```
                        ;               I D E N T I F I C A T I O N
                        ;               - - - - - - - - - - - - - - -
                        ;       PROGRAM CODE            AC-E262C-MC
                        ;       PPROGRAM NAME           CZPLBCO PCL11 STAND ALONE TEST
                        ;       DATE CREATED            22-OCT-75
                        ;       UPDATED (TO VER 02)     13-MAR-78
                        ;       MODIFIED                06-JUN-79
                        ;       MAINTAINER              SPECIAL SYSTEMS KANATA
                        ;       AUTHOR                  DAVID G. WIENS

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                        .SBTTL HEADER AND INSTRUCTIONS
000000                  .REPT 0


                1.      GENERAL

                  THE PARALLEL COMMUNICATIONS LINK (PCL11) TEST WILL VIGOROUSLY
TEST THE HARDWARE INVOLVED IN ANY ONE PDP-11 PROCESSOR CONTAINING
PCL11 HARDWARE.
  THERE ARE THREE SEPARATE SECTIONS IN THIS TEST. TO COMPLETELY
CHECK BOTH TRANSMITTER AND RECEIVER PORTIONS OF THE PCL11, ALL
THREE SECTIONS MUST BE RUN SUCCESSFULLY.
  THE FIRST TEST IS THE BASIC TRANSMITTER TEST WHICH IS
DESIGNED TO BE RUN AS A STAND ALONE DEVICE TEST
ON THE TRANSMITTER. IT WILL RUN WITH NO MANUAL INTERVENTION
(AFTER INITIAL SETUP) ASSUMING THAT THE TRANSMITTER ADDRESS
SWITCHES IN THE MASTER SECTION ARE SET TO BE AT LEAST EQUAL TO
THE TRANSMITTERS OWN ADDRESS SWITCHES. THIS ASSURES THAT TIMING
SLICES WILL SELECT THE TRANSMITTER BEING TESTED.
  THE SECOND TEST IS THE BASIC RECEIVER TEST WHICH IS DESIGNED TO
RUN AS A STAND ALONE DEVICE TEST FOR THE RECEIVER MODULE.
AFTER INITIAL SETUP, THIS TEST RUNS WITH NO MANUAL INTERVENTION.
  THE THIRD TEST IS THE TRANSMITTER-RECEIVER LOOP TEST.
THE OBJECTIVE OF THE THIRD TEST IS TO TEST ANY FUNCTIONS THAT
WERE NEGLECTED IN THE FIRST AND SECOND TESTS DUE TO THE NEED FOR
TRANSMITTER TO RECEIVER COMMUNICATIONS. IT WILL ALSO TEST THE
T.D.M. BUS DRIVERS AND RECEIVERS BY SENDING DATA PATTERNS AND
CHECKING THE DATA RECEIVED. FURTHER, IT WILL EXERCISE THE ABILITY
TO REJECT OR TRUNCATE COMMUNICATIONS.


  THE TESTS ARE SELECTED, IN THE START-UP PROCEDURE, SO THAT ANY
ONE OF THE TESTS MAY BE LOOPED INDIVIDUALLY, OR ALL THREE MAY BE
LOOPED AS AN OVERALL TEST.
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```
                2.      REQUIREMENTS

                2.1     GENERAL:

                2.11            PDP-11 PROCESSOR WITH 8K OF MEMORY
                                AND A CONSOLE DEVICE ON-LINE.

                2.12            PCL11 HARDWARE ON THE UNIBUS

                2.13            ALL PROCESSOR MAINDECS MUST HAVE BEEN RUN
                                SUCCESSFULLY PRIOR TO RUNNING PCL11 TEST.
                2.14            ONE PCL11 CONNECTED TO UNIBUS
                                (SEE PCL11 OPTION DESCRIPTION SEC 2.1)
```

```
                3.      RESTRICTIONS

                3.1             THIS TEST CANNOT BE LOADED INTO A PDP-11 WITH
                                LESS THAN 8K OF MEMORY.

                3.3             SINCE THERE ARE TIMING LOOPS IN THIS TEST,
                                IT MAY NOT RUN SUCCESSFULLY IN SOLID-STATE MEMORY
                                IF THE DELAY CONSTANT  (CNTRL-D)  IS LOWERED TO
                                BELOW 6.
                                *** THIS ALSO APPLIES TO USING FASTER PDP-11'S (45, 70, ETC.)***


                4.      TEST SET-UP

                4.1             ENSURE PCL11 HAS BEEN INSTALLED CORRECTLY
                                AS PER THE INSTALLATION PROCEDURE IN SEC 2.1 OF
                                PCL11 OPTION DESCRIPTION (YC-A20TC-00)

                4.2             ENSURE ALL CABLES CONNECTING THE PCL11 UNDER
                                TEST TO OTHER PCL11 UNITS OR DISPLAY PANELS
                                ARE DISCONNECTED (OR DISABLED).

                4.3             DETERMINE OR SET UP PROPER TDM ADDRESSES FOR
                                THE RECEIVER AND TRANSMITTER. THE TRANSMITTER'S
                                ADDRESS IS IN S1 ON THE M7991 MODULE; THE
                                RECEIVER'S IS IN S1 ON THE M7997 MODULE.

                4.4             ENSURE S1 ON THE M7994 MODULE IS SET TO A NUMBER
                                GREATER THAN OR EQUAL TO THE TRANSMITTER'S ADDRESS.
```

```
                5.      LOADING

                        THE PCL11 TEST IS ON PAPER TAPE IN PDP-11 .ABS
                        FORMAT. THE TAPE IS LOADED BY MEANS OF THE PDP-11
                        ABSOLUTE LOADER.

                6.      STARTING AND RESTARTING ADDRESSES

                        START ADDR              RESTART ADDR
                        ----------              ------------

                          200                     204   (FOR DIFFERENT T.D.M. BUS ADDRESSES)
                                                  224   (FOR TEST SELECT)



                7.      SWITCH REGISTER OPTIONS

                7.1     ALL TESTS

                                SW 15 = 0       HALT AFTER ERRORS
                                SW 15 = 1       DON'T HALT AFTER ERRORS
                                SW 14 = 0       ALLOW PRINTING
                                SW 14 = 1       INHIBIT PRINTING
                                SW 13 = 0       SEE SW 15
                                SW 13 = 1       AFTER ERROR, RE-TRY CURRENT ROUTINE
                                SW 12 = 0       CARRY ON TO NEXT SUBTEST
                                SW 12 = 1       DON'T EXIT THIS SUBTEST
                                SW 11 = 0       10 TIMES THRU ALL SUBTESTS PER PASS
                                SW 11 = 1       ONCE THRU ALL SUBTESTS PER PASS

                7.2     TRANSMITTER TEST

                                SW 10 = 0       START AT 1ST SUBTEST AND RUN
                                SW 10 = 1       START AT SUBTEST # IN SW'S <3:0>
                                SW 09 = 0       STAY IN MASTER SECTION SCOPE LOOP
                                SW 09 = 1       EXIT MASTER SECTION SCOPE LOOP

                7.3     RECEIVER TEST

                                SW 10 = 0       START AT 1ST SUBTEST AND RUN
                                SW 10 = 1       START AT SUBTEST # IN SW'S <2:0>


                7.4     TRANSMITTER-RECEIVER LOOP

                                SW 10 = 0       START AT 1ST SUBTEST AND RUN
                                SW 10 = 1       START AT SUBTEST # IN SW'S <2:0>
```

```
                7.5     SWITCH REGISTER OPTION USE ON NON-SWITCH-REGISTER PDP-11'S

                AT START UP TIME
                THE PROGRAM WILL DECIDE WHETHER A HARDWARE SWITCH REGISTER
                EXSISTS ON THE PDP-11. IF NONE EXSISTS, A SOFTWARE
                FLAG WILL BE SET INDICATING TO THE REST OF THE PROGRAM THAT
                THE ''SWITCH MONITOR'' IS TO BE USED TO ACHIEVE CHANGING OF
                SWITCH OPTIONS.
                  THE MONITOR IS ENTERED AT THE START OF THE TEST PROGRAM
                AUTOMATICALLY. IT IS ALSO ENTERED AUTOMATICALLY ON AN ERROR
                HALT IF SW 15 = 0. AT OTHER TIMES IT MUST BE CALLED BY THE
                OPERATER BY TYPING CNTRL-S
                  WHEN THE MONITOR IS ENTERED THE FOLLOWING IS PRINTED:
                        SWR - XXXXXX  :
                SHOWING THE OPERATER THE PRESENT CONTENTS OF THE SOFTWARE
                SWITCH REGISTER LOCATION. HE MAY CHANGE THE LOCATION BY TYPING:
                        YYYYYY <CR>
                IN RESPONSE; OR HE MAY LEAVE THE LOCATION UNCHANGED BY TYPING
                ONLY <CR>.
                  REFERENCE PAGE 9 OF THIS LISTING FOR ''SWITCH'' BIT POSITIONS.
                UPON DETECTING A <CR> THE MONITOR WILL TYPE:
                        CNTRL-P TO CONTINUE
                  THE OPERATER NOW HAS THE OPTION OF TYPING ^P TO CONTINUE
                THE PROGRAM WHERE IT LEFT OFF, OR ^S TO RE-ENTER THE
                SWITCH MONITOR.



                8.      TEST DESCRIPTION

                8.1     TEST 1 - TRANSMITTER TEST:

                        SUBTEST 00      TEST INITIAL CONDITIONS AFTER RESET
                        SUBTEST 01      COMMAND REGISTER TEST
                        SUBTEST 02      BYTE COUNT REGISTER TEST
                        SUBTEST 03      BUS ADDRESS REGISTER TEST
                        SUBTEST 04      MASTER SECTION TEST
                        SUBTEST 05      DATA SILO TEST
                        SUBTEST 06      STATUS REGISTER AND ERRORS TEST
                        SUBTEST 07      INTERRUPT TEST
                        SUBTEST 10      C.R.C GENERATION TEST

                8.2     TEST 2 - RECEIVER TEST:

                        SUBTEST 00      TEST INITIAL CONDITIONS AFTER RESET
                        SUBTEST 01      COMMAND REGISTER TEST
                        SUBTEST 02      BYTE COUNT REGISTER TEST
                        SUBTEST 03      BUS ADDRESS REGISTER TEST
                        SUBTEST 04      DATA SILO TEST
                        SUBTEST 05      STATUS REGISTER AND ERRORS TEST
                        SUBTEST 06      INTERRUPT TEST
                        SUBTEST 07      C.R.C GENERATION TEST

                8.3     TEST 3 - XMTR-RCVR LOOP TEST:

                        SUBTEST 00      CHK NPR FROM RCVR SILO TO XMTR SILO
```

```
                    SUBTEST 01      DATA LOOPS TEST
                    SUBTEST 02      TRANSMISSION ERRORS TEST
                    SUBTEST 03      REJECT AND TRUNCATE TEST

8.4     TEST 4 - COMBINATION RUN

        RUN TEST 1 THEN
        RUN TEST 2 THEN
        RUN TEST 3 THEN
        RUN TEST 1 ETC .



8.5     THE TESTS WILL IDENTIFY THEMSELVES UPON SELECTION, IN THE
        FOLLOWING WAY:

        TEST 1  'PCL11 TRANSMITTER TEST''

        TEST 2  'PCL11 RECEIVER TEST''

        TEST 3  'TRANSMITTER - RECEIVER LOOP TESTS''

        TEST 4  'PCL11 TESTS 1 - 3 SEQUENCE''

8.6     THE TESTS WILL SIGNIFY COMPLETION BY PRINTING THE FOLLOWING
        END PASS MESSAGES ALONG WITH THE PASS COUNT IN DECIMAL:

        TEST 1  -- END PASS # N

        TEST 2  -- END PASS # NA

        TEST 3  -- END PASS # NB

        TEST 4  -- END PASS # NC
```

```
                        9.      STARTING AND OPERATING PROCEDURE

                                LOAD THE PROGRAM TAPE USING THE PDP-11 ABSOLUTE LOADER

                        9.1     START UP:

                                START PROGRAM AT 200
                                PROGRAM WILL ASK THE FOLLOWING (ONE AT A TIME)
                        XMTR 1ST UNIBUS ADDR..  (DEFAULT = 164200)
                        RCVR 1ST UNIBUS ADDR... (DEFAULT = 164220)
                        XMTR VECTOR..           (DEFAULT = 170)
                        RCVR VECTOR..           (DEFAULT   174)
                        XMTR PRIORITY (4-7)..   (DEFAULT = 5)
                        RCVR PRIORITY (4-7)..   (DEFAULT = 5)
                        XMTR TDM BUS ADDR (1-37)..      (DEFAULT = 1)
                        RCVR TDM BUS ADDR (1-37)..      (DEFAULT   1)

                        RESPOND TO EACH PROMPT WITH:
                        <CR> IF DEFAULT IS DESIRED
                        XXXXX <CR> IF XXXXX IS DESIRED FOR NEW ENTRY

                        9.11    SELECT TEST:

                                THE PROGRAM THEN TYPES:

                                SELECT TEST (<CR> FOR HELP)..

                        THE OPERATOR HAS THE FOLLOWING CHOICES:

                        1 = SELECT TEST 1 TO RUN ONLY (TRANSMITTER LOGIC TEST)
                        2 = SELECT TEST 2 TO RUN ONLY (RECEIVER LOGIC TEST)
                        3 = SELECT TEST 3 TO RUN ONLY (XMTR -TO- RCVR LOOP TEST)
                        4 = SEQUENCE TEST 1, TEST 2, TEST 3  REPETEDLY.
                        <CR>  PRINT THIS HELP MESSAGE.

                        9.12            POSSIBLE INTERVENTION:

                        9.121            IF SW 12 IS UP AT START TIME, THE FIRST SUBTEST
                                        WILL RUN CONTINUOUSLY AND THE TEST WILL NEVER
                                        ACHIEVE A SUCCESSFUL PASS COMPLETE. SWITCH 12
                                        MUST BE LEFT DOWN UNLESS AN INTERMITTENT ERROR
                                        OCCURS IN A SUBTEST AND IT IS DESIRED TO SCOPE
                                        THE MODULE WITH THE SAME SUBTEST RUNNING CONTINUOUSLY.
                                        AT ANY TIME, SW 12 MAY BE LOWERED AND THE TEST
                                        SEQUENCE WILL RESUME.

                        9.122            ANY PARTICULAR SUBTEST MAY BE STARTED BY
                                        STARTING WITH OPTION SWITCH 10 = 1 AND THE
                                        NUMBER OF THE DESIRED SUBTEST IN SW'S <3:0>.
                                        IF IT IS DESIRED, HOWEVER, TO CONTINUOUSLY
                                        RUN ONLY THE SELECTED SUBTEST, SW 12 MUST BE RAISED
                                        AS WELL AS SW 10 AT START UP TIME.

                        9.123            WHEN THE MASTER SECTION TEST HAS IT'S TURN TO RUN
                                        THE FOLLOWING MESSAGE WILL APPEAR ON THE CONSOLE
```

```
                                        PRINTER

                                           SCOPE SECTION FOR SLICE TIMING
                                           RAISE SW 09 TO EXIT THIS LOOP

                                        THIS IS A 'HANG-UP' PROVIDED FOR MAINTENANCE
                                        PURPOSES OF CHECKING AND ADJUSTING SLICE
                                        TIMING IN THE MASTER SECTION. NEITHER THE
                                        PRINTOUT NOR THE 'HANG-UP' WILL OCCUR IF
                                        SW 09 IS UP.


                                9.124    NORMALLY, 10 (OCTAL) PASSES ARE MADE OF THE
                                        COMPLETE TEST BEFORE A PASS COMPLETE IS
                                        ACHIEVED AND

                                                END PASS XX

                                        IS PRINTED ON THE CONSOLE PRINTER.
                                        HOWEVER, RAISING SW 11 WILL CAUSE EVERY SINGLE
                                        PASS TO BE CONSIDERED AS COMPLETE.

                                9.13    RESTARTING:

                                        THE TEST MAY BE RE-STARTED AT LOC. 204
                                        THIS WILL OMIT MOST OPENING DIALOGUE.
                                        THE FOLLOWING WILL STILL BE REQUESTED, HOWEVER:

                                        TRANSMITTER TDM BUS ADDRESS IS (1-37).. (DEFAULT - 1)
                                        RECEIVER TDM BUS ADDRESS IS (1-37)..    (DEFAULT   1)

                                        OR --THE TEST MAY BE RE-STARTED AT LOC. 224
                                        THIS WILL OMIT ALL OF THE OPENING DIALOGUE
                                        AND BEGIN RIGHT AT THE TEST SELECTOR.

                                9.14    (CONTROL CHARACTERS)

                                        CNTRL-C RESTART TO SELECT NEW TDM BUS ADDRESSES
                                        CNTRL-T RESTART AT TEST SELECTOR
                                        CNTRL-D MODIFY DELAY CONSTANT
                                                (NORMALLY SET FOR FASTEST PDP-11)
                                        CNTRL-S MODIFY SWITCH OPTIONS ON NON-
                                                SWITCH REGISTER PDP-11'S
                                        CNTRL-P CONTINUE AFTER CONTROL FUNCTION
                                        CNTRL-F MODIFY CONSOLE FILL COUNT
```

```
                        10      ERRORS

                                BASICALLY, THE ERRORS IN THIS TEST ARE IN THE FORM:

                                **ERROR X AT LOCATION YYYYYY

                                WHERE X IS THE ERROR NUMBER:

                                   TRANSMITTER TEST ERROR #'S 1 TO 121  (TEST # 1)
                                   RECEIVER TEST ERROR #'S 200-262      (TEST # 2)
                                   LOOP TEST ERROR #'S 300-355          (TEST # 3)

                                AND YYYYYY IS THE ADDRESS IN THE LISTING WHERE THE
                                ERROR OCCURRED.

                                REFER TO THE LISTING ABOVE THE COMMENT:

                                   ******* ERROR X *******

                                TO DETERMINE THE CAUSE OF THE ERROR PRINTOUT.

                                DATA ERRORS WILL CAUSE A FURTHER PRINTOUT INDICATING
                                THE ERRONEOUS DATA:

                                   SHOULD BE AAAAAA, WAS BBBBBB


                                OTHER ERRORS WILL CAUSE THE FOLLOWING FURTHER
                                PRINTOUTS:

                                   TRANSMITTER STATUS REGISTER = CCCCCC

                                   RECEIVER STATUS REGISTER = DDDDDD

                                   NO. OF WORDS RECEIVED = EEEEEE

                                   SILO OUTPUT WORD WAS FFFFFF

                                   SILO INPUT WORD WAS HHHHHH
```

```
                                .ENDR
                        .TITLE  CZPLBC0 PCL11 STND ALN V02C
                                .SBTTL SYMBOLIC DEFINITIONS
                                .NLIST  TTM                     ;****THESE ADDED FOR SAFETY***
                                .LIST   ME                      ;*****************************

                        ;INTERNAL DEFINITIONS:

177776                  PS      =       177776
177570                  HWSWR   =       177570
032406                  SSWR    =       SWREG

                        ;REGISTER DEFINITIONS

