136           8154#
$ICNT   001404           8154#   8729*
$INTAG  001435           8154#
$ITEMB  001414           8154#   8729*
$LF     001524           8154#   8729
$LFLG   000243           7013#*
$LPADR  001406           8154#*  8729*
$LPERR  001410           8154#*  8729*
$MADR1  001560           8154#
$MADR2  001564           8154#
$MADR3  001570           8154#
$MADR4  001574           8154#
$MAIL   001526           8154#   8729
$MAMS1  001556           8154#
$MAMS2  001562           8154#
$MAMS3  001566           8154#
$MAMS4  001572           8154#
$MBADR  002140           8154#
$MFLG   000242           7013#*
$MSGAD  001542           7013*   8154#
$MSGLG  001544           7013*   8154#
$MSGTY  001526           7013*   8154#
$MTYP1  001557           8154#
$MTYP2  001563           8154#
$MTYP3  001567           8154#
$MTYP4  001573           8154#
$MXCNT  016652           8729#
$N    = 000000           6840#   8729#
$NULL   001454           8154#   8729
$NWTST= 000000           8161#   8221#   8301#   8345#   8382#   8424#   8467#   8538#   8604#   8718#   8719#   8720#   8721#
                         8722#   8723#   8724#   8725#   8726#   8727#   8728#
$OCNT   015006           8729#*
$OMODE  015010           8729#*
$OVER   016632           8729#
$PASS   001534           8154#*  8729*
$PASTM  002144           8154#
$PWRDN  015012           8154    8729#
$QUES   001522           8154#   8729
$RDCHR= ****** U         8729
$RDDEC= ****** U         8729
$RDLIN= ****** U         8729
$RDOCT= ****** U         8729
$REGAD  001460           8154#
$REG0   001462           8154#   8729*
$REG1   001464           8154#   8729*
$REG2   001466           8154#   8729*
$REG3   001470           8154#   8729*
$REG4   001472           8154#   8729*
$REG5   001474           8154#   8729*
$R2A  = ****** U         8729
$SAVRE= ****** U         8729
$SCOPE  016320           8154    8729#
$SETUP= 000017           8154#   8729
```

```
$STUP = 177777          8154#
$SVLAD  016576          8729#
$SVPC = 002136          8154#
$SWR  = 177400          6495#   8154    8161    8221    8301    8345    8382    8424    8467    8538    8604    8718    8719
                        8720    8721    8722    8723    8724    8725    8726    8727    8728    8729
$SWREG  001550          8154#
$SWRMK= 000000          8729
$TESTN  001532          8154#   8729*
$TIMES  001512          8154#*  8729*
$TKB    001446          8154#   8729
$TKS    001444          8154#   8729
$TMP0   001476          8154#
$TMP1   001500          8154#   8184*   8190*   8266*   8272*   8726*   8727*   8728*   8773*   8785    8795*   8797*   8802
                        8812*   8814*
$TMP2   001502          8154#   8772*   8774*   8775*   8776*   8777    8785*   8789*   8802*   8806*
$TMP3   001504          8154#   8786*   8790*   8793*   8803*   8807*   8810*
$TMP4   001506          8154#
$TMP5   001510          8154#   8559*   8563*   8564    8612*   8616*   8617    8636*   8640*   8641    8678*   8682*   8683
$TN   = 000025          7252#   8161#   8221#   8301#   8345#   8382#   8424#   8467#   8538#   8604#   8718#   8719#   8720#
                        8721#   8722#   8723#   8724#   8725#   8726#   8727#   8728#
$TPB    001452          8154#   8729*
$TPFLG  001457          8154#   8729
$TPS    001450          8154#   8729
$TRAP   016654          8154    8729#
$TRAP2  016676          8729#
$TRP  = 000015          8729#
$TRPAD  016710          8729#
$TSTM   002142          8154#
$TSTNM  001402          8154#*  8729*
$TYPBN= ****** U        8729
$TYPDS= ****** U        8729
$TYPE   013072          7013    8729#
$TYPEC  013304          8729#
$TYPEX  013352          8729#
$TYPOC  014610          8729#
$TYPON  014624          8729#
$TYPOS  014564          8729#
$UNIT   001540          8154#
$UNITM  002146          8154#
$USWR   001552          8154#
$VECT1  001576          8154#
$VECT2  001600          8154#
$XTSTR  016402          8729#
$OFILL  015007          8729#*
$40CAT= ****** U        8729
.     = 017470          7013#   8154#   8174    8200    8208    8223    8236    8247    8258    8282    8290    8320    8326
                        8354    8363    8390    8432    8447    8455    8484    8491    8494    8505    8516    8562    8586
                        8593    8615    8618    8639    8681    8694    8701    8705    8710    8718    8719    8720    8721
                        8722    8723    8724    8725    8726    8727    8728    8729#   8820#
.BEGIN  003310          8154#   8729
.CONVR  013764          8729#
.EOP    012354          8729#
.INSTE  013462          8729#
.INSTR  013354          8729#
.INST1  013374          8729#
.MSG    013376          8729#*
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.PARAM  013472            8729#
.PFAIL  015012            8154    8729#
.RESOS  013732            8729#
.SAVOS  013672            8729#
.SCOPE  016320            8729#
.SCOP1  013050            8729#
.SETFL  014142            8729#
.START  002152            8154#   8729
.$ASTA= ****** U          7013
.$X   = 002136            8154#
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CROSS REFERENCE TABLE -- MACRO NAMES