000000                  R0      =       %0
000001                  R1      =       %1
000002                  R2      =       %2
000003                  R3      =       %3
000004                  R4      =       %4
000005                  R5      =       %5
000006                  SP      =       %6
000007                  PC      =       %7

                        ;BUS REQUEST DEFINITIONS:

000340                  P7      =       340
000300                  P6      =       300
000240                  P5      =       240
000200                  P4      =       200
000140                  P3      =       140
000100                  P2      =       100
000040                  P1      =       40

                        ;BIT DEFINITIONS:

100000                  B15     =       100000
040000                  B14     =       40000
020000                  B13     =       20000
010000                  B12     =       10000
004000                  B11     =       4000
002000                  B10     =       2000
001000                  B09     =       1000
000400                  B08     =       400
000200                  B07     =       200
000100                  B06     =       100
000040                  B05     =       40
000020                  B04     =       20
000010                  B03     =       10
000004                  B02     =       4
000002                  B01     =       2
000001                  B00     =       1

                        ;OTHER DEFINITIONS:

002000                  ISP     =       BEGIN                   ;INITIAL STACK POINTER
```

```
                                .SBTTL MACRO DEFINITIONS

                                ;BOARD INITIALIZE MACRO

                                        .MACRO  BDINIT  DEV
                                        .NLIST
                                .IF     IDN     <DEV>,<XMTR>
                                        BIS     #B01,@TCR
                                .IFF
                                   .IF  IDN     <DEV>,<RCVR>
                                        BIS     #B01,@RCR
                                   .IFF
                                        .ERROR          ;BAD ARGUMENT FOR BDINIT
                                   .ENDC
                                .ENDC
                                        .LIST
                                        .ENDM

000001                          N       =       1                       ;INITIAL ERROR NUMBER
                                ;ERROR MACROS

                                        .MACRO  ERROR   P
                                                                        ;******* ERROR P *******
                                        BIT     #B14,@SR
                                        BNE     .+14
                                        MOV     #P,ERRNUM
                                        JSR     PC,E.R
                                N       =       N+1
                                        .ENDM

                                        .MACRO  DATERR  P
                                                                        ;******* ERROR P *******
                                        BIT     #B14,@SR
                                        BNE     .+14
                                        MOV     #P,ERRNUM
                                        JSR     PC,DERR
                                N       =       N+1
                                        .ENDM

                                        .MACRO  HLT
                                        JSR     PC,SWHLT
                                        .ENDM

                                ;PRINT MACRO (MSG ADDR IN R0)

                                        .MACRO  PNTM    A
                                        MOV     #A,R0           ;PRINT MESSAGE
                                        JSR     PC,TYPOUT               ;POINTED TO BY A
                                        .ENDM

                                ;SCOPE LOOP MACRO

                                        .MACRO  SCOPE   X
                                        JSR     R5,SCPRTN
                                        X
                                        .ENDM
```

```
                        ;INTER-PDP-11 COMPATABLE MOVE TO PS
                        ;TO RUN ON LSI-11: CHANGE THIS MACRO TO:
                        ;       MOV     SRC,-(SP)
                        ;       MOV     #LLL,-(SP)
                        ;       RTI
                        ;LLL:

                                .MACRO  MTPS    SRC,?LLL
                                MOV     SRC,@#PS
                                .ENDM

                        ;REGISTER SAVE AND RESTORE MACRO'S


                                .MACRO  REGSAV
                                JSR     R5,REGSAV
                                .ENDM

                                .MACRO  REGRES
                                JSR     R5,REGRES
                                .ENDM
```

```
                                .SBTTL TRAP CATCHERS
                                .ENABLE ABS
                        000000  .       =       0
000000  000002                  .WORD   .+2
000002  000000                  .WORD   0
000004  004476                  .WORD   ERRTRP                  ;TRAP BAD DEVICE ADDRESSES
000006  000340                  .WORD   340
        000176                  .REPT   126.
                                .WORD   .+2
                                .WORD   0
                                .ENDR
(1)  000010  000012             .WORD   .+2
(1)  000012  000000             .WORD   0
(1)  000014  000016             .WORD   .+2
(1)  000016  000000             .WORD   0
(1)  000020  000022             .WORD   .+2
(1)  000022  000000             .WORD   0
(1)  000024  000026             .WORD   .+2
(1)  000026  000000             .WORD   0
(1)  000030  000032             .WORD   .+2
(1)  000032  000000             .WORD   0
(1)  000034  000036             .WORD   .+2
(1)  000036  000000             .WORD   0
(1)  000040  000042             .WORD   .+2
(1)  000042  000000             .WORD   0
(1)  000044  000046             .WORD   .+2
(1)  000046  000000             .WORD   0
(1)  000050  000052             .WORD   .+2
(1)  000052  000000             .WORD   0
(1)  000054  000056             .WORD   .+2
(1)  000056  000000              WORD   0
(1)  000060  000062             .WORD   .+2
(1)  000062  000000             .WORD   0
(1)  000064  000066             .WORD   .+2
(1)  000066  000000             .WORD   0
(1)  000070  000072             .WORD   .+2
(1)  000072  000000             .WORD   0
(1)  000074  000076             .WORD   .+2
(1)  000076  000000             .WORD   0
(1)  000100  000102             .WORD   .+2
(1)  000102  000000             .WORD   0
(1)  000104  000106             .WORD   .+2
(1)  000106  000000             .WORD   0
(1)  000110  000112             .WORD   .+2
(1)  000112  000000             .WORD   0
(1)  000114  000116             .WORD   .+2
(1)  000116  000000             .WORD   0
(1)  000120  000122             .WORD   .+2
(1)  000122  000000             .WORD   0
(1)  000124  000126             .WORD   .+2
(1)  000126  000000             .WORD   0
(1)  000130  000132             .WORD   .+2
(1)  000132  000000             .WORD   0
(1)  000134  000136             .WORD   .+2
(1)  000136  000000             .WORD   0
(1)  000140  000142             .WORD   .+2
```

```
(1)  000142  000000                    .WORD   0
(1)  000144  000146                    .WORD   .+2
(1)  000146  000000                    .WORD   0
(1)  000150  000152                    .WORD   .+2
(1)  000152  000000                    .WORD   0
(1)  000154  000156                    .WORD   .+2
(1)  000156  000000                    .WORD   0
(1)  000160  000162                    .WORD   .+2
(1)  000162  000000                    .WORD   0
(1)  000164  000166                    .WORD   .+2
(1)  000166  000000                    .WORD   0
(1)  000170  000172                    .WORD   .+2
(1)  000172  000000                    .WORD   0
(1)  000174  000176                    .WORD   .+2
(1)  000176  000000                    .WORD   0
(1)  000200  000202                    .WORD   .+2
(1)  000202  000000                    .WORD   0
(1)  000204  000206                    .WORD   .+2
(1)  000206  000000                    .WORD   0
(1)  000210  000212                    .WORD   .+2
(1)  000212  000000                    .WORD   0
(1)  000214  000216                    .WORD   .+2
(1)  000216  000000                    .WORD   0
(1)  000220  000222                    .WORD   .+2
(1)  000222  000000                    .WORD   0
(1)  000224  000226                    .WORD   .+2
(1)  000226  000000                    .WORD   0
(1)  000230  000232                    .WORD   .+2
(1)  000232  000000                    .WORD   0
(1)  000234  000236                    .WORD   .+2
(1)  000236  000000                    .WORD   0
(1)  000240  000242                    .WORD   .+2
(1)  000242  000000                    .WORD   0
(1)  000244  000246                    .WORD   .+2
(1)  000246  000000                    .WORD   0
(1)  000250  000252                    .WORD   .+2
(1)  000252  000000                    .WORD   0
(1)  000254  000256                    .WORD   .+2
(1)  000256  000000                    .WORD   0
(1)  000260  000262                    .WORD   .+2
(1)  000262  000000                    .WORD   0
(1)  000264  000266                    .WORD   .+2
(1)  000266  000000                    .WORD   0
(1)  000270  000272                    .WORD   .+2
(1)  000272  000000                    .WORD   0
(1)  000274  000276                    .WORD   .+2
(1)  000276  000000                    .WORD   0
(1)  000300  000302                    .WORD   .+2
(1)  000302  000000                    .WORD   0
(1)  000304  000306                    .WORD   .+2
(1)  000306  000000                    .WORD   0
(1)  000310  000312                    .WORD   .+2
(1)  000312  000000                    .WORD   0
(1)  000314  000316                    .WORD   .+2
(1)  000316  000000                    .WORD   0
(1)  000320  000322                    .WORD   .+2
```

```
(1)  000322  000000                    .WORD   0
(1)  000324  000326                    .WORD   .+2
(1)  000326  000000                    .WORD   0
(1)  000330  000332                    .WORD   .+2
(1)  000332  000000                    .WORD   0
(1)  000334  000336                    .WORD   .+2
(1)  000336  000000                    .WORD   0
(1)  000340  000342                    .WORD   .+2
(1)  000342  000000                    .WORD   0
(1)  000344  000346                    .WORD   .+2
(1)  000346  000000                    .WORD   0
(1)  000350  000352                    .WORD   .+2
(1)  000352  000000                    .WORD   0
(1)  000354  000356                    .WORD   .+2
(1)  000356  000000                    .WORD   0
(1)  000360  000362                    .WORD   .+2
(1)  000362  000000                    .WORD   0
(1)  000364  000366                    .WORD   .+2
(1)  000366  000000                    .WORD   0
(1)  000370  000372                    .WORD   .+2
(1)  000372  000000                    .WORD   0
(1)  000374  000376                    .WORD   .+2
(1)  000376  000000                    .WORD   0
(1)  000400  000402                    .WORD   .+2
(1)  000402  000000                    .WORD   0
(1)  000404  000406                    .WORD   .+2
(1)  000406  000000                    .WORD   0
(1)  000410  000412                    .WORD   .+2
(1)  000412  000000                    .WORD   0
(1)  000414  000416                    .WORD   .+2
(1)  000416  000000                    .WORD   0
(1)  000420  000422                    .WORD   .+2
(1)  000422  000000                    .WORD   0
(1)  000424  000426                    .WORD   .+2
(1)  000426  000000                    .WORD   0
(1)  000430  000432                    .WORD   .+2
(1)  000432  000000                    .WORD   0
(1)  000434  000436                    .WORD   .+2
(1)  000436  000000                    .WORD   0
(1)  000440  000442                    .WORD   .+2
(1)  000442  000000                    .WORD   0
(1)  000444  000446                    .WORD   .+2
(1)  000446  000000                    .WORD   0
(1)  000450  000452                    .WORD   .+2
(1)  000452  000000                    .WORD   0
(1)  000454  000456                    .WORD   .+2
(1)  000456  000000                    .WORD   0
(1)  000460  000462                    .WORD   .+2
(1)  000462  000000                    .WORD   0
(1)  000464  000466                    .WORD   .+2
(1)  000466  000000                    .WORD   0
(1)  000470  000472                    .WORD   .+2
(1)  000472  000000                    .WORD   0
(1)  000474  000476                    .WORD   .+2
(1)  000476  000000                    .WORD   0
(1)  000500  000502                    .WORD   .+2
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(1)  000502  000000                    .WORD   0
(1)  000504  000506                    .WORD   .+2
(1)  000506  000000                    .WORD   0
(1)  000510  000512                    .WORD   .+2
(1)  000512  000000                    .WORD   0
(1)  000514  000516                    .WORD   .+2
(1)  000516  000000                    .WORD   0
(1)  000520  000522                    .WORD   .+2
(1)  000522  000000                    .WORD   0
(1)  000524  000526                    .WORD   .+2
(1)  000526  000000                    .WORD   0
(1)  000530  000532                    .WORD   .+2
(1)  000532  000000                    .WORD   0
(1)  000534  000536                    .WORD   .+2
(1)  000536  000000                    .WORD   0
(1)  000540  000542                    .WORD   .+2
(1)  000542  000000                    .WORD   0
(1)  000544  000546                    .WORD   .+2
(1)  000546  000000                    .WORD   0
(1)  000550  000552                    .WORD   .+2
(1)  000552  000000                    .WORD   0
(1)  000554  000556                    .WORD   .+2
(1)  000556  000000                    .WORD   0
(1)  000560  000562                    .WORD   .+2
(1)  000562  000000                    .WORD   0
(1)  000564  000566                    .WORD   .+2
(1)  000566  000000                    .WORD   0
(1)  000570  000572                    .WORD   .+2
(1)  000572  000000                    .WORD   0
(1)  000574  000576                    .WORD   .+2
(1)  000576  000000                    .WORD   0
(1)  000600  000602                    .WORD   .+2
(1)  000602  000000                    .WORD   0
(1)  000604  000606                    .WORD   .+2
(1)  000606  000000                    .WORD   0
(1)  000610  000612                    .WORD   .+2
(1)  000612  000000                    .WORD   0
(1)  000614  000616                    .WORD   .+2
(1)  000616  000000                    .WORD   0
(1)  000620  000622                    .WORD   .+2
(1)  000622  000000                    .WORD   0
(1)  000624  000626                    .WORD   .+2
(1)  000626  000000                    .WORD   0
(1)  000630  000632                    .WORD   .+2
(1)  000632  000000                    .WORD   0
(1)  000634  000636                    .WORD   .+2
(1)  000636  000000                    .WORD   0
(1)  000640  000642                    .WORD   .+2
(1)  000642  000000                    .WORD   0
(1)  000644  000646                    .WORD   .+2
(1)  000646  000000                    .WORD   0
(1)  000650  000652                    .WORD   .+2
(1)  000652  000000                    .WORD   0
(1)  000654  000656                    .WORD   .+2
(1)  000656  000000                    .WORD   0
(1)  000660  000662                    .WORD   .+2
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(1)  000662  000000                    .WORD   0
(1)  000664  000666                    .WORD   .+2
(1)  000666  000000                    .WORD   0
(1)  000670  000672                    .WORD   .+2
(1)  000672  000000                    .WORD   0
(1)  000674  000676                    .WORD   .+2
(1)  000676  000000                    .WORD   0
(1)  000700  000702                    .WORD   .+2
(1)  000702  000000                    .WORD   0
(1)  000704  000706                    .WORD   .+2
(1)  000706  000000                    .WORD   0
(1)  000710  000712                    .WORD   .+2
(1)  000712  000000                    .WORD   0
(1)  000714  000716                    .WORD   .+2
(1)  000716  000000                    .WORD   0
(1)  000720  000722                    .WORD   .+2
(1)  000722  000000                    .WORD   0
(1)  000724  000726                    .WORD   .+2
(1)  000726  000000                    .WORD   0
(1)  000730  000732                    .WORD   .+2
(1)  000732  000000                    .WORD   0
(1)  000734  000736                    .WORD   .+2
(1)  000736  000000                    .WORD   0
(1)  000740  000742                    .WORD   .+2
(1)  000742  000000                    .WORD   0
(1)  000744  000746                    .WORD   .+2
(1)  000746  000000                    .WORD   0
(1)  000750  000752                    .WORD   .+2
(1)  000752  000000                    .WORD   0
(1)  000754  000756                    .WORD   .+2
(1)  000756  000000                    .WORD   0
(1)  000760  000762                    .WORD   .+2
(1)  000762  000000                    .WORD   0
(1)  000764  000766                    .WORD   .+2
(1)  000766  000000                    .WORD   0
(1)  000770  000772                    .WORD   .+2
(1)  000772  000000                    .WORD   0
(1)  000774  000776                    .WORD   .+2
(1)  000776  000000                    .WORD   0
```

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                                        .SBTTL TEST SUPERVISOR

                000200                  .       =       200

000200  000167  001574                  JMP     BEGIN                   ;TEST STARTS AT 200
000204  012706  002000                  MOV     #ISP,SP
000210                                  MTPS    #P7
(1) 000210  012737  000340  177776      MOV     #P7,@#PS
000216  000005                          RESET
000220  000167  002646                  JMP     RESTRT
000224  012706  002000                  MOV     #ISP,SP
000230                                  MTPS    #P7
(1) 000230  012737  000340  177776      MOV     #P7,@#PS
000236  000167  003104                  JMP     BCONT                   ;GO TO TEST SELECT

                002000                  .       =       2000

002000  000005                  BEGIN:  RESET                           ;CLEAR ALL
002002  012706  002000                  MOV     #ISP,SP                 ;SET UP STACK
002006                                  MTPS    #P7                     ;DISABLE C.P. INTERRUPT
(1) 002006  012737  000340  177776      MOV     #P7,@#PS
002014  005067  034032                  CLR     SWRFLG                  ;CLEAR SWR FLAG
002020  012737  004210  000004          MOV     #SRTST,@#4              ;SET UP TO TRAP IF NO HSWR
002026  012737  000340  000006          MOV     #P7,@#6
002034  012767  177570  030346          MOV     #HWSWR,SR               ;SET SR TO HDWARE SW REG
002042  005777  030342                  TST     @SR                     ;SEE IF IT'S THERE
002046                                  PNTM    TSTHDR                  ;PRINT TEST HEADER
(1) 002046  012700  035447              MOV     #TSTHDR,R0              ;PRINT MESSAGE
(1) 002052  004767  030572              JSR     PC,TYPOUT               ;POINTED TO BY TSTHDR
002056                          PROMT:  PNTM    TMTR                    ;PRINT "TRANSMITTER"
(1) 002056  012700  035065              MOV     #TMTR,R0                ;PRINT MESSAGE
(1) 002062  004767  030562              JSR     PC,TYPOUT               ;POINTED TO BY TMTR
002066                                  PNTM    FRAD                    ;PRINT "1ST BUS ADDR"
(1) 002066  012700  035103              MOV     #FRAD,R0                ;PRINT MESSAGE
(1) 002072  004767  030552              JSR     PC,TYPOUT               ;POINTED TO BY FRAD
002076  016700  034104                  MOV     TXMADR,R0               ;PRINT DEFAULT ADDR
002102  004767  031C60                  JSR     PC,OCTPNT
002106                                  PNTM    TWOSP
(1) 002106  012700  032401              MOV     #TWOSP,R0               ;PRINT MESSAGE
(1) 002112  004767  030532              JSR     PC,TYPOUT               ,POINTED TO BY TWOSP
002116  016767  034064  031040          MOV     TXMADR,KBBUF            ;LOAD DEFAULT ADDR
002124  004767  030562                  JSR     PC,INPKB                ;GET KBD INPUT
002130  016767  031030  034050          MOV     KBBUF,TXMADR            ;REPLACE XMTR ADDR
002136  026727  034044  164000          CMP     TXMADR,#164000          ;IS IT WITHIN LIMITS?
002144  103006                          BHIS    PRMT1                   ;YES, CARRY ON
002146                                  PNTM    TOOLOW                  ;NO ERROR, ASK AGAIN
(1) 002146  012700  035125              MOV     #TOOLOW,R0              ;PRINT MESSAGE
(1) 002152  004767  030472              JSR     PC,TYPOUT               ;POINTED TO BY TOOLOW
002156  000167  177674                  JMP     PROMT
002162  012737  004456  000004  PRMT1:  MOV     #DVATST,@#4
002170  005777  034012                  TST     @TXMADR                 ;IS IT A GOOD ADDRESS?
002174                          PRMT2:  PNTM    RECVR                   ;PRINT "RECEIVER"
(1) 002174  012700  035074              MOV     #RECVR,R0               ;PRINT MESSAGE
(1) 002200  004767  030444              JSR     PC,TYPOUT               ;POINTED TO BY RECVR
002204                                  PNTM    FRAD                    ;PRINT 1ST UNIBUS ADDR"
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(1)  002204  012700  035103            MOV     #FRAD,R0          ;PRINT MESSAGE
(1)  002210  004767  030434            JSR     PC,TYPOUT         ;POINTED TO BY FRAD
604  002214  016700  033770            MOV     RCVADR,R0         ;PRINT DEFAULT ADDRESS
605  002220  004767  030742            JSR     PC,OCTPNT
606  002224                           PNTM    TWOSP
(1)  002224  012700  032401            MOV     #TWOSP,R0         ;PRINT MESSAGE
(1)  002230  004767  030414            JSR     PC,TYPOUT         ;POINTED TO BY TWOSP
607  002234  016767  033750  030722    MOV     RCVADR,KBBUF      ;LOAD DEFAULT ADDRESS
608  002242  004767  030444            JSR     PC,INPKB          ;GET KBD INPUT
609  002246  016767  030712  033734    MOV     KBBUF,RCVADR      ;LOAD NEW ADDRESS
610  002254  026727  033730  164000    CMP     RCVADR,#164000    ;IS IT WITHIN LIMITS?
611  002262  103006                    BHIS    PRMT3             ;YES, CARRY ON
612  002264                           PNTM    TOOLOW
(1)  002264  012700  035125            MOV     #TOOLOW,R0        ;PRINT MESSAGE
(1)  002270  004767  030354            JSR     PC,TYPOUT         ;POINTED TO BY TOOLOW
613  002274  000167  177674            JMP     PRMT2
614  002300  005777  033704  PRMT3:    TST     @RCVADR           ;IS IT A GOOD ADDRESS?
615  002304  012737  004476  000004    MOV     #ERRTRP,@#4       ;SET UP FOR FURTHER TRAPS
616  002312           PRMT4:          PNTM    TMTR              ;PRINT "TRANSMITTER"
(1)  002312  012700  035065            MOV     #TMTR,R0          ;PRINT MESSAGE
(1)  002316  004767  030326            JSR     PC,TYPOUT         ;POINTED TO BY TMTR
617  002322                           PNTM    VCTR              ;PRINT "VECTOR IS"
(1)  002322  012700  035245            MOV     #VCTR,R0          ;PRINT MESSAGE
(1)  002326  004767  030316            JSR     PC,TYPOUT         ;POINTED TO BY VCTR
618  002332  016700  033644            MOV     TXMVEC,R0         ;PRINT DEFAULT VECTOR
619  002336  004767  030624            JSR     PC,OCTPNT
620  002342                           PNTM    TWOSP
(1)  002342  012700  032401            MOV     #TWOSP,R0         ;PRINT MESSAGE
(1)  002346  004767  030276            JSR     PC,TYPOUT         ;POINTED TO BY TWOSP
621  002352  016767  033624  030604    MOV     TXMVEC,KBBUF      ;LOAD DEFAULT VECTOR
622  002360  004767  030326            JSR     PC,INPKB          ;GET KBD INPUT
623  002364  016767  030574  033610    MOV     KBBUF,TXMVEC      ;REPLACE XMTR VECTOR
624  002372  026727  030566  000776    CMP     KBBUF,#776        ;IS IT WITHIN LIMITS?
625  002400  101406                    BLOS    PRMT5
626  002402                           PNTM    AGAIN             ;NO, TELL HIM
(1)  002402  012700  035211            MOV     #AGAIN,R0         ;PRINT MESSAGE
(1)  002406  004767  030236            JSR     PC,TYPOUT         ;POINTED TO BY AGAIN
627  002412  000167  177674            JMP     PRMT4
628  002416           PRMT5:          PNTM    RECVR             ;PRINT "RECEIVER"
(1)  002416  012700  035074            MOV     #RECVR,R0         ;PRINT MESSAGE
(1)  002422  004767  030222            JSR     PC,TYPOUT         ;POINTED TO BY RECVR
629  002426                           PNTM    VCTR              ;PRINT "VECTOR IS"
(1)  002426  012700  035245            MOV     #VCTR,R0          ;PRINT MESSAGE
(1)  002432  004767  030212            JSR     PC,TYPOUT         ;POINTED TO BY VCTR
630  002436  016700  033542            MOV     RCVVEC,R0         ;PRINT DEFAULT VECTOR
631  002442  004767  030520            JSR     PC,OCTPNT
632  002446                           PNTM    TWOSP
(1)  002446  012700  032401            MOV     #TWOSP,R0         ;PRINT MESSAGE
(1)  002452  004767  030172            JSR     PC,TYPOUT         ;POINTED TO BY TWOSP
633  002456  016767  033522  030500    MOV     RCVVEC,KBBUF      ;LOAD DEFAULT VECTOR
634  002464  004767  030222            JSR     PC,INPKB          ;GET KEYBOARD INPUT
635  002470  016767  030470  033506    MOV     KBBUF,RCVVEC      ;LOAD NEW VECTOR
636  002476  026727  030462  000776    CMP     KBBUF,#776        ;IS IT WITHIN LIMITS
637  002504  101406                    BLOS    PRMT6
638  002506                           PNTM    AGAIN
(1)  002506  012700  035211            MOV     #AGAIN,R0         ;PRINT MESSAGE
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(1)  002512  004767  030132                    JSR     PC,TYPOUT               ;POINTED TO BY AGAIN
634  002516  000167  177674                    JMP     PRMT5
640  002522                          PRMT6:    PNTM    TMTR                    ;PRINT 'TRANSMITTER'
(1)  002522  012700  035065                    MOV     #TMTR,R0                ;PRINT MESSAGE
(1)  002526  004767  030116                    JSR     PC,TYPOUT               ;POINTED TO BY TMTR
641  002532                                    PNTM    PRIOTY                  ;PRINT 'PRIORITY LEVEL IS'
(1)  002532  012700  035256                    MOV     #PRIOTY,R0              ;PRINT MESSAGE
(1)  002536  004767  030106                    JSR     PC,TYPOUT               ;POINTED TO BY PRIOTY
642  002542  016700  033350                    MOV     FKPRI0,R0               ;PRINT DEFAULT PRIORITY
643  002546  004767  030414                    JSR     PC,OCTPNT
644  002552                                    PNTM    TWOSP
(1)  002552  012700  032401                    MOV     #TWOSP,R0               ;PRINT MESSAGE
(1)  002556  004767  030066                    JSR     PC,TYPOUT               ;POINTED TO BY TWOSP
645  002562  016767  033330  030374            MOV     FKPRI0,KBBUF            ;LOAD DEFAULT PRIORITY
646  002570  004767  030116                    JSR     PC,INPKB                ;GET KBD INPUT
647  002574  026727  030364  000007            CMP     KBBUF,#7                ;IS IT WITHIN LIMITS
648  002602  003406                            BLE     PRMT7                   ;LOW ENOUGH, O.K.
649  002604                                    PNTM    AGAIN
(1)  002604  012700  035211                    MOV     #AGAIN,R0               ;PRINT MESSAGE
(1)  002610  004767  030034                    JSR     PC,TYPOUT               ;POINTED TO BY AGAIN
650  002614  000167  177702                    JMP     PRMT6
651  002620  026727  030340  000004  PRMT7:    CMP     KBBUF,#4                ;HIGH ENOUGH?
652  002626  002006                            BGE     PRMT8
653  002630                                    PNTM    AGAIN
(1)  002630  012700  035211                    MOV     #AGAIN,R0               ;PRINT MESSAGE
(1)  002634  004767  030010                    JSR     PC,TYPOUT               ;POINTED TO BY AGAIN
654  002640  000167  177656                    JMP     PRMT6
655  002644  016767  030314  033244  PRMT8:    MOV     KBBUF,FKPRI0
656  002652  006367  030306                    ASL     KBBUF
657  002656  006367  030302                    ASL     KBBUF
658  002662  006367  030276                    ASL     KBBUF
659  002666  006367  030272                    ASL     KBBUF
660  002672  006367  030266                    ASL     KBBUF                   ;SHIFT INTO PLACE
661  002676  016767  030262  033222            MOV     KBBUF,XPRIO             ;LOAD NEW PRIORITY.
662  002704                          PRMT9:    PNTM    RECVR                   ;PRINT 'RECEIVER
(1)  002704  012700  035074                    MOV     #RECVR,R0               ;PRINT MESSAGE
(1)  002710  004767  027734                    JSR     PC,TYPOUT               ;POINTED TO BY RECVR
663  002714                                    PNTM    PRIOTY                  ;PRINT 'PRIORITY LEVEL IS'
(1)  002714  012700  035256                    MOV     #PRIOTY,R0              ;PRINT MESSAGE
(1)  002720  004767  027724                    JSR     PC,TYPOUT               ;POINTED TO BY PRIOTY
664  002724  016700  033170                    MOV     FKPRI1,R0               ;PRINT DEFAULT PRIORITY
665  002730  004767  030232                    JSR     PC,OCTPNT
666  002734                                    PNTM    TWOSP
(1)  002734  012700  032401                    MOV     #TWOSP,R0               ;PRINT MESSAGE
(1)  002740  004767  027704                    JSR     PC,TYPOUT               ;POINTED TO BY TWOSP
667  002744  016767  033150  030212            MOV     FKPRI1,KBBUF            ;LOAD DEFAULT PRIORITY
668  002752  004767  027734                    JSR     PC,INPKB                ;GET KBD INPUT
669  002756  026727  030202  000007            CMP     KBBUF,#7                ;LOW ENOUGH, O.K.
670  002764  003406                            BLE     3$
671  002766                                    PNTM    AGAIN
(1)  002766  012700  035211                    MOV     #AGAIN,R0               ;PRINT MESSAGE
(1)  002772  004767  027652                    JSR     PC,TYPOUT               ;POINTED TO BY AGAIN
672  002776  000167  177702                    JMP     PRMT9
673  003002  026727  030156  000004  3$:       CMP     KBBUF,#4                ;HIGH ENOUGH?
674  003010  002006                            BGE     4$
675  003012                                    PNTM    AGAIN
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(1)  003012  012700  035211            MOV     #AGAIN,R0               ;PRINT MESSAGE
(1)  003016  004767  027626            JSR     PC,TYPOUT               ;POINTED TO BY AGAIN
676  003022  000167  177656            JMP     PRMT9
677  003026  016767  030132  033064  4$:  MOV   KBBUF,FKPRI1
678  003034  006367  030124            ASL     KBBUF
679  003040  006367  030120            ASL     KBBUF
680  003044  006367  030114            ASL     KBBUF
681  003050  006367  030110            ASL     KBBUF
682  003054  006367  030104            ASL     KBBUF                   ;SHIFT INTO PLACE
683  003060  016767  030100  033042      MOV   KBBUF,RPRIO             ;LOAD NEW PRIORITY
684  003066  004767  001172            JSR     PC,DEVGEN               ;GENERATE PCL-11 ADDRESSES
685  003072                         RESTRT: PNTM  TMTR                  ;PRINT 'TRANSMITTER'
(1)  003072  012700  035065            MOV     #TMTR,R0                ;PRINT MESSAGE
(1)  003076  004767  027546            JSR     PC,TYPOUT               ;POINTED TO BY TMTR
686  003102                            PNTM    TDMAD                   ;PRINT 'TDM BUS ADDRESS'
(1)  003102  012700  035300            MOV     #TDMAD,R0               ;PRINT MESSAGE
(1)  003106  004767  027536            JSR     PC,TYPOUT               ;POINTED TO BY TDMAD
687  003112  012700  000001            MOV     #1,R0                   ;PRINT '1' AS DEFAULT
688  003116  004767  030044            JSR     PC,OCTPNT
689  003122                            PNTM    TWOSP
(1)  003122  012700  032401            MOV     #TWOSP,R0               ;PRINT MESSAGE
(1)  003126  004767  027516            JSR     PC,TYPOUT               ;POINTED TO BY TWOSP
690  003132  012767  000001  030024    MOV     #1,KBBUF                ;LOAD DEFAULT OF '1'
691  003140  004767  027546            JSR     PC,INPKB                ;GET KBD INPUT.
692  003144  005767  030014            TST     KBBUF                   ;DON'T ALLOW 0
693  003150  001006                    BNE     ADOK
694  003152                            PNTM    AGAIN
(1)  003152  012700  035211            MOV     #AGAIN,R0               ;PRINT MESSAGE
(1)  003156  004767  027466            JSR     PC,TYPOUT               ;POINTED TO BY AGAIN
695  003162  000167  177704            JMP     RESTRT
696  003166  026727  027772  000040  ADOK:  CMP   KBBUF,#40            ;CAN'T BE 40 OR HIGHER
697  003174  103406                    BLO     ADGD
698  003176                            PNTM    AGAIN
(1)  003176  012700  035211            MOV     #AGAIN,R0               ;PRINT MESSAGE
(1)  003202  004767  027442            JSR     PC,TYPOUT               ;POINTED TO BY AGAIN
699  003206  000167  177660            JMP     RESTRT
700  003212  116767  027746  032667  ADGD:  MOVB  KBBUF,TRAD+1          ;SAVE ADDR IN UPPER BYTE
701  003220                         PRMT10: PNTM  RECVR                 ;PRINT 'RECIEVER'
(1)  003220  012700  035074            MOV     #RECVR,R0               ;PRINT MESSAGE
(1)  003224  004767  027420            JSR     PC,TYPOUT               ;POINTED TO BY RECVR
702  003230                            PNTM    TDMAD                   ;PRINT 'TDM BUS ADDRESS'
(1)  003230  012700  035300            MOV     #TDMAD,R0               ;PRINT MESSAGE
(1)  003234  004767  027410            JSR     PC,TYPOUT               ;POINTED TO BY TDMAD
703  003240  012700  000001            MOV     #1,R0                   ;PRINT '1' AS DEFAULT
704  003244  004767  027716            JSR     PC,OCTPNT
705  003250                            PNTM    TWOSP
(1)  003250  012700  032401            MOV     #TWOSP,R0               ;PRINT MESSAGE
(1)  003254  004767  027370            JSR     PC,TYPOUT               ;POINTED TO BY TWOSP
706  003260  012767  000001  027676    MOV     #1,KBBUF                ;LOAD DEFAULT OF 1
707  003266  004767  027420            JSR     PC,INPKB                ;GET KBD INPUT
708  003272  005767  027666            TST     KBBUF                   ;DON'T ALLOW 0
709  003276  001006                    BNE     ADROK
710  003300                            PNTM    AGAIN
(1)  003300  012700  035211            MOV     #AGAIN,R0               ;PRINT MESSAGE
(1)  003304  004767  027340            JSR     PC,TYPOUT               ;POINTED TO BY AGAIN
711  003310  000167  177704            JMP     PRMT10
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 712  003314  026727  027644  000040  ADROK:  CMP     KBBUF,#40               ;CAN'T BE 40 OR HIGHER
 713  003322  103406                          BLO     ADRGD
 714  003324                                  PNTM    AGAIN
 (1)  003324  012700  035211                  MOV     #AGAIN,R0               ;PRINT MESSAGE
 (1)  003330  004767  027314                  JSR     PC,TYPOUT               ;POINTED TO BY AGAIN
 715  003334  000167  177660                  JMP     PRMT10
 716  003340  116767  027620  032537  ADRGD:  MOVB    KBBUF,RCAD+1            ;SAVE ADDR IN UPPER BYTE
 717  003346                          BCONT:  PNTM    TSTSEL                  ;PRINT 'SELECT TEST <CR> = HELP''
 (1)  003346  012700  035533                  MOV     #TSTSEL,R0              ;PRINT MESSAGE
 (1)  003352  004767  027272                  JSR     PC,TYPOUT               ;POINTED TO BY TSTSEL
 718  003356  012767  000077  027600          MOV     #77,KBBUF               ;DEFAULT TO HELP
 719  003364  004767  027322                  JSR     PC,INPKB                ;GET KEYBOARD INPUT
 720  003370  026727  027570  000005          CMP     KBBUF,#5                ;DID HE TYPE 5 OR HIGHER?
 721  003376  103005                          BHIS    BHLPMG                  ;YES, GIVE ASSISTANCE.
 722  003400  005767  027560                  TST     KBBUF                   ;HOPE IT WASN'T '0''
 723  003404  001402                          BEQ     BHLPMG                  ;'CAUSE THAT'S NO GOOD EITHER
 724  003406  000167  000014                  JMP     TESTGO                  ;EVERYTHING OK. GO TO TESTS
 725  003412                          BHLPMG: PNTM    HLPMSG                  ;NO GOOD, PRINT HELP MESSAGE.
 (1)  003412  012700  035570                  MOV     #HLPMSG,R0              ;PRINT MESSAGE
 (1)  003416  004767  027226                  JSR     PC,TYPOUT               ;POINTED TO BY HLPMSG
 726  003422  000167  177720                  JMP     BCONT
 727
 728  003426  016767  027532  032444  TESTGO: MOV     KBBUF,TESTNO            ;SAVE TEST NUMBER
 729  003434  005767  032412                  TST     SWRFLG                  ;GOT ANY SWITCHES?
 730  003440  001402                          BEQ     1$                      ;YES, YOU'RE ON YOUR OWN
 731  003442  004767  026256                  JSR     PC,SWDMP                ;OTHERWISE, SHOW SW OPTIONS.
 732  003446  005067  032414          1$:     CLR     PSNO1                   ;CLEAR END PASS COUNTER
 733  003452  005067  032412                  CLR     PSNO2                   ;CLEAR END PASS A COUNTER
 734  003456  005067  032410                  CLR     PSNO3                   ;CLEAR END PASS B COUNTER
 735  003462  005067  032406                  CLR     PSNO4                   ;CLEAR END PASS C COUNTER
 736  003466  026727  032406  000001          CMP     TESTNO,#1               ;SELECT TEST 1?
 737  003474  001012                          BNE     2$                      ;NO.
 738  003476  005067  032400                  CLR     $4FLAG                  ;CLEAR END PASS INHIBIT FLAG
 739  003502                                  PNTM    TXHDR                   ;PRINT XMTR TEST HEADER
 (1)  003502  012700  034671                  MOV     #TXHDR,R0               ;PRINT MESSAGE
 (1)  003506  004767  027136                  JSR     PC,TYPOUT               ;POINTED TO BY TXHDR
 740  003512  004767  000220          11$:    JSR     PC,TEST1                ;YES, GO DO IT (LOOP)
 741  003516  000167  177770                  JMP     11$
 742  003522  026727  032352  000002  2$:     CMP     TESTNO,#2               ;SELECT TEST 2?
 743  003530  001012                          BNE     3$                      ;NO.
 744  003532  005067  032344                  CLR     $4FLAG                  ;CLEAR END PASS INHIBIT FLAG
 745  003536                                  PNTM    RCHDR                   ;PRINT RCVR TEST HEADER
 (1)  003536  012700  034725                  MOV     #RCHDR,R0               ;PRINT MESSAGE
 (1)  003542  004767  027102                  JSR     PC,TYPOUT               ;POINTED TO BY RCHDR
 746  003546  004767  011362          21$:    JSR     PC,TEST2                ;YES, GO DO IT (LOOP)
 747  003552  000167  177770                  JMP     21$
 748  003556  026727  032316  000003  3$:     CMP     TESTNO,#3               ;SELECT TEST 3?
 749  003564  001012                          BNE     4$                      ;NO.
 750  003566  005067  032310                  CLR     $4FLAG                  ;CLEAR END PASS INHIBIT FLAG
 751  003572                                  PNTM    XRHDR                   ;PRINT LOOP TEST HEADER
 (1)  003572  012700  034756                  MOV     #XRHDR,R0               ;PRINT MESSAGE
 (1)  003576  004767  027046                  JSR     PC,TYPOUT               ;POINTED TO BY XRHDR
 752  003602  004767  017246          31$:    JSR     PC,TEST3                ;YES, GO DO IT.
 753  003606  000167  177770                  JMP     31$
 754  003612  026727  032262  000004  4$:     CMP     TESTNO,#4               ;SELECT TEST 4?
 755  003620  001044                          BNE     5$                      ;NO?????
```

```
  756  003622  012767  177777  032252          MOV     #-1,$4FLAG          ;SET FLAG TO INHIBIT END PASS
  757  003630                                  PNTM    ALTHDR              ;PRINT TRIPLE TEST HEADER
(1)    003630  012700  035025                  MOV     #ALTHDR,R0          ;PRINT MESSAGE
(1)    003634  004767  027010                  JSR     PC,TYPOUT           ;POINTED TO BY ALTHDR
  758  003640  004767  000072          41$:    JSR     PC,TEST1
  759  003644  004767  011264                  JSR     PC,TEST2
  760  003650  004767  017200                  JSR     PC,TEST3            ;DO ALL TESTS (LOOP)
  761  003654  005267  032214                  INC     PSN04               ;UPDATE PASS COUNTER
  762  003660                                  PNTM    PEND                ;PRINT END PASS #
(1)    003660  012700  034443                  MOV     #PEND,R0            ;PRINT MESSAGE
(1)    003664  004767  026760                  JSR     PC,TYPOUT           ;POINTED TO BY PEND
  763  003670  016700  032200                  MOV     PSN04,R0            ;GET PASS # TO R0
  764  003674  004767  027372                  JSR     PC,DECPNT           ;PRINT IT IN DECIMAL
  765  003700  012700  000040                  MOV     #40,R0              ;ALSO, PRINT "C"
  766  003704  004767  027562                  JSR     PC,TTO
  767  003710  012700  000103                  MOV     #'C,R0              ;TO IDENTIFY END PASS OF
  768  003714  004767  027552                  JSR     PC,TTO              ;TEST 4
  769  003720  005000                          CLR     R0
  770  003722  004767  027544                  JSR     PC,TTO              ;NULLS TO ALLOW PASS #
  771  003726  004767  027540                  JSR     PC,TTO
  772  003732  000167  177702          5$:     JMP     41$
```