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COMMEN   1566#  8154#
ENDCOM   1578#  8154#
ERROR    8154#  8175   8209   8210   8237   8249   8259   8291   8292   8321   8327   8356   8364   8411   8433
         8448   8449   8485   8492   8495   8507   8517   8566   8587   8594   8650   8691   8695   8702   8706
         8711   8718   8719   8720   8721   8722   8723   8724   8725   8726   8727   8728
ESCAPE   1698#  8154#
GETPRI   1312#  8154#
GETSWR   1771#  8154#
MULT     4484#  8154#
NEWTST   1626#  8154#  8161   8221   8301   8345   8382   8424   8467   8538   8604   8718   8719   8720   8721
         8722   8723   8724   8725   8726   8727   8728
POP      2153#  7013   8154#
PRGEND   8118#  8729
PRGFRT   7253#  8154
PUSH     2145#  7013   8154#
PUSSYF   7989#  8724   8725
REPORT   5463#  6494#  8154#
RSETUP   7448#  8163   8225   8726   8727   8728
SC       6813#  8729
SCOPE    8154#  8161   8221   8301   8345   8382   8424   8467   8538   8604   8718   8719   8720   8721   8722
         8723   8724   8725   8726   8727   8728   8729
SC1      6831#  8729
SETPRI   1279#  8154#
SETTRA   6493#  8729#
SETUP    1337#  8154#
SKIP     1733#  8154#
SLASH    1517#  8154#
SPACE    8154#
STARS    1485#  7013   8154#  8161   8221   8301   8345   8382   8424   8467   8538   8604   8718   8719   8720
         8721   8722   8723   8724   8725   8726   8727   8728   8729
SWRSU    1453#  8154#
TRMTRP   8729#
TSETUP   7460#  8303   8469   8605   8722   8723   8724   8725
TYPBIN   2088#  8154#
TYPDEC   2058#  8154#
TYPNAM   1826#  8154#
TYPNUM   2025#  8154#
TYPOCS   1978#  8154#
TYPOCT   1941#  8154#  8729
TYPTXT   1894#  8154#
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$BINAR   7936#  8722   8723   8724   8725
$BUFFE   7127#  8729
$CABLE   8004#
$CATCH   6591#  8154
$CK      6967#  8729
$CLRVE   6737#  8154
$CONVR   7138#  8729
$DNA     7837#
$EOP     6885#  8729
$GETFL   6767#  8154
$GETPA   6757#  8154
$GETSY   6773#  8154
$HEADE   6497#  8154
$INSTR   7014#  8729
$ISOB    7765#
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$MATCH   7574#  8718    8719    8720    8721
$MRR     7435#
$MRRW    7383#
$MRW     7418#
$MSG     7101#  8729
$NEED    8106#  8729
$PARAM   7044#  8729
$PFAIL   7183#  8729
$POKE    7557#  8307    8309    8473    8475    8718    8719    8720    8721    8722    8723
$POKER   7562#  8165    8227    8726    8727    8728
$RCNET   8016#
$RECAC   7496#
$REG     7226#  8729
$RESET   7379#  8163    8225    8303    8347    8383    8425    8469    8542    8544    8605    8718    8719    8720    8721
         8722   8723    8724    8725    8726    8727    8728
$RXACT   7473#
$SCOPE   6836#  8729
$SCOP1   7002#  8729
$SETFL   6793#  8729
$SETVE   6602#  8154
$START   6680#  8154
$STRIP   7806#
$SYMBO   6518#  8154
$SYNCR   7568#  8726    8727    8728
$TRPAR   7888#
$TSTNO   6843#  8161    8221    8301    8345    8382    8424    8467    8538    8604    8718    8719    8720    8721    8722
         8723   8724    8725    8726    8727    8728
$UNIBU   7362#
$VARIA   6618#  8154
$WORDF   7704#
$WORDO   7654#  8726    8727    8728
$WORDP   7732#
$$CMRE   8154#
$$CMTM   8154#
$$ESCA   1711#  8154#
$$NEWT   1662#  8154#   8161    8221    8301    8345    8382    8424    8467    8538    8604    8718    8719    8720    8721
         8722   8723    8724    8725    8726    8727    8728
$$SET    8729#
$$SETM   8154#
$$SKIP   1746#  8154#
.EQUAT    189#  6493#   8154
.HEADE     61#  6492#
.INIT    5658#  8154#   8820
.SETUP   1213#  6492#   8154
.SWRHI    104#
.$ACT1   5064#  6494#   8154
.$APTB   5109#  6494#   8154#
.$APTH   5370#  6494#   8154
.$APTV   5547#  6494#   7013
.$ASTA   5417#
.$CATC    932#  6492#
.$CMTA   1047#  6492#   8154
.$DB2D   4686#
 $DB2O   4812#
.$DIV    4587#
.$EOP    2214#  6492#
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.$ERRO   2700#   6493#   8729
.$ERRT   2896#   6493#   8729
.$MULT   4523#
.$POWE   4229#   6493#
.$RAND   4307#
.$RDDE   3891#
.$RDOC   3797#
.$READ   3395#
.$R2AZ   4958#
.$SAVE   3969#
.$SB2D   4771#
.$SB2O   4874#
.$SCOP   2454#   6493#   8729
.$SIZE   4361#
.$SUPR   4913#
.$TRAP   4073#   6493#   8729
.$TYPB   3287#
.$TYPD   3209#
.$TYPE   2985#   6492#   8729
.$TYPO   3112#   6493#   8729
.$40CA    972#


. ABS.  017470     000


 ERRORS DETECTED:  0

 CNDUVA,CNDUVA/CRF/NL:TOC=CNMAC2.SML,CNDUV1.M11,CNDUV2.M11,CNDUVA.M11
 RUN-TIME: 17 16 1 SECONDS
 RUN-TIME RATIO: 89/34=2.5
 CORE USED:  43K  (86 PAGES)
```