```
                                        .SBTTL  TRANSMITTER TESTS

                                ;TEST 1: TRANSMITTER LOGIC TESTS
                                ;  (00) RESET TEST
                                ;  (01) TCR REG. TEST
                                ;  (02) TSBC REG TEST
                                ;  (03) TSBA REG TEST
                                ;  (04) MASTER SECT. TEST
                                ;  (05) DATA SILO TEST
                                ;  (06) TSR REG. & ERRORS TEST
                                ;  (07) INTERRUPT TEST
                                ;  (10) C.R.C. TEST


003736                          TEST1:  MTPS    #P7
(1) 003736  012737  000340  177776      MOV     #P7,@#PS
003744  012767  000010  032104          MOV     #10,ITER        ;INITIAL ITERATION OF 10 PER PASS
003752  004767  025714                  JSR     PC,MONIT        ;CHECK FOR KBD INPUT
003756  032777  002000  026424          BIT     #B10,@SR                ;CHECK SW 10
003764  001424                          BEQ     LOOP            ;IF 0, RUN SEQUENTIALLY
003766  017767  026416  032064          MOV     @SR,SWI         ;IF SET, GET TEST # FROM SWR
003774  042767  177760  032056          BIC     #-20,SWI        ;MASK LOW DIGIT
004002  026727  032052  000010          CMP     SWI,#10         ;DON'T ALLOW SW = >10
004010  003012                          BGT     LOOP            ;IF GREATER, START 1'ST TEST
004012  000241                          CLC                     ;CLEAR "C" BIT BEFORE ROTATE
004014  006167  032040                  ROL     SWI
004020  006167  032034                  ROL     SWI             ;MULTIPLY BY 4
004024  062767  004036  032026          ADD     #LOOP,SWI       ;GENERATE OFFSET
004032  000177  032022                  JMP     @SWI            ;GO TO SELECTED TEST
004036  004767  000602          LOOP:   JSR     PC,XINIT                ;DO INITIAL CLR TEST
004042  004767  001230                  JSR     PC,TCRTST       ;DO TCR REG TEST
004046  004767  002012                  JSR     PC,BCTST        ;DO BYTE COUNT REG TST
004052  004767  002170                  JSR     PC,BATST        ;DO BYTE ADDR REG TEST
004056  004767  002346                  JSR     PC,MSRTST       ;DO MASTER SECTION TEST
004062  004767  004360                  JSR     PC,SILTST       ;DO DATA SILO TEST
004066  004767  006026                  JSR     PC,TSRTST       ;DO TSR REG & ERRORS TEST
004072  004767  010064                  JSR     PC,INTST        ;DO INTERRUPT TEST
004076  004767  010544                  JSR     PC,CRCTST       ;DO CRC GENERATION TEST
004102  032777  004000  026300          BIT     #B11,@SR        ;CHECK SWITCH 11
004110  001003                          BNE     XEND            ;PRINT END IF SET
004112  005367  031740                  DEC     ITER            ;OTHERWISE, REITERATE
004116  001347                          BNE     LOOP
004120  005767  031756          XEND:   TST     $4FLAG          ;SHOULD WE PRINT END PASS?
004124  001020                          BNE     REPEAT          ;NO, LEAVE
004126  005267  031734                  INC     PSN01           ;UPDATE PASS NUMBER
004132                                  PNTM    PEND            ;PRINT "END PASS # "
(1) 004132  012700  034443              MOV     #PEND,R0        ;PRINT MESSAGE
(1) 004136  004767  026506              JSR     PC,TYPOUT       ;POINTED TO BY PEND
004142  016700  031720                  MOV     PSN01,R0
004146  004767  027120                  JSR     PC,DECPNT       ;PRINT PASSNO.
004152  005000                          CLR     R0
004154  004767  027312                  JSR     PC,TTO          ;PRINT NULLS TO ALLOW TIME
004160  005000                          CLR     R0              ;FOR PASS # TO BE PRINTED
004162  004767  027304                  JSR     PC,TTO
004166  000207                  REPEAT: RTS     PC              ;RETURN TO SUPERVISOR

```

```
827                                     ;NON-SWR PROCESSOR HALT SUBROUTINE
828
829  004170  005767  031656      SWHLT: TST     SWRFLG                  ;ANY HARDWARE SWR?
830  004174  001403                     BEQ     1$                      ;IF YES GO HALT
831  004176  004767  025522             JSR     PC,SWDMP                ;IF NOT GO GET SW LOC
832  004202  000207                     RTS     PC
833  004204  000000             1$:     HALT
834  004206  000207                     RTS     PC                      ;RETURN IF CONT KEY HIT
835
836  004210  012767  032406  026172 SRTST: MOV     #SSWR,SR                ;NO HDWARE SWR, USE MEM LOC
837  004216  012767  177777  031626       MOV     #-1,SWRFLG              ;SET SOFT SWR FLAG
838  004224  000002                     RTI                             ;RETURN
839
840                                     ;THIS ROUTINE ENTERED FOR SCOPE ROUTINES
841
842  004226  004767  025440     SCPRTN: JSR     PC,MONIT                ;SEE IF ^S WAS TYPED
843  004232  005777  026152             TST     @SR                     ;BIT 15 SET?
844  004236  100402                     BMI     SBAK                    ;YES, DON'T HALT
845  004240                              HLT                             ;COMMON ERROR HALT. EXAMINE
(1)  004240  004767  177724             JSR     PC,SWHLT
846                                                                     ;R5 FOR PC OF ERROR
847  004244  012500             SBAK:   MOV     (R5)+,R0                ;GET DIRECTION FOR SCOPE LOOP
848  004246  032777  020000  026134     BIT     #B13,@SR                ;SW 13 SET?
849  004254  001402                     BEQ     SCONT                   ;NO, DON'T LOOP
850  004256  012605                     MOV     (SP)+,R5                ;YES, RESTORE R5
851  004260  000110                     JMP     (R0)                    ;AND LOOP
852  004262  000205             SCONT:  RTS     R5                      ;JUST RETURN
```

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                        .SBTTL UTILITY ROUTINES

                        ;DEVICE ADDRESS GENERATION

004264  016700  031716  DEVGEN: MOV     TXMADR,R0       ;GET BASIC XMTR ADDRESS
004270  010067  031636          MOV     R0,TCR          ;GENERATE TCR
004274  062700  000002          ADD     #2,R0
004300  010067  031630          MOV     R0,TSR          ;GENERATE TSR
004304  062700  000002          ADD     #2,R0
004310  010067  031622          MOV     R0,TSDB         ;GENERATE TSDB
004314  062700  000002          ADD     #2,R0
004320  010067  031614          MOV     R0,TSBC         ;GENERATE TSBC
004324  062700  000002          ADD     #2,R0
004330  010067  031606          MOV     R0,TSBA         ;GENERATE TSBA
004334  062700  000002          ADD     #2,R0
004340  010067  031600          MOV     R0,TMMR         ;GENERATE TMMR
004344  005200                  INC     R0
004346  010067  031574          MOV     R0,TMMRH        ;GEN. TMMR HIGH BYTE
004352  005200                  INC     R0
004354  010067  031570          MOV     R0,TSCRC        ;GENERATE TSCRC
004360  016767  031616  031534  MOV     TXMVEC,TXVEC    ;GENERATE TXVEC
004366  016700  031616          MOV     RCVADR,R0       ;GET BASIC RCVR ADDRESS
004372  010067  031554          MOV     R0,RCR          ;GENERATE RCR
004376  062700  000002          ADD     #2,R0
004402  010067  031546          MOV     R0,RSR          ;GENERATE RSR
004406  062700  000002          ADD     #2,R0
004412  010067  031540          MOV     R0,RDDB         ;GENERATE RDDB
004416  062700  000002          ADD     #2,R0
004422  010067  031532          MOV     R0,RDBC         ;GENERATE RDBC
004426  062700  000002          ADD     #2,R0
004432  010067  031524          MOV     R0,RDBA         ;GENERATE RDBA
004436  062700  000004          ADD     #4,R0
004442  010067  031516          MOV     R0,RDCRC        ;GENERATE RDCRC
004446  016767  031532  031450  MOV     RCVVEC,RCVEC    ;GENERATE RCVEC
004454  000207                  RTS     PC              ;RETURN.

                        ;DEVICE TEST TRAP HANDLER

004456  012706  002000  DVATST: MOV     #ISP,SP
004462                  PNTM    INVLAD                  ;PRINT NON-EXST ADDR MSG
(1) 004462  012700  035326      MOV     #INVLAD,R0      ;PRINT MESSAGE
(1) 004466  004767  026156      JSR     PC,TYPOUT       ;POINTED TO BY INVLAD
004472  000167  175360          JMP     PROMT           ;RETURN TO ASK ALL AGAIN

                        ;ROUTINE TO CATCH TRAPS TO 4

004476  011667  031374  ERRTRP: MOV     (SP),TEMP       ;SAVE STACK FOR ADDRESS OF TRAP
004502  012737  000340  177776  MOV     #P7,@#PS        ;RAISE PRIORITY
004510  012706  002000          MOV     #ISP,SP         ;FIX THE STACK
004514                  PNTM    TRAP4                   ;PRINT "TRAPPED TO 4 " MSG
(1) 004514  012700  035401      MOV     #TRAP4,R0       ;PRINT MESSAGE
(1) 004520  004767  026124      JSR     PC,TYPOUT       ;POINTED TO BY TRAP4
```

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  906  004524  162767  000002  031344          SUB     #2,TEMP
  907  004532  016700  031340                  MOV     TEMP,R0
  908  004536  004767  026424                  JSR     PC,OCTPNT               ;PRINT WHERE FROM.
  909  004542  000167  176600                  JMP     BCONT
  910
  911
  912                                  ;STANDARD DELAY SUBROUTINE
  913                                  ;MODIFY LOCATION 'DLCON' TO CHANGE
  914                                  ;DELAY PERIOD.
  915
  916  004546  012567  031274          DELAY:  MOV     (R5)+,DILLY             ;GET DELAY PARAMETER
  917  004552  005767  025634                  TST     DLCON                   ;IS DLCON = 0?
  918  004556  001003                          BNE     DLWT                    ;IF NOT, CARRY ON
  919  004560  012767  000001  025624          MOV     #1,DLCON                ;IF SO, MAKE IT = 1
  920  004566  016767  025620  031254  DLWT:   MOV     DLCON,DLY               ;GET DELAY CONSTANT
  921  004574  005367  031250          DLWT1:  DEC     DLY
  922  004600  001375                          BNE     DLWT1
  923  004602  005367  031240                  DEC     DILLY
  924  004606  001367                          BNE     DLWT
  925  004610  000205                          RTS     R5
  926
  927                                  ;REGISTER SAVE & RESTORE ROUTINES
  928
  929  004612  010446          REGSAV: MOV     R4,-(SP)
  930  004614  010346                  MOV     R3,-(SP)
  931  004616  010246                  MOV     R2,-(SP)
  932  004620  010146                  MOV     R1,-(SP)
  933  004622  010046                  MOV     R0,-(SP)
  934  004624  000115                  JMP     @R5
  935
  936  004626  030026          REGRES: BIT     R0,(SP)+
  937  004630  012600                  MOV     (SP)+,R0
  938  004632  012601                  MOV     (SP)+,R1
  939  004634  012602                  MOV     (SP)+,R2
  940  004636  012603                  MOV     (SP)+,R3
  941  004640  012604                  MOV     (SP)+,R4
  942  004642  000205                  RTS     R5
```

```
                                        .SBTTL  INITIALIZE TEST
                                ;CHECK INITIAL CONDITIONS AFTER A RESET
004644  000005          XINIT:  RESET                           ;CLEAR ALL
004646  017767 031266 025770        MOV     @TSBC,BAD         ;GET BYTE COUNT REGISTER
004654  005067 025766              CLR     GOOD
004660  005767 025760              TST     BAD               ;WAS TSBC = 0?
004664  001414                    BEQ     XA1
004666                            DATERR  \N          ;ERROR:TSBC NOT CLEARED BY RESET
(1)                                                         ;******* ERROR 1 *******
(1)     004666  032777 040000 025514        BIT     #B14,@SR
(1)     004674  001005              BNE     .+14
(1)     004676  012767 000001 025736        MOV     #1,ERRNUM
(1)     004704  004767 025570              JSR     PC,DERR
(1)             000002              N       -       N+1
004710                            SCOPE   XINIT
(1)     004710  004567 177312              JSR     R5,SCPRTN
(1)     004714  004644              XINIT
004716  017767 031220 025720  XA1:  MOV     @TSBA,BAD         ;GET BYTE ADDRESS REGISTER
004724  005067 025716              CLR     GOOD
004730  005767 025710              TST     BAD               ;WAS TSBA = 0?
004734  001414                    BEQ     XA2
004736                            DATERR  \N          ;ERROR:TSBA NOT CLEARED BY RESET
(1)                                                         ;******* ERROR 2 *******
(1)     004736  032777 040000 025444        BIT     #B14,@SR
(1)     004744  001005              BNE     .+14
(1)     004746  012767 000002 025666        MOV     #2,ERRNUM
(1)     004754  004767 025520              JSR     PC,DERR
(1)             000003              N       -       N+1
004760                            SCOPE   XINIT
(1)     004760  004567 177242              JSR     R5,SCPRTN
(1)     004764  004644              XINIT
004766  017767 031152 025650  XA2:  MOV     @TMMR,BAD         ;GET TMMR REGISTER
004774  042767 000377 025642        BIC     #377,BAD          ;MASK OFF ANY ADDR SILO DATA
005002  012767 050000 025636        MOV     #50000,GOOD       ;SET UP GOOD FOR COMPARE
005010  026767 025632 025626        CMP     GOOD,BAD          ;IGNORE BIT 8 WHEN DETERMINING
005016  001420                    BEQ     XA3               ;ERROR
005020  022767 050400 025616        CMP     #50400,BAD
005026  001414                    BEQ     XA3
005030                            DATERR  \N          ;ERROR:TMMR NOT INITIATED BY RESET
(1)                                                         ;******* ERROR 3 *******
(1)     005030  032777 040000 025352        BIT     #B14,@SR
(1)     005036  001005              BNE     .+14
(1)     005040  012767 000003 025574        MOV     #3,ERRNUM
(1)     005046  004767 025426              JSR     PC,DERR
(1)             000004              N       =       N+1
005052                            SCOPE   XINIT
(1)     005052  004567 177150              JSR     R5,SCPRTN
(1)     005056  004644              XINIT
005060  017767 031050 025556  XA3:  MOV     @TSR,BAD          ;GET TSR REGISTER
005066  012767 000400 025552        MOV     #400,GOOD         ;SET UP GOOD FOR COMPARE
005074  026767 025546 025542  XA4:  CMP     GOOD,BAD
005102  001414                    BEQ     XA5
005104                            DATERR  \N          ;ERROR:TSR NOT INITIALIZED BY RESET
(1)                                                         ;******* ERROR 4 *******
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CZPLBC0 PCL11 STND ALN V02C     MACY11 30A(1052)  20-JUN-79  07:50  PAGE 15-1
CZPLBC.P11    07-JUN-79 15:47          INITIALIZE TEST                          SEQ 0030

  (1)  005104  032777  040000  025276          BIT     #B14,@SR
  (1)  005112  001005                          BNE     .+14
  (1)  005114  012767  000004  025520          MOV     #4,ERRNUM
  (1)  005122  004767  025352                  JSR     PC,DERR
  (1)               000005               N     -       N+1
  975  005126                                  SCOPE   XINIT
  (1)  005126  004567  177074                  JSR     R5,SCPRTN
  (1)  005132  004644                          XINIT
  976  005134  017767  030772  025502  XA5:    MOV     @TCR,BAD                ;GET TCR REGISTER
  977  005142  005067  025500                  CLR     GOOD
  978  005146  005767  025472                  TST     BAD                     ;WAS TCR = 0?
  979  005152  001414                          BEQ     XA6
  980  005154                                  DATERR  \N              ;ERROR:TCR NOT CLR'D BY RESET
  (1)                                                                 ;******* ERROR 5 *******
  (1)  005154  032777  040000  025226          BIT     #B14,@SR
  (1)  005162  001005                          BNE     .+14
  (1)  005164  012767  000005  025450          MOV     #5,ERRNUM
  (1)  005172  004767  025302                  JSR     PC,DERR
  (1)               000006               N     -       N+1
  981  005176                                  SCOPE   XINIT
  (1)  005176  004567  177024                  JSR     R5,SCPRTN
  (1)  005202  004644                          XINIT
  982  005204  017767  030740  025432  XA6:    MOV     @TSCRC,BAD
  983  005212  005067  025430                  CLR     GOOD                    ;CHECK CRC REGISTER
  984  005216  005767  025422                  TST     BAD                     ;WAS IT 0?
  985  005222  001414                          BEQ     XA7                     ;YES,CONTINUE
  986  005224                                  DATERR  \N              ;ERROR:TSCRC NOT CLEARED BY RESET
  (1)                                                                 ;******* ERROR 6 *******
  (1)  005224  032777  040000  025156          BIT     #B14,@SR
  (1)  005232  001005                          BNE     .+14
  (1)  005234  012767  000006  025400          MOV     #6,ERRNUM
  (1)  005242  004767  025232                  JSR     PC,DERR
  (1)               000007               N     =       N+1
  987  005246                                  SCOPE   XINIT
  (1)  005246  004567  176754                  JSR     R5,SCPRTN
  (1)  005252  004644                          XINIT
  988  005254  004767  024412          XA7:    JSR     PC,MONIT
  989  005260  032777  010000  025122          BIT     #B12,@SR                ;CHECK EXIT SW (SW 12)
  990  005266  001402                          BEQ     XART
  991  005270  000167  177350                  JMP     XINIT                   ;IF SET, STAY IN THIS TEST
  992  005274  000207                  XART:   RTS     PC
```

```
                                        .SBTTL  TCR TEST

                                        ;TRANSMITTER COMMAND REGISTER TEST

005276  005077  030630          TCRTST: CLR     @TCR                    ;CLEAR TCR REG
005302  012767  017400  025336  XD1:    MOV     #17400,GOOD             ;SET ALL DEST. CODE BITS
005310  016777  025332  030614          MOV     GOOD,@TCR
005316  017767  030610  025320          MOV     @TCR,BAD                ;AND READ THEM BACK
005324  026767  025316  025312          CMP     GOOD,BAD                ;ALL DEST CODE BITS SET?
005332  001414                          BEQ     XD2
005334                                  DATERR  \N              ;ERROR:CANNOT SET SOME DEST. CODE BITS
(1)                                                             ;******* ERROR 7 *******
(1)     005334  032777  040000  025046          BIT     #B14,@SR
(1)     005342  001005                          BNE     .+14
(1)     005344  012767  000007  025270          MOV     #7,ERRNUM
(1)     005352  004767  025122                  JSR     PC,DERR
(1)             000010                  N       =       N+1
005356                                  SCOPE   XD1
(1)     005356  004567  176644                  JSR     R5,SCPRTN
(1)     005362  005302                          XD1
005364  005067  025256          XD2:    CLR     GOOD                    ;NOW CLR DEST. CODE BITS AFTER
005370  005077  030536                  CLR     @TCR                    ;SETTING THEM
005374  017767  030532  025242          MOV     @TCR,BAD                ;READ THEM BACK
005402  042767  160377  025234          BIC     #160377,BAD             ;IGNORE ALL BUT DEST. CODE BITS
005410  026767  025232  025226          CMP     GOOD,BAD                ;ALL CLEAR?
005416  001414                          BEQ     XD3
005420                                  DATERR  \N              ;ERROR:CANNOT CLR SOME DEST.CODE BITS
(1)                                                             ;******* ERROR 10 *******
(1)     005420  032777  040000  024762          BIT     #B14,@SR
(1)     005426  001005                          BNE     .+14
(1)     005430  012767  000010  025204          MOV     #10,ERRNUM
(1)     005436  004767  025036                  JSR     PC,DERR
(1)             000011                  N       =       N+1
005442                                  SCOPE   XD2
(1)     005442  004567  176560                  JSR     R5,SCPRTN
(1)     005446  005364                          XD2
005450  005077  030456          XD3:    CLR     @TCR
005454  005077  030454                  CLR     @TSR                    ;CLEAR POSSIBLE TIMEOUT
005460  012767  120365  025160          MOV     #120365,GOOD            ;SET ST TXM,INH ADR INC,EA 16&17,
005466  016777  025154  030436          MOV     GOOD,@TCR               ;IE,RD SILO,SND WD,&RIB
005474  017767  030432  025142          MOV     @TCR,BAD                ;SEE IF THEY ALL SET
005502  026767  025140  025134          CMP     GOOD,BAD
005510  001414                          BEQ     XD4
005512                                  DATERR  \N              ;ERROR:BAD BITS IN TCR
(1)                                                             ;******* ERROR 11 *******
(1)     005512  032777  040000  024670          BIT     #B14,@SR
(1)     005520  001005                          BNE     .+14
(1)     005522  012767  000011  025112          MOV     #11,ERRNUM
(1)     005530  004767  024744                  JSR     PC,DERR
(1)             000012                  N       =       N+1
005534                                  SCOPE   XD3
(1)     005534  004567  176466                  JSR     R5,SCPRTN
(1)     005540  005450                          XD3
005542  012777  137765  030362  XD4:    MOV     #137765,@TCR            ;SET ALL SETTABLE BITS IN TCR
005550  012777  177777  030362          MOV     #-1,@TSBC               ;AND IN TSBC
005556  012777  177777  030356          MOV     #-1,@TSBA               ;AND IN TSBA
```

```
1026  005564  012777  037240  030342          MOV     #37240,@TSR             ;AND IN TSR
1027  005572  052777  000002  030332          BIS     #2,@TCR                 ;B O A R D  I N I '
1028  005600  017767  030326  025036          MOV     @TCR,BAD                ;CHK TCR
1029  005606  005067  025034                  CLR     GOOD
1030  005612  026767  025030  025024          CMP     GOOD,BAD                ;TCR = 0?
1031  005620  001414                          BEQ     XD5
1032  005622                                  DATERR  \N              ;ERROR:TCR NOT CLR'D BY BOARD INIT
 (1)                                                                ;******* ERROR 12 *******
 (1)  005622  032777  040000  024560          BIT     #B14,@SR
 (1)  005630  001005                          BNE     .+14
 (1)  005632  012767  000012  025002          MOV     #12,ERRNUM
 (1)  005640  004767  024634                  JSR     PC,DERR
 (1)          000013                  N       =       N+1
1033  005644                                  SCOPE   XD4
 (1)  005644  004567  176356                  JSR     R5,SCPRTN
 (1)  005650  005542                          XD4
1034  005652  017767  030262  024764  XD5:    MOV     @TSBC,BAD               ;CHECK TSBC
1035  005660  026767  024762  024756          CMP     GOOD,BAD                ;TSBC = 0?
1036  005666  001414                          BEQ     XD6
1037  005670                                  DATERR  \N              ;ERROR:TSBC NOT CLR'D BY BD INIT
 (1)                                                                ;******* ERROR 13 *******
 (1)  005670  032777  040000  024512          BIT     #B14,@SR
 (1)  005676  001005                          BNE     .+14
 (1)  005700  012767  000013  024734          MOV     #13,ERRNUM
 (1)  005706  004767  024566                  JSR     PC,DERR
 (1)          000014                  N       =       N+1
1038  005712                                  SCOPE   XD4
 (1)  005712  004567  176310                  JSR     R5,SCPRTN
 (1)  005716  005542                          XD4
1039  005720  017767  030216  024716  XD6:    MOV     @TSBA,BAD               ;TSBA   0?
1040  005726  026767  024714  024710          CMP     GOOD,BAD
1041  005734  001414                          BEQ     XD7
1042  005736                                  DATERR  \N              ;ERROR:TSBA NOT CLR'D BY BD INIT
 (1)                                                                ;******* ERROR 14 *******
 (1)  005736  032777  040000  024444          BIT     #B14,@SR
 (1)  005744  001005                          BNE     .+14
 (1)  005746  012767  000014  024666          MOV     #14,ERRNUM
 (1)  005754  004767  024520                  JSR     PC,DERR
 (1)          000015                  N       -       N+1
1043  005760                                  SCOPE   XD4
 (1)  005760  004567  176242                  JSR     R5,SCPRTN
 (1)  005764  005542                          XD4
1044  005766  017767  030142  024650  XD7:    MOV     @TSR,BAD                ;TSR OK?
1045  005774  012767  000400  024644          MOV     #400,GOOD
1046  006002  026767  024640  024634  XD8:    CMP     GOOD,BAD
1047  006010  001414                          BEQ     XD9
1048  006012                                  DATERR  \N              ;ERROR:TSR BAD AFTER BD INIT
 (1)                                                                ;******* ERROR 15 *******
 (1)  006012  032777  040000  024370          BIT     #B14,@SR
 (1)  006020  001005                          BNE     .+14
 (1)  006022  012767  000015  024612          MOV     #15,ERRNUM
 (1)  006030  004767  024444                  JSR     PC,DERR
 (1)          000016                  N       -       N+1
1049  006034                                  SCOPE   XD4
 (1)  006034  004567  176166                  JSR     R5,SCPRTN
 (1)  006040  005542                          XD4
```

```
1050 006042 004767 023624         XD9:   JSR    PC,MONIT
1051 006046 032777 010000 024334         BIT    #B12,@SR
1052 006054 001402                       BEQ    XDRT                ;LEAVE IF SW 12 = 0
1053 006056 000167 177214                JMP    TCRTST              ;OTHERWISE, MUST STAY
1054 006062 000207                XDRT:  RTS    PC
```

```
                                        .SBTTL  TSBC TEST

                                ;BYTE COUNT REG. DATA TEST

006064                          BCTST:  BDINIT  XMTR                    ;INIT XMTR MODULE
006072  012767  177777  027762          MOV     #-1,PAT                 ;SET PATTERN
006100  012767  000001  027756          MOV     #B00,MASK               ;SET BIT MASK
006106  016767  027750  024532  XB1:     MOV     PAT,GOOD                ;LOAD "GOOD" WITH PATTERN
006114  016777  024526  030016          MOV     GOOD,@TSBC              ;LOAD PATTERN INTO TSBC
006122  017767  030012  024514          MOV     @TSBC,BAD               ;READ TSBC
006130  026767  024512  024506          CMP     GOOD,BAD
006136  001414                        BEQ     XB2
006140                                  DATERR  \N              ;ERROR:BAD DATA IN TSBC
                                                                        ;******* ERROR 16 *******
 (1)    006140  032777  040000  024242          BIT     #B14,@SR
 (1)    006146  001005                  BNE     .+14
 (1)    006150  012767  000016  024464          MOV     #16,ERRNUM
 (1)    006156  004767  024316                  JSR     PC,DERR
 (1)            000017                  N       =       N+1
006162                                  SCOPE   XB1
 (1)    006162  004567  176040                  JSR     R5,SCPRTN
 (1)    006166  006106                  XB1
006170  032767  100000  027664  XB2:     BIT     #B15,PAT                ;DONE WHOLE REGISTER?
006176  001412                        BEQ     XB3                     ;IF YES, DONE
006200  012767  177777  027654          MOV     #-1,PAT
006206  046767  027652  027646          BIC     MASK,PAT                ;NO, PREPARE FOR NEXT BIT
006214  006367  027644                  ASL     MASK                    ;ROTATE MASK
006220  000167  177662                  JMP     XB1                     ;AND CONTINUE
006224  004767  023442  XB3:     JSR     PC,MONIT
006230  032777  010000  024152          BIT     #B12,@SR                ;IF SO, CONSIDER LEAVING
006236  001402                        BEQ     XBRT                    ;EXIT IF SW 12 - 0
006240  000167  177620                  JMP     BCTST                   ;STAY HERE IF SW 12 = 1
006244  000207                  XBRT:   RTS     PC
```

```
 1082                                           .SBTTL  TSBA TEST
 1083
 1084                                           ;BYTE ADDRESS REGISTER TEST
 1085
 1086  006246                                   BATST:  BDINIT  XMTR                    ;INIT XMTR MODULE
 1087  006254  012767  177777  027600                   MOV     #-1,PAT                ;SET PATTERN
 1088  006262  012767  000001  027574                   MOV     #B00,MASK              ;SET BIT MASK
 1089  006270  016767  027566  024350  XC1:     MOV     PAT,GOOD               ;LOAD ''GOOD'' WITH PATTERN
 1090  006276  016777  024344  027636                   MOV     GOOD,@TSBA             ;LOAD PATTERN INTO TSBA
 1091  006304  017767  027632  024332                   MOV     @TSBA,BAD              ;READ IT BACK
 1092  006312  026767  024330  024324                   CMP     GOOD,BAD
 1093  006320  001414                                   BEQ     XC2
 1094  006322                                           DATERR  \N              ;ERROR:BAD DATA IN TSBA
  (1)                                                                             ;******* ERROR 17 *******
  (1)  006322  032777  040000  024060                   BIT     #B14,@SR
  (1)  006330  001005                                   BNE     .+14
  (1)  006332  012767  000017  024302                   MOV     #17,ERRNUM
  (1)  006340  004767  024134                           JSR     PC,DERR
  (1)          000020                          N        =       N+1
 1095  006344                                           SCOPE   XC1
  (1)  006344  004567  175656                           JSR     R5,SCPRTN
  (1)  006350  006270                                   XC1
 1096  006352  032767  100000  027502  XC2:     BIT     #B15,PAT               ;DONE WHOLE REGISTER?
 1097  006360  001412                                   BEQ     XC3                    ;IF YES, DONE
 1098  006362  012767  177777  027472                   MOV     #-1,PAT
 1099  006370  046767  027470  027464                   BIC     MASK,PAT               ;NO,PREPARE FOR NEXT BIT
 1100  006376  006367  027462                           ASL     MASK                   ;ROTATE MASK
 1101  006402  000167  177662                           JMP     XC1                    ;AND CONTINUE
 1102  006406  004767  023260  XC3:     JSR     PC,MONIT
 1103  006412  032777  010000  023770                   BIT     #B12,@SR               ;IF SO, CONSIDER LEAVING
 1104  006420  001402                                   BEQ     XCRT                   ;EXIT IF SW 12 - 0
 1105  006422  000167  177620                           JMP     BATST                  ;STAY HERE IF SW 12 - 1
 1106  006426  000207                          XCRT:   RTS     PC
```

```
 1108                                          .SBTTL  MASTER SECTION TEST
 1109
 1110                                          ;TEST MASTER CONTROL AND ADDRESS SILO
 1111
 1112  006430                                  MSRTST: BDINIT  XMTR                    ;INIT BOADR
 1113  006436  11277/  000001  027502                  MOVB    #1,@TMMRH               ;SET MASTER FLOP
 1114  006444  132777  000001  027474                  BITB    #1,@TMMRH               ;IS MASTER SET?
 1115  006452  001014                                  BNE     XE1
 1116  006454                                          ERROR   \N              ;ERROR:COULD NOT SET MASTER FLOP
  (1)                                                                             ;******* ERROR 20 *******
  (1)  006454  032777  040000  023'26                  BIT     #B14,@SR
  (1)  006462  001005                                  BNE     .+14
  (1)  006464  012767  000020  024150                  MOV     #20,ERRNUM
  (1)  006472  004767  023716                          JSR     PC,ERR
  (1)          000021                          N               N+1
 1117  006476                                          SCOPE   MSRTST
  (1)  006476  004567  175524                          JSR     R5,SCPRTN
  (1)  006502  006430                                  MSRTST
 1118  006504  004767  023162                  XE1:    JSR     PC,MONIT
 1119  006510  032777  001000  023672                  BIT     #B09,@SR                ;CHECK SW 09
 1120  006516  001024                                  BNE     XE3                     ;IF ON, SKIP SCOPE LOOP
 1121  006520  012767  177777  027326                  MOV     #-1,PNTFLG              ;SET PRINT ALLOW FLAG
 1122  006526                                          PNTM    SCSEC                   ;OTHERWISE PRINT ''SCOPE SECTION..ETC''
  (1)  006526  012700  034457                          MOV     #SCSEC,R0               ;PRINT MESSAGE
  (1)  006532  004767  024112                          JSR     PC,TYPOUT               ;POINTED TO BY SCSEC
 1123  006536  005067  027312                          CLR     PNTFLG                  ;CLEAR PRINT ALLOW FLAG
 1124  006542  005767  027304                          TST     SWRFLG                  ;REAL SW REG?
 1125  006546  001402                                  BEQ     XE2                     ;YES, SKIP
 1126  006550  004767  023150                          JSR     PC,SWDMP
 1127  006554  004767  023112                  XE2:    JSR     PC,MONIT
 1128  006560  032777  001000  023622                  BIT     #B09,@SR                ;KEEP AN EYE ON SW 09
 1129  006566  001772                                  BEQ     XE2                     ;STAY HERE 'TILL IT GETS SET
 1130  006570  142777  000001  027350  XE3:    BICB    #1,@TMMRH               ;CLR MASTER FLOP
 1131  006576  132777  000001  027342                  BITB    #1,@TMMRH               ;IS MASTER CLEAR?
 1132  006604  001414                                  BEQ     XE3A
 1133  006606                                          ERROR   \N              ;ERROR:COULD NOT CLR MASTER FLOP
  (1)                                                                             ;******* ERROR 21 *******
  (1)  006606  032777  040000  023574                  BIT     #B14,@SR
  (1)  006614  001005                                  BNE     .+14
  (1)  006616  012767  000021  024016                  MOV     #21,ERRNUM
  (1)  006624  004767  023564                          JSR     PC,ERR
  (1)          000022                          N       =       N+1
 1134  006630                                          SCOPE   XE3
  (1)  006630  004567  175372                          JSR     R5,SCPRTN
  (1)  006634  006570                                  XE3
 1135  006636  152777  000004  027302  XE3A:   BISB    #4,@TMMRH               ;SET 'NOW MASTER'' FLOP
 1136  006644  132777  000004  027274                  BITB    #4,@TMMRH               ;IS IT SET?
 1137  006652  001014                                  BNE     XE3B                    ;YES, GO TO CLEAP IT
 1138  006654                                          ERROR   \N              ;ERROR:COULD NOT SET 'NOW MASTER FLOP
  (1)                                                                             ;******* ERROR 22 *******
  (1)  006654  032777  040000  023526                  BIT     #B14,@SR
  (1)  006662  001005                                  BNE     .+14
  (1)  006664  012767  000022  023750                  MOV     #22,ERRNUM
  (1)  006672  004767  023516                          JSR     PC,ERR
  (1)          000023                          N       -       N+1
 1139  006676                                          SCOPE   XE3A
```

```
  (1) 006676 004567 175324           JSR     R5,SCPRTN
  (1) 006702 006636                  XE3A
1140  006704 142777 000004 027234 XE3B: BICB    #4,@TMMRH          ;OKAY, NOW CLEAR 'NOW MASTER'
1141  006712 132777 000004 027226       BITB    #4,@TMMRH          ;IS IT CLEAR?
1142  006720 001414                     BEQ     XE5A               ;YES, OKAY.
1143  006722                            ERROR   \N          ;ERROR:COULD NOT CLEAR 'NOW MASTER'
  (1)                                                             ;******* ERROR 23 *******
  (1) 006722 032777 040000 023460       BIT     #B14,@SR
  (1) 006730 001005                     BNE     .+14
  (1) 006732 012767 000023 023702       MOV     #23,ERRNUM
  (1) 006740 004767 023450              JSR     PC,ERR
  (1)        000024                 N   =       N+1
1144  006744                            SCOPE   XE3B
  (1) 006744 004567 175256              JSR     R5,SCPRTN
  (1) 006750 006704                     XE3B
1145  006752 112777 000002 027166 XE5A: MOVB    #2,@TMMRH          ;SET SECONDARY FLOP
1146  006760 132777 000001 027160       BITB    #1,@TMMRH          ;IS MASTER SET?
1147  006766 001017                     BNE     XE6
1148  006770 142777 000002 027150       BICB    #2,@TMMRH          ;CLR SEC FOR RE-TRY
1149  006776                            ERROR   \N          ;ERROR:SETTING SEC DID NOT SET MASTER
  (1)                                                             ;******* ERROR 24 *******
  (1) 006776 032777 040000 023404       BIT     #B14,@SR
  (1) 007004 001005                     BNE     .+14
  (1) 007006 012767 000024 023626       MOV     #24,ERRNUM
  (1) 007014 004767 023374              JSR     PC,ERR
  (1)        000025                 N   -       N+1
1150  007020                            SCOPE   XE5A
  (1) 007020 004567 175202              JSR     R5,SCPRTN
  (1) 007024 006752                     XE5A
1151  007026 132777 000002 027112 XE6:  BITB    #2,@TMMRH          ;IS SEC CLR?
1152  007034 001417                     BEQ     XE6A
1153  007036 142777 000002 027102       BICB    #2,@TMMRH          ;CLR SEC FOR RETRY
1154  007044                            ERROR   \N          ;ERROR:SEC NOT CLR'D BY THE SETTING OF MASTER
  (1)                                                             ;******* ERROR 25 *******
  (1) 007044 032777 040000 023336       BIT     #B14,@SR
  (1) 007052 001005                     BNE     .+14
  (1) 007054 012767 000025 023560       MOV     #25,ERRNUM
  (1) 007062 004767 023326              JSR     PC,ERR
  (1)        000026                 N   -       N+1
1155  007066                            SCOPE   XE5A
  (1) 007066 004567 175134              JSR     R5,SCPRTN
  (1) 007072 006752                     XE5A
1156  007074 132777 000004 027044 XE6A: BITB    #4,@TMMRH          ;IS 'NOW MASTER '' SET?
1157  007102 001017                     BNE     XE7                ;YES, OKAY
1158  007104 142777 000002 027034       BICB    #2,@TMMRH          ;CLR SEC FOR RETRY.
1159  007112                            ERROR   \N          ;ERROR:'NOW MASTER'' NOT SET VIA SECONDARY
  (1)                                                             ;******* ERROR 26 *******
  (1) 007112 032777 040000 023270       BIT     #B14,@SR
  (1) 007120 001005                     BNE     .+14
  (1) 007122 012767 000026 023512       MOV     #26,ERRNUM
  (1) 007130 004767 023260              JSR     PC,ERR
  (1)        000027                 N   =       N+1
1160  007134                            SCOPE   XE5A
  (1) 007134 004567 175066              JSR     R5,SCPRTN
  (1) 007140 006752                     XE5A
```

```
1162                                    ;ADDRESS SILO TEST
1163
1164  007142  152777  000060  026776  XE7:    BISB    #60,@TMMRH              ;SET AUT ADR TO LD SILO &CLR SILO
1165  007150  132777  000020  026770          BITB    #20,@TMMRH              ;IS AUT ADR SET?
1166  007156  001014                          BNE     XE7A
1167  007160                                  ERROR   \N              ;ERROR:COULD NOT SET TMMR BIT 12
 (1)                                                                      ;******* ERROR 27 *******
 (1)  007160  032777  040000  023222          BIT     #B14,@SR
 (1)  007166  001005                          BNE     .+14
 (1)  007170  012767  000027  023444          MOV     #27,ERRNUM
 (1)  007176  004767  023212                  JSR     PC,ERR
 (1)          000030                  N       =       N+1
1168  007202                                  SCOPE   XE7
 (1)  007202  004567  175020                  JSR     R5,SCPRTN
 (1)  007206  007142                          XE7
1169  007210  132777  000200  026730  XE7A:   BITB    #200,@TMMRH             ;CHECK FOR OUTPUT RDY
1170  007216  001414                          BEQ     XE8
1171  007220                                  ERROR   \N              ;ERROR:TMMR BIT 13 DOES NOT CLR ADDR SILO
 (1)                                                                      ;******* ERROR 30 *******
 (1)  007220  032777  040000  023162          BIT     #B14,@SR
 (1)  007226  001005                          BNE     .+14
 (1)  007230  012767  000030  023404          MOV     #30,ERRNUM
 (1)  007236  004767  023152                  JSR     PC,ERR
 (1)          000031                  N       =       N+1
1172  007242                                  SCOPE   XE7
 (1)  007242  004567  174760                  JSR     R5,SCPRTN
 (1)  007246  007142                          XE7
1173  007250  012704  177700          XE8:    MOV     #-64.,R4                ;R4 IS COUNTER
1174  007254  005003                          CLR     R3                      ;R3 IS DATA
1175  007256  132777  000100  026662          BITB    #100,@TMMRH             ;ADR SILO INPUT RDY?
1176  007264  001014                          BNE     XE9
1177  007266                                  ERROR   \N              ;ERROR:ADR SILO INPUT NOT RDY
 (1)                                                                      ;******* ERROR 31 *******
 (1)  007266  032777  040000  023114          BIT     #B14,@SR
 (1)  007274  001005                          BNE     .+14
 (1)  007276  012767  000031  023336          MOV     #31,ERRNUM
 (1)  007304  004767  023104                  JSR     PC,ERR
 (1)          000032                  N       =       N+1
1178  007310                                  SCOPE   XE8
 (1)  007310  004567  174712                  JSR     R5,SCPRTN
 (1)  007314  007250                          XE8
1179  007316  110377  026622          XE9:    MOVB    R3,@TMMR                ;LOAD ADDR SILO
1180  007322  005203                          INC     R3
1181  007324  005204                          INC     R4
1182  007326  001420                          BEQ     XE11
1183  007330  132777  000100  026610  XE10:   BITB    #100,@TMMRH             ;INPUT READY?
1184  007336  001367                          BNE     XE9
1185  007340                                  ERROR   \N              ;ERROR:INPUT NOT RDY-PREMATURLY FULL?
 (1)                                                                      ;******* ERROR 32 *******
 (1)  007340  032777  040000  023042          BIT     #B14,@SR
 (1)  007346  001005                          BNE     .+14
 (1)  007350  012767  000032  023264          MOV     #32,ERRNUM
 (1)  007356  004767  023032                  JSR     PC,ERR
 (1)          000033                  N       =       N+1
1186  007362                                  SCOPE   XE7
 (1)  007362  004567  174640                  JSR     R5,SCPRTN
```

```
  (1)  007366  007142                          XE7
1187   007370  132777  000100  026550  XE11:   BITB    #100,@TMMRH          ;SILO SHOULD BE FULL NOW
1188   007376  001414                          BEQ     XE12                 ;INPUT READY?
1189   007400                                  ERROR   \N           ;ERROR:SILO FULL-BUT STILL RDY FOR INPUT
  (1)                                                                ;******* ERROR 33 *******
  (1)  007400  032777  040000  023002          BIT     #B14,@SR
  (1)  007406  001005                          BNE     .+14
  (1)  007410  012767  000033  023224          MOV     #33,ERRNUM
  (1)  007416  004767  022772                  JSR     PC,ERR
  (1)          000034                  N       -       N+1
1190   007422                                  SCOPE   XE7
  (1)  007422  004567  174600                  JSR     R5,SCPRTN
  (1)  007426  007142                          XE7
1191   007430  132777  000200  026510  XE12:   BITB    #200,@TMMRH          ;SILO OUTPUT RDY?
1192   007436  001014                          BNE     XE13
1193   007440                                  ERROR   \N           ;ERROR:FULL SILO NOT RDY FOR OUTPUT
  (1)                                                                ;******* ERROR 34 *******
  (1)  007440  032777  040000  022742          BIT     #B14,@SR
  (1)  007446  001005                          BNE     .+14
  (1)  007450  012767  000034  023164          MOV     #34,ERRNUM
  (1)  007456  004767  022732                  JSR     PC,ERR
  (1)          000035                  N       =       N+1
1194   007462                                  SCOPE   XE7
  (1)  007462  004567  174540                  JSR     R5,SCPRTN
  (1)  007466  007142                          XE7
1195   007470  005003                  XE13:   CLR     R3                   ;R3 IS FOR DATA COMPARE
1196   007472  012704  177700                  MOV     #-64.,R4             ;R4 IS COUNTER
1197   007476  052777  000200  026426  XE14:   BIS     #B07,@TCR            ;SET RD SILO
1198   007504  117767  026434  023132          MOVB    @TMMR,BAD            ;READ WORD FROM ADDRESS SILO
1199   007512  005077  026414                  CLR     @TCR                 ;CLEAR RD SILO BIT
1200   007516  042767  177400  023120          BIC     #177400,BAD          ;ONLY INTERRESTED IN LOW BYTE
1201   007524  010367  023116                  MOV     R3,GOOD
1202   007530  026767  023112  023106  XE15:   CMP     GOOD,BAD             ;SILO OUTPUT OK?
1203   007536  001414                          BEQ     XE16
1204   007540                                  DATERR  \N           ;ERROR:BAD DATA READ FROM ADDR SILO
  (1)                                                                ;******* ERROR 35 *******
  (1)  007540  032777  040000  022642          BIT     #B14,@SR
  (1)  007546  001005                          BNE     .+14
  (1)  007550  012767  000035  023064          MOV     #35,ERRNUM
  (1)  007556  004767  022716                  JSR     PC,DERR
  (1)          000036                  N       -       N+1
1205   007562                                  SCOPE   XE7
  (1)  007562  004567  174440                  JSR     R5,SCPRTN
  (1)  007566  007142                          XE7
1206   007570  005203                  XE16:   INC     R3
1207   007572  042703  177740                  BIC     #177740,R3           ;KEEP R3 DOWN TO 5 BITS
1208   007576  005204                          INC     R4
1209   007600  001420                          BEQ     XE18                 ;AFTER 64 WDS, EXIT
1210   007602  132777  000200  026336  XE17:   BITB    #200,@TMMRH          ;SILO OUTPUT READY?
1211   007610  001332                          BNE     XE14
1212   007612                                  ERROR   \N           ;ERROR:SILO OUT NOT RDY-SILO NOT EMPTY
  (1)                                                                ;******* ERROR 36 *******
  (1)  007612  032777  040000  022570          BIT     #B14,@SR
  (1)  007620  001005                          BNE     .+14
  (1)  007622  012767  000036  023012          MOV     #36,ERRNUM
  (1)  007630  004767  022560                  JSR     PC,ERR
```

```
  (1)           000037                      N       =       N+1
1213  007634                                        SCOPE   XE7
  (1) 007634    004567  174366                      JSR     R5,SCPRTN
  (1) 007640    007142                              XE7
1214  007642    132777  000200  026276      XE18:   BITB    #200,@TMMRH             ;SILO OUT RDY AFTER 64 READS?
1215  007650    001414                              BEQ     XE19
1216  007652                                        ERROR   \N              ;ERROR:EMPTY SILO READY FOR OUTPUT
  (1)                                                                     ;******* ERROR 37 *******
  (1) 007652    032777  040000  022530              BIT     #B14,@SR
  (1) 007660    001005                              BNE     .+14
  (1) 007662    012767  000037  022752              MOV     #37,ERRNUM
  (1) 007670    004767  022520                      JSR     PC,ERR
  (1)           000040                      N       =       N+1
1217  007674                                        SCOPE   XE7
  (1) 007674    004567  174326                      JSR     R5,SCPRTN
  (1) 007700    007142                              XE7
1218  007702    005077  026224      XE19:   CLR     @TCR                    ;CLR RD SILO
1219  007706    112777  000000  026230              MOVB    #0,@TMMR                ;LOAD A WORD INTO SILO
1220  007714    004567  174626                      JSR     R5,DELAY                ;WAIT FOR MIGRATION
1221  007720    000010                              .WORD   10
1222  007722    132777  000200  026216              BITB    #200,@TMMRH             ;CHECK OUT RDY AFTER DELAY
1223  007730    001022                              BNE     XE20
1224  007732                                        ERROR   \N              ;ERROR:SILO SETTLING TIME TOO LONG
  (1)                                                                     ;******* ERROR 40 *******
  (1) 007732    032777  040000  022450              BIT     #B14,@SR
  (1) 007740    001005                              BNE     .+14
  (1) 007742    012767  000040  022672              MOV     #40,ERRNUM
  (1) 007750    004767  022440                      JSR     PC,ERR
  (1)           000041                      N       =       N+1
1225  007754    052777  000200  026150              BIS     #B07,@TCR               ;SET RD SILO BIT
1226  007762    117767  026156  022654              MOVB    @TMMR,BAD               ;GET RID OF THE WORD IN SILO
1227  007770                                        SCOPE   XE19
  (1) 007770    004567  174232                      JSR     R5,SCPRTN
  (1) 007774    007702                              XE19
1228  007776    152777  000041  026142      XE20:   BISB    #41,@TMMRH              ;SET 'CLR SILO' BIT & SET MASTER
1229  010004    132777  000200  026134              BITB    #200,@TMMRH             ;SILO RDY?
1230  010012    001414                              BEQ     XE21
1231  010014                                        ERROR   \N              ;ERROR:BIT 13 OF TMMR DID NOT CLR ADR SILO
  (1)                                                                     ;******* ERROR 41 *******
  (1) 010014    032777  040000  022366              BIT     #B14,@SR
  (1) 010022    001005                              BNE     .+14
  (1) 010024    012767  000041  022610              MOV     #41,ERRNUM
  (1) 010032    004767  022356                      JSR     PC,ERR
  (1)           000042                      N       =       N+1
1232  010036                                        SCOPE   XE20
  (1) 010036    004567  174164                      JSR     R5,SCPRTN
  (1) 010042    007776                              XE20
1233  010044    112777  000037  026072      XE21:   MOVB    #37,@TMMR               ;LOAD SILO WITH TEST WORD
1234  010052    132777  000200  026066      XE22:   BITB    #200,@TMMRH             ;SILO OUT RDY?
1235  010060    001774                              BEQ     XE22                    ;WAIT FOR IT
1236  010062    142777  000020  026056      XE22A:  BICB    #20,@TMMRH              ;CLR AUT ADR
1237  010070    016704  022316                      MOV     DLCON,R4
1238  010074    012703  177000              XE22B:  MOV     #177000,R3              ;SET UP FOR ABOUT 5MS DELAY
1239  010100    132777  000200  026040      XE23:   BITB    #200,@TMMRH             ;OUTPUT RDY?
1240  010106    001420                              BEQ     XE24                    ;IF NO - CARRY ON
1241  010110    005203                              INC     R3                      ;WAITED 5MS?
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 1242  010112  001372                          BNE     XE23                    ;NOT YET
 1243  010114  005304                          DEC     R4
 1244  010116  001366                          BNE     XE22B
 1245  010120                                  ERROR   \N              ;ERROR:ADDRESS SILO IS NOT CYCLING
  (1)                                                                     ;******* ERROR 42 *******
  (1)  010120  032777  040000  022262          BIT     #B14,@SR
  (1)  010126  001005                          BNE     .+14
  (1)  010130  012767  000042  022504          MOV     #42,ERRNUM
  (1)  010136  004767  022252                  JSR     PC,ERR
  (1)          000043                  N       -       N+1
 1246  010142                                  SCOPE   XE22A
  (1)  010142  004567  174060                  JSR     R5,SCPRTN
  (1)  010146  010062                          XE22A
 1247  010150  142777  000001  025770  XE24:   BICB    #1,@TMMRH               ;CLEAR MASTER FOR SYNC.
 1248  010156  004567  174364                  JSR     R5,DELAY
 1249  010162  000010                          .WORD   10
 1250  010164  132777  000200  025754          BITB    #200,@TMMRH             ;OUTPUT READY
 1251  010172  001014                          BNE     XE25
 1252  010174                                  ERROR   \N              ;ERROR:CYCLED WORD WAS LOST-OUT NOT RDY
  (1)                                                                     ;******* ERROR 43 *******
  (1)  010174  032777  040000  022206          BIT     #B14,@SR
  (1)  010202  001005                          BNE     .+14
  (1)  010204  012767  000043  022430          MOV     #43,ERRNUM
  (1)  010212  004767  022176                  JSR     PC,ERR
  (1)          000044                  N       =       N+1
 1253  010216                                  SCOPE   XE20
  (1)  010216  004567  174004                  JSR     R5,SCPRTN
  (1)  010222  007776                          XE20
 1254  010224  004567  174316          XF25:   JSR     R5,DELAY
 1255  010230  000010                          .WORD   10
 1256  010232  152777  000021  025706          BISB    #21,@TMMRH              ;SET AUTO ADDR & MASTER
 1257  010240  052777  000200  025664          BIS     #B07,@TCR               ;SET RD SILO
 1258  010246  117767  025672  022370          MOVB    @TMMR,BAD               ;CHECK VALIDITY OF OUTPUT
 1259  010254  042767  177400  022362          BIC     #177400,BAD             ;ONLY INTERRESTED IN LOW BYTE
 1260  010262  012767  000037  022356          MOV     #37,GOOD
 1261  010270  026767  022352  022346          CMP     GOOD,BAD                ;OUTPUT SHOULD BE 37
 1262  010276  001417                          BEQ     XE26
 1263  010300                                  DATERR  \N              ;ERROR:CYCLED WORD IS BAD DATA
  (1)                                                                     ;******* ERROR 44 *******
  (1)  010300  032777  040000  022102          BIT     #B14,@SR
  (1)  010306  001005                          BNE     .+14
  (1)  010310  012767  000044  022324          MOV     #44,ERRNUM
  (1)  010316  004767  022156                  JSR     PC,DERR
  (1)          000045                  N       =       N+1
 1264  010322  042777  000200  025602          BIC     #B07,@TCR               ;CLR RD SILO BIT FOR SCOPE
 1265  010330                                  SCOPE   XE20
  (1)  010330  004567  173672                  JSR     R5,SCPRTN
  (1)  010334  007776                          XE20
 1266  010336  004567  174204          XE26:   JSR     R5,DELAY                ;WAIT ANOTHER SETTLING TIME
 1267  010342  000010                          .WORD   10
 1268  010344  132777  000200  025574          BITB    #200,@TMMRH             ;IS SILO OUT RDY (SHOULDN'T BE)?
 1269  010352  001417                          BEQ     XE27                    ;NO, LEAVE
 1270  010354                                  ERROR   \N              ;ERROR:EXTRA WORD FOUND IN SILO
  (1)                                                                     ;******* ERROR 45 *******
  (1)  010354  032777  040000  022026          BIT     #B14,@SR
  (1)  010362  001005                          BNE     .+14
```

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   (1)  010364  012767  000045  022250          MOV     #45,ERRNUM
   (1)  010372  004767  022016                  JSR     PC,ERR
   (1)          000046                  N       -       N+1
  1271  010376  042777  000200  025526          BIC     #B07,@TCR               ;CLR RD SILO
  1272  010404                                  SCOPE   XE20
   (1)  010404  004567  173616                  JSR     R5,SCPRTN
   (1)  010410  007776                          XE20
  1273  010412  152777  000060  025526  XE27:   BISB    #60,@TMPMRH             ;SET AUTO ADDRESS & CLR ADDR SILO
  1274  010420  005077  025506                  CLR     @TCR                    ;CLEAR RD SILO
  1275  010424  004767  021242                  JSR     PC,MONIT
  1276  010430  032777  0'0000  021752          BIT     #B12,@SR                ;OK TO EXIT IF SW 12 = 0
  1277  010436  001402                          BEQ     XERT
  1278  010440  000167  175764                  JMP     @SRTST                  ;OTHERWISE, STAY HERE
  1279  010444  000207                  XERT:   RTS     PC
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                                        .SBTTL  DATA SILO TEST

                                ;TRANSMITTER DATA SILO TEST

                        SILTST: BDINIT  XMTR                    ;CLEAR BOARD
010454  004567  174066          JSR     R5,DELAY
010460  000010                  .WORD   10
010462  032777  000010  025442  BIT     #B03,@TCR               ;SILO OUTPUT READY?
010470  001414                  BEQ     XF1
010472                          ERROR   \N              ;ERROR:BD INIT DID NOT CLEAR DATA SILO
 (1)                                                            ;******* ERROR 46 *******
 (1)    010472  032777  040000  021710          BIT     #B14,@SR
 (1)    010500  001005                  BNE     .+14
 (1)    010502  012767  000046  022132          MOV     #46,ERRNUM
 (1)    010510  004767  021700          JSR     PC,ERR
 (1)            000047          N       =       N+1
                                        SCOPE   SILTST
 (1)    010514  004567  173506          JSR     R5,SCPRTN
 (1)    010520  010446                  SILTST
010522  032777  000400  025404  XF1:    BIT     #B08,@TSR               ;SILO INPUT READY?
010530  001014                  BNE     XF2
010532                          ERROR   \N              ;ERROR:BD INIT DID NOT SET INPUT READY
 (1)                                                            ;******* ERROR 47 *******
 (1)    010532  032777  040000  021650          BIT     #B14,@SR
 (1)    010540  001005                  BNE     .+14
 (1)    010542  012767  000047  022072          MOV     #47,ERRNUM
 (1)    010550  004767  021640          JSR     PC,ERR
 (1)            000050          N       =       N+1
                                        SCOPE   SILTST
 (1)    010554  004567  173446          JSR     R5,SCPRTN
 (1)    010560  010446                  SILTST
010562  012777  177777  025346  XF2:    MOV     #-1,@TSDB               ;LOAD 177777 INTO DATA SILO
010570  004567  173752                  JSR     R5,DELAY
010574  000010                  .WORD   10
010576  032777  000010  025326          BIT     #B03,@TCR               ;SILO OUTPUT READY?
010604  001017                  BNE     XF3
010606                          ERROR   \N              ;ERROR:NO SILO OUTPUT 37 US. AFTER LOAD
 (1)                                                            ;******* ERROR 50 *******
 (1)    010606  032777  040000  021574          BIT     #B14,@SR
 (1)    010614  001005                  BNE     .+14
 (1)    010616  012767  000050  022016          MOV     #50,ERRNUM
 (1)    010624  004767  021564          JSR     PC,ERR
 (1)            000051          N       =       N+1
010630                          BDINIT  XMTR                    ;CLEAR SILO
010636                          SCOPE   XF2
 (1)    010636  004567  173364          JSR     R5,SCPRTN
 (1)    010642  010562                  XF2
010644  017767  025266  021772  XF3:    MOV     @TSDB,BAD               ;READ WORD FROM SILO
010652  012767  177777  021766          MOV     #-1,GOOD
010660  026767  021762  021756          CMP     GOOD,BAD                ;SILO OUTPUT = 177777
010666  001417                  BEQ     XF3A
010670                          DATEP   \N              ;ERROR:DROPPED BITS IN DATA SILO
 (1)                                                            ;******* ERROR 51 *******
 (1)    010670  032777  040000  021512          BIT     #B14,@SR
 (1)    010676  001005                  BNE     .+14
 (1)    010700  012767  000051  021734          MOV     #51,ERRNUM
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  (1)  010706  004767  021566              JSR     PC,DERR
  (1)          000052              N       =       N+1
1309   010712                              BDINIT  XMTR                    ;CLEAR SILO
1310   010720                              SCOPE   XF2
  (1)  010720  004567  173302              JSR     R5,SCPRTN
  (1)  010724  010562                      XF2
1311   010726  052777  000200  025176  XF3A:  BIS     #B07,@TCR               ;SET RD SILO BIT IN TCR
1312   010734  017703  025176              MOV     @TSDB,R3                ;POP WORD FROM SILO
1313   010740  032777  000010  025164      BIT     #B03,@TCR               ;SILO OUTPUT READY?
1314   010746  001414                      BEQ     XF5
1315   010750                              ERROR   \N              ;ERROR:WORD DID NOT GET POPPED FROM SILO
  (1)                                                                 ;******* ERROR 52 *******
  (1)  010750  032777  040000  021432      BIT     #B14,@SR
  (1)  010756  001005                      BNE     .+14
  (1)  010760  012767  000052  021654      MOV     #52,ERRNUM
  (1)  010766  004767  021422              JSR     PC,ERR
  (1)          000053              N       =       N+1
1316   010772                              SCOPE   XF3
  (1)  010772  004567  173230              JSR     R5,SCPRTN
  (1)  010776  010644                      XF3
1317   011000  032777  000400  025126  XF5:   BIT     #B08,@TSR               ;IS INPUT READY?
1318   011006  001014                      BNE     XF6
1319   011010                              ERROR   \N              ;ERROR:DATA SILO INPUT NOT READY
  (1)                                                                 ;******* ERROR 53 *******
  (1)  011010  032777  040000  021372      BIT     #B14,@SR
  (1)  011016  001005                      BNE     .+14
  (1)  011020  012767  000053  021614      MOV     #53,ERRNUM
  (1)  011026  004767  021362              JSR     PC,ERR
  (1)          000054              N       =       N+1
1320   011032                              SCOPE   XF5
  (1)  011032  004567  173170              JSR     R5,SCPRTN
  (1)  011036  011000                      XF5
1321   011040  042777  000200  025064  XF6:   BIC     #B07,@TCR               ;CLEAR RD SILO BIT
1322   011046  005077  025064              CLR     @TSDB                   ;LOAD 0'S INTO SILO
1323   011052  032777  000010  025052  XF6A:  BIT     #B03,@TCR               ;OUTPUT RDY?
1324   011060  001774                      BEQ     XF6A                    ;WAIT FOR IT
1325   011062  017767  025050  021554      MOV     @TSDB,BAD               ;READ OUTPUT OF SILO
1326   011070  005067  021552              CLR     GOOD
1327   011074  026767  021546  021542      CMP     GOOD,BAD                ;OUTPUT = 0?
1328   011102  001417                      BEQ     XF7
1329   011104                              DATERR  \N              ;ERROR:BITS PICKED UP IN DATA SILO
  (1)                                                                 ;******* ERROR 54 *******
  (1)  011104  032777  040000  021276      BIT     #B14,@SR
  (1)  011112  001005                      BNE     .+14
  (1)  011114  012767  000054  021520      MOV     #54,ERRNUM
  (1)  011122  004767  021352              JSR     PC,DERR
  (1)          000055              N       =       N+1
1330   011126                              BDINIT  XMTR                    ;CLR SILO
1331   011134                              SCOPE   XF6
  (1)  011134  004567  173066              JSR     R5,SCPRTN
  (1)  011140  011040                      XF6
1332   011142                      XF7:    BDINIT  XMTR                    ;CLR XMITTER BOARD
1333   011150  012777  177600  024762      MOV     #-128.,@TSBC            ;SET BYTE COUNT TO -128
1334   011156  012777  033564  024756      MOV     #SILDAT,@TSBA           ;POINT DEVICE AT CORE BUFFER
1335   011164  052777  040000  024740      BIS     #B14,@TCR               ;SET TX NPR
1336   011172  032777  040000  024732      BIT     #B14,@TCR               ;IS TX NPR SET?
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1337  011200  001014                        BNE     XF8
1338  011202                                ERROR   \N              ;ERROR:CANNOT SET TX NPR
 (1)                                                                ;******* ERROR 55 *******
 (1)  011202  032777  040000  021200        BIT     #B14,@SR
 (1)  011210  001005                        BNE     .+14
 (1)  011212  012767  000055  021422        MOV     #55,ERRNUM
 (1)  011220  004767  021170                JSR     PC,ERR
 (1)          000056                N       =       N+1
1339  011224                                SCOPE   XF7
 (1)  011224  004567  172776                JSR     R5,SCPRTN
 (1)  011230  011142                        XF7
1340  011232  016704  021154        XF8:    MOV     DLCON,R4
1341  011236  012703  177500        XF8A:   MOV     #177500,R3              ;SET UP 2 MS DELAY
1342  011242  005777  024672        XF9:    TST     @TSBC                   ;IS BYTE COUNT 0?
1343  011246  001420                        BEQ     XF10
1344  011250  005203                        INC     R3                      ;WAITED 2 MS?
1345  011252  001373                        BNE     XF9                     ;NO, KEEP LOOKING
1346  011254  005304                        DEC     R4
1347  011256  001367                        BNE     XF8A
1348  011260                                ERROR   \N              ;ERROR: NPR NOT COMPLETE AFTER 2 MS
 (1)                                                                ;******* ERROR 56 *******
 (1)  011260  032777  040000  021122        BIT     #B14,@SR
 (1)  011266  001005                        BNE     .+14
 (1)  011270  012767  000056  021344        MOV     #56,ERRNUM
 (1)  011276  004767  021112                JSR     PC,ERR
 (1)          000057                N       =       N+1
1349  011302                                SCOPE   XF7
 (1)  011302  004567  172720                JSR     R5,SCPRTN
 (1)  011306  011142                        XF7
1350  011310  032777  000400  024616  XF10:  BIT     #B08,@TSR               ;INPUT READY?
1351  011316  001414                        BEQ     XF11
1352  011320                                ERROR   \N              ;ERROR:SILO FULL BUT INPUT RDY SET
 (1)                                                                ;******* ERROR 57 *******
 (1)  011320  032777  040000  021062        BIT     #B14,@SR
 (1)  011326  001005                        BNE     .+14
 (1)  011330  012767  000057  021304        MOV     #57,ERRNUM
 (1)  011336  004767  021052                JSR     PC,ERR
 (1)          000060                N       =       N+1
1353  011342                                SCOPE   XF10
 (1)  011342  004567  172660                JSR     R5,SCPRTN
 (1)  011346  011310                        XF10
1354  011350  032777  000010  024554  XF11:  BIT     #B03,@TCR               ;OUTPUT READY?
1355  011356  001014                        BNE     XF12
1356  011360                                ERROR   \N              ;ERROR:FULL SILO NOT RDY FOR OUTPUT
 (1)                                                                ;******* ERROR 60 *******
 (1)  011360  032777  040000  021022        BIT     #B14,@SR
 (1)  011366  001005                        BNE     .+14
 (1)  011370  012767  000060  021244        MOV     #60,ERRNUM
 (1)  011376  004767  021012                JSR     PC,ERR
 (1)          000061                N       =       N+1
1357  011402                                SCOPE   XF11
 (1)  011402  004567  172620                JSR     R5,SCPRTN
 (1)  011406  011350                        XF11
1358  011410  052777  000200  024514  XF12:  BIS     #B07,@TCR               ;SET RD SILO BIT
1359  011416  012704  033564                MOV     #SILDAT,R4              ;R4 IS DATA POINTER
1360  011422  012703  177700                MOV     #-64.,R3                ;R3 IS COUNTER
```

```
 1361  011426  017767  024504  021210  XF13:   MOV     @TSDB,BAD               ;POP WORD FROM SILO TO 'BAD'
 1362  011434  012467  021206          .       MOV     (R4)+,GOOD              ;AND POP A WORD FROM BUFFER
 1363  011440  026767  021202  021176          CMP     GOOD,BAD                ;DATA OK?
 1364  011446  001422                          BEQ     XF14
 1365  011450                                  DATERR  \N              ;ERROR:DATA FROM SILO IS WRONG
  (1)                                                                    ;******* ERROR 61 *******
  (1)  011450  032777  040000  020732          BIT     #B14,@SR
  (1)  011456  001005                          BNE     .+14
  (1)  011460  012767  000061  021154          MOV     #61,ERRNUM
  (1)  011466  004767  021006                  JSR     PC,DERR
  (1)          000062                  N       =       N+1
 1366  011472  042777  000200  024432          BIC     #B07,@TCR               ;CLR RD SILO BIT
 1367  011500                                  SCOPE   XF7                     ;GO TO RE-FILL SILO FOR RE-TRY
  (1)  011500  004567  172522                  JSR     R5,SCPRTN
  (1)  011504  011142                          XF7
 1368  011506  052777  000200  024416          BIS     #B07,@TCR               ;RE-SET RD SILO BIT
 1369  011514  005203                  XF14:   INC     R3                      ;ALL DONE?
 1370  011516  001343                          BNE     XF13                    ;IF NOT, POP ANOTHER WORD
 1371  011520                          XF17:   BDINIT  XMTR                    ;CLEAR THE BOARD
 1372  011526  012777  177774  024404          MOV     #-4,@TSBC               ;SET BYTE COUNT TO -4
 1373  011534  012777  033564  024400          MOV     #SILDAT,@TSBA           ;POINT NPR TO DATA BUFFER
 1374  011542  012767  033564  021076          MOV     #SILDAT,GOOD
 1375  011550  052777  040004  024354          BIS     #40004,@TCR             ;SET TX NPR AND INH ADR INC
 1376  011556  005777  024356          XF18:   TST     @TSBC                   ;WAIT FOR NPR TO FINISH
 1377  011562  001375                          BNE     XF18
 1378  011564  017767  024352  021052          MOV     @TSBA,BAD               ;READ BYTE ADDRESS
 1379  011572  026767  021050  021044          CMP GOOD,BAD                    ;HAS IT CHANGED?
 1380  011600  001417                          BEQ     XF19
 1381  011602                                  DATERR  \N              ;ERROR:TSBA SHD NOT CHANGE WITH INH ADR INC SET
  (1)                                                                    ;******* ERROR 62 *******
  (1)  011602  032777  040000  020600          BIT     #B14,@SR
  (1)  011610  001005                          BNE     .+14
  (1)  011612  012767  000062  021022          MOV     #62,ERRNUM
  (1)  011620  004767  020654                  JSR     PC,DERR
  (1)          000063                  N       =       N+1
 1382  011624                                  BDINIT  XMTR
 1383  011632                                  SCOPE   XF17
  (1)  011632  004567  172370                  JSR     R5,SCPRTN
  (1)  011636  011520                          XF17
```

```
                                        .SBTTL  DATA SILO BLOCK COUNTER TEST

                                        ;THIS TESTS THAT, AFTER PULLING 200 (OCTAL) WORDS THRU THE SILO
                                        ;THE BLOCK COUNTER COUNTS THE 200 WORDS AND HOLDS SILO OUTPUT READY
                                        ;IN A FALSE STATE.

011640                                  XF19:   BDINIT  XMTR                    ;CLEAR THE BOARD
011646  142777  000001  024272                  BICB    #B00,@TMMRH             ;CLEAR MASTER FOR THIS TEST
011654  004767  000136                        JSR     PC,XFSR                 ;FILL THE DATA SILO
011660  012702  000100                        MOV     #64.,R2
011664  004767  000176                        JSR     PC,XFEMT                ;POP ALL 64 WORDS OUT
011670  004767  000122                        JSR     PC,XFSR                 ;FILL SILO AGAIN
011674  012702  000020                        MOV     #20,R2
011700  004767  000162                        JSR     PC,XFEMT                ;POP 20 (OCTAL) WORDS OUT
011704  004767  000106                        JSR     PC,XFSR                 ;FILL SILO AGAIN
011710  012702  000060                        MOV     #60,R2
011714  004767  000146                        JSR     PC,XFEMT                ;POP 60 (OCTAL) WORDS OUT
                                                                                ;  LEAVING 20 (OCTAL) IN SILO
                                                                                ;  AND HAVING PULLED OUT 200 TOTAL (OCTAL)
011720  032777  000010  024204                BIT     #B03,@TSR               ;NOW CHECK OUTPUT READY
011726  001414                              BEQ     XF19A                   ;IF IT'S CLEAR, OKAY
011730                                      ERROR   \N              .ERROR:OUTPUT RDY AFTER 200 WORD BLOCK
 (1)                                                                            .******* ERROR 63 *******
 (1)    011730  032777  040000  020452          BIT     #B14,@SR
 (1)    011736  001005                        BNE     .+14
 (1)    011740  012767  000063  020674        MOV     #63,ERRNUM
 (1)    011746  004767  020442                JSR     PC,ERR
 (1)            000064                  N       =       N+1
011752                                      SCOPE   XF19
 (1)    011752  004567  172250                JSR     R5,SCPRTN
 (1)    011756  011640                        XF19
011760                                  XF19A:  BDINIT  XMTR                    ;CLEAN UP.
011766  152777  000020  024152          XF20:   BISB    #20,@TMMRH              ;SET AUT ADR
011774  004767  017672                        JSR     PC,MONIT
012000  032777  010000  020402                BIT     #B12,@SR                ;CAN WE EXIT NOW?
012006  001402                              BEQ     XFRT                    ;OK IF SW 12 = 0
012010  000167  176432                        JMP     SILTST                  ;NO IF SW 12 = 1
012014  000207                          XFRT:   RTS     PC

                                        ;ROUTINE TO FILL DATA SILO VIA NPR

012016  012777  177600  024114          XFSR:   MOV     #-128.,@TSBC            ;SET BYTE COUNT FOR FILL-UP
012024  012777  033564  024110                  MOV     #SILDAT,@TSBA           ;POINT DEVICE AT CORE BUFFER
012032  052777  040000  024072                  BIS     #B14,@TCR               ;START NPR
012040  016704  020346                        MOV     DLCON,R4
012044  012703  175000          XFSR1:  MOV     #175000,R3              ;SET UP TO WAIT FOR CMPL
012050  005203                  XFSRW:  INC     R3
012052  001376                          BNE     XFSRW                   ;WAIT FOR NPR COMPLETION
012054  005304                          DEC     R4
012056  001372                          BNE     XFSR1
012060  005077  024046                  CLR     @TCR                    ;CLEAR TXNPR
012064  000207                          RTS     PC                      ;RETURN WITH SILO FULL

                                        ;ROUTINE TO POP (R2) NUMBER OF WORDS FROM DATA SILO

012066  052777  000200  024036  XFEMT:  BIS     #B07,@TCR               ;SET RD SILO
```

```
 1433  012074  010203                          MOV     R2,R3
 1434  012076  017767  024034  020540  XFMTW:  MOV     @TSDB,BAD       ;POP A WORD OUT
 1435  012104  005303                          DEC     R3              ;KEEP TRACK OF # OF WORDS
 1436  012106  001373                          BNE     XFMTW
 1437  012110  042777  000200  024014          BIC     #B07,@TCR       ;LEAVE WITH RD SILO CLEAR
 1438  012116  000207                          RTS     PC
```

```
                                        .SBTTL  TSRTST

                                ;STATUS REGISTER AND ERRORS TEST

012120                          TSRTST: BDINIT  XMTR                    ;CLR BOARD
012126  052777  000200  024000          BIS     #B07,@TSR               ;SET SUCC XFER
012134  032777  000200  023772          BIT     #B07,@TSR               ;IS IT SET?
012142  001014                          BNE     XH1
012144                                  ERROR   \N              ;ERROR:CANNOT SET TSR BIT 07
                                                                        ;******* ERROR 64 *******
012144  032777  040000  020236          BIT     #B14,@SR
012152  001005                          BNE     .+14
012154  012767  000064  020460          MOV     #64,ERRNUM
012162  004767  020226                  JSR     PC,ERR
        000065                  N       =       N+1
012166                                  SCOPE   TSRTST
012166  004567  172034                  JSR     R5,SCPRTN
012172  012120                          TSRTST
012174  042777  000200  023732  XH1:    BIC     #B07,@TSR               ;CLR SUCC XFER
012202  032777  000200  023724          BIT     #B07,@TSR               ;IS IT CLR?
012210  001414                          BEQ     XH2
012212                                  ERROR   \N              ;ERROR:CANNOT CLR SUCC XFR
                                                                        ;******* ERROR 65 *******
012212  032777  040000  020170          BIT     #B14,@SR
012220  001005                          BNE     .+14
012222  012767  000065  020412          MOV     #65,ERRNUM
012230  004767  020160                  JSR     PC,ERR
        000066                  N       =       N+1
012234                                  SCOPE   XH1
012234  004567  171766                  JSR     R5,SCPRTN
012240  012174                          XH1
012242                          XH2:    BDINIT  XMTR                    ;CLEAR BOARD
012250  012777  177777  023660          MOV     #-1,@TSDB               ;LOAD WORD INTO SILO
012256  032777  000010  023646          BIT     #B03,@TCR               ;OUTPUT READY?
012264  001774                          BEQ     .-6                     ;WAIT FOR WORD TO HIT BOTTOM
012266  152777  000001  023652          BISB    #1,@TMMRH               ;SET MASTER FOR TIME SLICES
012274  012777  120000  023630          MOV     #120000,@TCR            ;SET RIB AND SND WD
012302  016704  020104                  MOV     DLCON,R4
012306  012703  177763          XH2B:   MOV     #177763,R3              ;SET UP FOR 100 U.S. ALARM
012312  032777  000020  023614  XH2A:   BIT     #B04,@TSR               ;TDM BUS BSY SET?
012320  001020                          BNE     XH3
012322  005203                          INC     R3                      ;WAIT 100 US.
012324  001372                          BNE     XH2A
012326  005304                          DEC     R4
012330  001366                          BNE     XH2B
012332                                  ERROR   \N              ;ERROR:TDM BUS BSY NOT SET
                                                                        ;******* ERROR 66 *******
012332  032777  040000  020050          BIT     #B14,@SR
012340  001005                          BNE     .+14
012342  012767  000066  020272          MOV     #66,ERRNUM
012350  004767  020040                  JSR     PC,ERR
        000067                  N       =       N+1
012354                                  SCOPE   XH2
012354  004567  171646                  JSR     R5,SCPRTN
012360  012242                          XH2
012362  032777  000100  023544  XH3:    BIT     #B06,@TSR               ;IS BUSY SET?
```

```
1472  012370  001014                          BNE     XH4
1473  012372                                  ERROR   \N              ;ERROR:BUSY NOT SET WITH SND WD & RIB
 (1)                                                                  ;******* ERROR 67 *******
 (1)  012372  032777  040000  020010          BIT     #B14,@SR
 (1)  012400  001005                          BNE     .+14
 (1)  012402  012767  000067  020232          MOV     #67,ERRNUM
 (1)  012410  004767  020000                  JSR     PC,ERR
 (1)          000070                  N       =       N+1
1474  012414                                  SCOPE   XH2
 (1)  012414  004567  171606                  JSR     R5,SCPRTN
 (1)  012420  012242                          XH2
1475  012422  042777  100000  023502  XH4:    BIC     #B15,@TCR               ;CLEAR RIB
1476  012430  000240                          NOP                             ;WAIT FOR TIME SLICE
1477  012432  032777  020000  023472          BIT     #B13,@TCR               ;IS SND WD CLR?
1478  012440  001414                          BEQ     XH5
1479  012442                                  ERROR   \N              ;ERROR:INTR REQ DID NOT CLR SND WD
 (1)                                                                  ;******* ERROR 70 *******
 (1)  012442  032777  040000  017740          BIT     #B14,@SR
 (1)  012450  001005                          BNE     .+14
 (1)  012452  012767  000070  020162          MOV     #70,ERRNUM
 (1)  012460  004767  017730                  JSR     PC,ERR
 (1)          000071                  N       =       N+1
1480  012464                                  SCOPE   XH2
 (1)  012464  004567  171536                  JSR     R5,SCPRTN
 (1)  012470  012242                          XH2
1481  012472  032777  000100  023434  XH5:    BIT     #B06,@TSR               ;IS BUSY CLR?
1482  012500  001414                          BEQ     XH6
1483  012502                                  ERROR   \N              ;ERROR:SND WD-0 DID NOT CLR BUSY
 (1)                                                                  ;******* ERROR 71 *******
 (1)  012502  032777  040000  017700          BIT     #B14,@SR
 (1)  012510  001005                          BNE     .+14
 (1)  012512  012767  000071  020122          MOV     #71,ERRNUM
 (1)  012520  004767  017670                  JSR     PC,ERR
 (1)          000072                  N       =       N+1
1484  012524                                  SCOPE   XH2
 (1)  012524  004567  171476                  JSR     R5,SCPRTN
 (1)  012530  012242                          XH2
1485  012532  005077  023376          XH6:    CLR     @TSR                    ;CLEAR TSR
1486  012536  052777  120000  023366          BIS     #120000,@TCR            ;SET RIB & SND WD
1487  012544  052777  001000  023362          BIS     #B09,@TSR               ;SET OVERRUN ERR BIT
1488  012552  032777  001000  023354          BIT     #B09,@TSR               ;IS IT SET?
1489  012560  001014                          BNE     XH7
1490  012562                                  ERROR   \N              ;ERROR:CANNOT SET TSR BIT 09
 (1)                                                                  ;******* ERROR 72 *******
 (1)  012562  032777  040000  017620          BIT     #B14,@SR
 (1)  012570  001005                          BNE     .+14
 (1)  012572  012767  000072  020042          MOV     #72,ERRNUM
 (1)  012600  004767  017610                  JSR     PC,ERR
 (1)          000073                  N       =       N+1
1491  012604                                  SCOPE   XH6
 (1)  012604  004567  171416                  JSR     R5,SCPRTN
 (1)  012610  012532                          XH6
1492  012612  032777  100000  023314  XH7:    BIT     #B15,@TSR               ;IS ERROR BIT SET (BIT 15)
1493  012620  001014                          BNE     XH8
1494  012622                                  ERROR   \N              ;ERROR:OVERRUN DID NOT SET ERROR BIT 15 IN TSR
 (1)                                                                  ;******* ERROR 73 *******
```

```
  (1)  012622  032777  040000  017560          BIT     #B14,@SR
  (1)  012630  001005                          BNE     .+14
  (1)  012632  012767  000073  020002          MOV     #73,ERRNUM
  (1)  012640  004767  017550                  JSR     PC,ERR
  (1)          000074                  N       =       N+1
1495   012644                                  SCOPE   XH6
  (1)  012644  004567  171356                  JSR     R5,SCPRTN
  (1)  012650  012532                          XH6
1496   012652  032777  020000  023252  XH8:    BIT     #B13,@TCR               ;IS SND WD CLR?
1497   012660  001414                          BEQ     XH8A
1498   012662                                  ERROR   \N              ;ERROR:TSR BIT 15 DID NOT CAUSE INTR REQ
                                                                        ;******* ERROR 74 *******
  (1)
  (1)  012662  032777  040000  017520          BIT     #B14,@SR
  (1)  012670  001005                          BNE     .+14
  (1)  012672  012767  000074  017742          MOV     #74,ERRNUM
  (1)  012700  004767  017510                  JSR     PC,ERR
  (1)          000075                  N       =       N+1
1499   012704                                  SCOPE   XH6
  (1)  012704  004567  171316                  JSR     R5,SCPRTN
  (1)  012710  012532                          XH6
1500   012712                          XH8A:   BDINIT  XMTR                    ;CLEAR ALL IN XMTR
1501   012720  012777  000000  023210          MOV     #0,@TSDB                ;LOAD A WORD INTO SILO
1502   012726  032777  001000  023200          BIT     #B09,@TSR               ;IS OVERRUN SET??
1503   012734  001414                          BEQ     XH9
1504   012736                                  ERROR   \N              ;ERROR:LOADING EMPTY SILO GIVES OVERRUN ERROR'
                                                                        ;******* ERROR 75 *******
  (1)
  (1)  012736  032777  040000  017444          BIT     #B14,@SR
  (1)  012744  001005                          BNE     .+14
  (1)  012746  012767  000075  017666          MOV     #75,ERRNUM
  (1)  012754  004767  017434                  JSR     PC,ERR
  (1)          000076                  N       =       N+1
1505   012760                                  SCOPE   XH8A
  (1)  012760  004567  171242                  JSR     R5,SCPRTN
  (1)  012764  012712                          XH8A
1506   012766  005077  023142          XH9:    CLR     @TSR
1507   012772  052777  002000  023134          BIS     #B10,@TSR               ;SET TIMEOUT BIT IN TSR
1508   013000  032777  002000  023126          BIT     #B10,@TSR               ;IS IT SET?
1509   013006  001014                          BNE     XH10
1510   013010                                  ERROR   \N              ;ERROR:CANNOT SET TSR BIT 10
                                                                        ;******* ERROR 76 *******
  (1)
  (1)  013010  032777  040000  017372          BIT     #B14,@SR
  (1)  013016  001005                          BNE     .+14
  (1)  013020  012767  000076  017614          MOV     #76,ERRNUM
  (1)  013026  004767  017362                  JSR     PC,ERR
  (1)          000077                  N       -       N+1
1511   013032                                  SCOPE   XH9
  (1)  013032  004567  171170                  JSR     R5,SCPRTN
  (1)  013036  012766                          XH9
1512   013040  032777  100000  023066  XH10:   BIT     #B15,@TSR               ;IS ERROR BIT SET?
1513   013046  001014                          BNE     XH11
1514   013050                                  ERROR   \N              ;ERROR:TIMEOUT DID NOT SET TSR BIT 15
                                                                        ;******* ERROR 77 *******
  (1)
  (1)  013050  032777  040000  017332          BIT     #B14,@SR
  (1)  013056  001005                          BNE     .+14
  (1)  013060  012767  000077  017554          MOV     #77,ERRNUM
  (1)  013066  004767  017322                  JSR     PC,ERR
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```
  (1)          000100                    N       =       N+1
1515  013072                                      SCOPE   XH9
  (1)  013072  004567  171130                    JSR     R5,SCPRTN
  (1)  013076  012766                             XH9
1516  013100  005077  023030              XH11:   CLR     @TSR                    ;CLR TSR
1517  013104  052777  004000  023022              BIS     #B11,@TSR               ;SET MST DWN
1518  013112  032777  004000  023014              BIT     #B11,@TSR               ;IS IT SET?
1519  013120  001014                             BNE     XH12
1520  013122                                      ERROR   \N              ;ERROR:CANNOT SET TSR BIT 11
  (1)                                                                             ;******* ERROR 100 *******
  (1)  013122  032777  040000  017260              BIT     #B14,@SR
  (1)  013130  001005                             BNE     .+14
  (1)  013132  012767  000100  017502              MOV     #100,ERRNUM
  (1)  013140  004767  017250                      JSR     PC,ERR
  (1)          000101                    N       =       N+1
1521  013144                                      SCOPE   XH11
  (1)  013144  004567  171056                    JSR     R5,SCPRTN
  (1)  013150  013100                             XH11
1522  013152  032777  100000  022754  XH12:       BIT     #B15,@TSR               ;IS ERROR BIT SET?
1523  013160  001014                             BNE     XH13
1524  013162                                      ERROR   \N              ;ERROR:MST DWN DIDN'T SET TSR BIT 15
  (1)                                                                             ;******* ERROR 101 *******
  (1)  013162  032777  040000  017220              BIT     #B14,@SR
  (1)  013170  001005                             BNE     .+14
  (1)  013172  012767  000101  017442              MOV     #101,ERRNUM
  (1)  013200  004767  017210                      JSR     PC,ERR
  (1)          000102                    N       =       N+1
1525  013204                                      SCOPE   XH11
  (1)  013204  004567  171016                    JSR     R5,SCPRTN
  (1)  013210  013100                             XH11
1526  013212  005077  022716              XH13:   CLR     @TSR
1527  013216  052777  010000  022710              BIS     #B12,@TSR               ;SET TXM ERR
1528  013224  032777  010000  022702              BIT     #B12,@TSR               ;IS IT SET?
1529  013232  001014                             BNE     XH14
1530  013234                                      ERROR   \N              ;ERROR:CANNOT SET TSR BIT 12
  (1)                                                                             ;******* ERROR 102 *******
  (1)  013234  032777  040000  017146              BIT     #B14,@SR
  (1)  013242  001005                             BNE     .+14
  (1)  013244  012767  000102  017370              MOV     #102,ERRNUM
  (1)  013252  004767  017136                      JSR     PC,ERR
  (1)          000103                    N       =       N+1
1531  013256                                      SCOPE   XH13
  (1)  013256  004567  170744                    JSR     R5,SCPRTN
  (1)  013262  013212                             XH13
1532  013264  032777  100000  022642  XH14:       BIT     #B15,@TSR               ;IS ERROR BIT SET?
1533  013272  001014                             BNE     XH15
1534  013274                                      ERROR   \N              ;ERROR:TXM ERR DIDN'T SET TSR BIT 15
  (1)                                                                             ;******* ERROR 103 *******
  (1)  013274  032777  040000  017106              BIT     #B14,@SR
  (1)  013302  001005                             BNE     .+14
  (1)  013304  012767  000103  017330              MOV     #103,ERRNUM
  (1)  013312  004767  017076                      JSR     PC,ERR
  (1)          000104                    N       =       N+1
1535  013316                                      SCOPE   XH13
  (1)  013316  004567  170704                    JSR     R5,SCPRTN
  (1)  013322  013212                             XH13
```

```
 1536  013324  005077  022604          XH15:   CLR     @TSR
 1537  013330  052777  020000  022576          BIS     #B13,@TSR               ;SET MEM OFL
 1538  013336  032777  020000  022570          BIT     #B13,@TSR               ;IS IT SET?
 1539  013344  001014                          BNE     XH16
 1540  013346                                  ERROR   \N              ;ERROR:CANNOT SET TSR BIT 13
   (1)                                                                   ;******* ERROR 104 *******
   (1)  013346  032777  040000  017034          BIT     #B14,@SR
   (1)  013354  001005                          BNE     .+14
   (1)  013356  012767  000104  017256          MOV     #104,ERRNUM
   (1)  013364  004767  017024                  JSR     PC,ERR
   (1)          000105                  N       =       N+1
 1541  013370                                  SCOPE   XH15
   (1)  013370  004567  170632                  JSR     R5,SCPRTN
   (1)  013374  013324                          XH15
 1542  013376  032777  100000  022530  XH16:   BIT     #B15,@TSR               ;IS ERROR BIT SET?
 1543  013404  001014                          BNE     XH17
 1544  013406                                  ERROR   \N              ;ERROR:MEM OFL DIDN'T SET TSR BIT 15
   (1)                                                                   ;******* ERROR 105 *******
   (1)  013406  032777  040000  016774          BIT     #B14,@SR
   (1)  013414  001005                          BNE     .+14
   (1)  013416  012767  000105  017216          MOV     #105,ERRNUM
   (1)  013424  004767  016764                  JSR     PC,ERR
   (1)          000106                  N       =       N+1
 1545  013430                                  SCOPE   XH15
   (1)  013430  004567  170572                  JSR     R5,SCPRTN
   (1)  013434  013324                          XH15
```

```
                                        ;ERROR GENERATION TESTS
                                        
013436                          XH17:   BDINIT  XMTR                    ;CLEAR BOARD
013444  012777  177774  022466        MOV     #-4,@TSBC               ;SET UP TO GENERATE NXM ERR
013452  012777  160000  022462        MOV     #160000,@TSBA           ;LOAD NON-EXST ADDR INTO TSBA
013460  052777  040060  022444        BIS     #40060,@TCR             ;START NPR AND SET EXT ADD BITS
013466  000240                        NOP
013470  000240                        NOP
013472  005777  022442                TST     @TSBC                   ;DID BYTE COUNT GO TO 0 ?
013476  001014                        BNE     XH18
013500                                ERROR   \N              ;ERROR:TXM NPR COMPL TO NEX ADDRESS
 (1)                                                                    ;******* ERROR 106 *******
 (1)    013500  032777  040000  016702        BIT     #B14,@SR
 (1)    013506  001005                BNE     .+14
 (1)    013510  012767  000106  017124        MOV     #106,ERRNUM
 (1)    013516  004767  016672                JSR     PC,ERR
 (1)            000107                N       =       N+1
013522                                  SCOPE   XH17
 (1)    013522  004567  170500                JSR     R5,SCPRTN
 (1)    013526  013436                        XH17
013530  032777  040000  022376        XH18:   BIT     #B14,@TSR               ;NOW CHECK NXL ERR BIT
013536  001014                        BNE     XH19
013540                                ERROR   \N              ;ERROR:NPR TO NON-EXST ADDR DIDN'T SET NXL ERR
 (1)                                                                    ;******* ERROR 107 *******
 (1)    013540  032777  040000  016642        BIT     #B14,@SR
 (1)    013546  001005                BNE     .+14
 (1)    013550  012767  000107  017064        MOV     #107,ERRNUM
 (1)    013556  004767  016632                JSR     PC,ERR
 (1)            000110                N       =       N+1
013562                                  SCOPE   XH17
 (1)    013562  004567  170440                JSR     R5,SCPRTN
 (1)    013566  013436                        XH17
013570  032777  100000  022336        XH19:   BIT     #B15,@TSR               ;IS ERROR BIT (15) SET?
013576  001014                        BNE     XH20
013600                                ERROR   \N              ;ERROR:NXL ERR DIDN'T SET TSR BIT 15
 (1)                                                                    ;******* ERROR 110 *******
 (1)    013600  032777  040000  016602        BIT     #B14,@SR
 (1)    013606  001005                BNE     .+14
 (1)    013610  012767  000110  017024        MOV     #110,ERRNUM
 (1)    013616  004767  016572                JSR     PC,ERR
 (1)            000111                N       =       N+1
013622                                  SCOPE   XH17
 (1)    013622  004567  170400                JSR     R5,SCPRTN
 (1)    013626  013436                        XH17
013630                                  XH20:   BDINIT  XMTR                    ;CLEAR BOARD
013636  016777  177774  022272        XH20L:  MOV     XH20L,@TSDB             ;FILL THE SILO WITH GARBAGE
013644  000240                        NOP
013646  000240                        NOP
013650  032777  000400  022256        BIT     #B08,@TSR               ;SILO INPUT READY?
013656  001367                        BNE     XH20L                   ;IF YES, KEEP LOADING
013660  016777  177752  022250        MOV     XH20L,@TSDB             ;NO,SILO FULL;LOAD 1 MORE WORD
013666  032777  001000  022240        BIT     #B09,@TSR               ;IS TSR BIT 9 SET?
013674  001014                        BNE     XH21
013676                                ERROR   \N              ;ERROR:LOADING FULL SILO DIDN'T SET TSR-09
 (1)                                                                    ;******* ERROR 111 *******
 (1)    013676  032777  040000  016504        BIT     #B14,@SR
```

```
  (1) 013704 001005                    BNE     .+14
  (1) 013706 012767 000111 016726      MOV     #111,ERRNUM
  (1) 013714 004767 016474             JSR     PC,ERR
  (1)        000112              N     =       N+1
1577 013720                            SCOPE   XH20L
  (1) 013720 004567 170302             JSR     R5,SCPRTN
  (1) 013724 013636                    XH20L
1578 013726                      XH21: BDINIT  XMTR                    ;CLEAR BOARD
1579 013734 052777 120000 022170       BIS     #120000,@TCR          ;SET SND WD & RIB
1580 013742 016702 016444              MOV     DLCON,R2
1581 013746 005003               XH21A: CLR    R3                    ;R3 AND R4 ARE COUNTERS
1582 013750 012704 177773              MOV     #-5,R4
1583 013754 032777 002000 022152 XH22: BIT     #B10,@TSR             ;IS TIMEOUT SET?
1584 013762 001022                     BNE     XH22A
1585 013764 005203                     INC     R3                    ;WATCH IT FOR A SEC
1586 013766 001372                     BNE     XH22
1587 013770 005204                     INC     R4
1588 013772 001370                     BNE     XH22
1589 013774 005302                     DEC     R2
1590 013776 001363                     BNE     XH21A
1591 014000                            ERROR   \N              ;ERROR:NO TIMEOUT IN A SECOND
  (1)                                                          ;******* ERROR 112 *******
  (1) 014000 032777 040000 016402      BIT     #B14,@SR
  (1) 014006 001005                    BNE     .+14
  (1) 014010 012767 000112 016624      MOV     #112,ERRNUM
  (1) 014016 004767 016372             JSR     PC,ERR
  (1)        000113              N     =       N+1
1592 014022                            SCOPE   XH21
  (1) 014022 004567 170200             JSR     R5,SCPRTN
  (1) 014026 013726                    XH21
1593 014030                      XH22A: BDINIT  XMTR                    ;CLR XMTR
1594 014036 105077 022104              CLRB    @TMMRH                ;CLEAR MASTER
1595 014042 012777 177777 022066       MOV     #-1,@TSDB             ;LOAD A WORD INTO XMTR DATA SILO
1596 014050 004567 170472              JSR     R5,DELAY              ;WAIT FOR MIGRATION
1597 014054 000010                     .WORD   10
1598 014056 052777 120000 022046       BIS     #120000,@TCR          ;SET RIB AND SND WORD
1599 014064 004567 170456              JSR     R5,DELAY
1600 014070 000010                     .WORD   10
1601 014072 032777 004000 022034       BIT     #B11,@TSR             ;CHECK FOR MASTER DOWN
1602 014100 001014                     BNE     XH23          ;ERROR:ATTEMPT TO SEND WORD WITH MASTER CLEAR
1603 014102                            ERROR   \N                    ;DID NOT SET MASTER DOWN
  (1)                                                          ;******* ERROR 113 *******
  (1) 014102 032777 040000 016300      BIT     #B14,@SR
  (1) 014110 001005                    BNE     .+14
  (1) 014112 012767 000113 016522      MOV     #113,ERRNUM
  (1) 014120 004767 016270             JSR     PC,ERR
  (1)        000114              N     -       N+1
1604 014124                            SCOPE   XH22A
  (1) 014124 004567 170076             JSR     R5,SCPRTN
  (1) 014130 014030                    XH22A
1605 014132                      XH23: BDINIT  XMTR
1606 014140 004767 015526              JSR     PC,MONIT
1607 014144 032777 010000 016236       BIT     #B12,@SR              ;IS SW 12 = 1?
1608 014152 001402                     BEQ     XHRT
1609 014154 000167 175740              JMP     TSRTST                ;IF SO, TRY THIS TEST OVER
1610 014160 000207               XHRT: RTS     PC
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                                        .SBTTL  INTERRUPT TEST

                                ;TRANSMITTER INTERRUPT TEST

014162                  INTST:  MTPS    #P7                     ;DIS-ALLOW INTERRUPT
(1) 014162 012737 000340 177776         MOV     #P7,@#PS
    014170                      BDINIT  XMTR                    ;CLR THE BOARD
014176 016700 021720                    MOV     TXVEC,R0
014202 012760 000340 000002             MOV     #340,2(R0)      ;SET NEW PS = P7
014210 012777 014240 021704             MOV     #ERRINT,@TXVEC  ;SET-UP FOR ERROR INTERRUPT
014216 052777 000100 021706             BIS     #B06,@TCR       ;SET INTERRUPT ENABLE
    014224                      MTPS    #0                      ;ALLOW INTERRUPT
(1) 014224 012737 000000 177776         MOV     #0,@#PS
014232 000240                           NOP
014234 000167 000046                    JMP     XJ0             ;SKIP ERROR IF NO INTERRUPT
    014240                  ERRINT: MTPS    #P7                 ;INTERRUPT OFF
(1) 014240 012737 000340 177776         MOV     #P7,@#PS
014246 022626                           CMP     (SP)+,(SP)+     ;CORRECT STACK
014250 042777 000100 021654             BIC     #B06,@TCR       ;CLR INTERRUPT ENABLE
    014256                      ERROR   \N              ;ERROR:ERRONEOUS INTERRUPT;NO FLAGS SET
(1)                                                             ;******* ERROR 114 *******
(1) 014256 032777 040000 016124         BIT     #B14,@SR
(1) 014264 001005                       BNE     .+14
(1) 014266 012767 000114 016346         MOV     #114,ERRNUM
(1) 014274 004767 016114                JSR     PC,ERR
(1)        000115               N       -       N+1
    014300                      SCOPE   INTST
(1) 014300 004567 167722                JSR     R5,SCPRTN
(1) 014304 014162                       INTST
    014306                  XJ0:    CLR     TMPRIO              ;START WITH C.P. AT PRIORITY 0
    014312                      MOV     #INTA,@TXVEC            ;SET VECTOR FOR GOOD INTERRUPT
    014320                  XJ1:    MTPS    #P7                 ;INTERRUPT OFF
(1) 014320 012737 000340 177776         MOV     #P7,@#PS
014326 052777 000100 021576             BIS     #B06,@TCR       ;ENABLE XMTR INTERRUPT
014334 052777 000200 021572             BIS     #B07,@TSR       ;FORCE INTR WITH SUCC XFER
    014342                      MTPS    TMPRIO                  ;ALLOW INTERRUPT
(1) 014342 016737 021546 177776         MOV     TMPRIO,@#PS
    014350                              NOP
    014352                              NOP                     ;WAIT FOR IT
    014354                      TST     TMPRIO                  ;IS PSW = 0?
    014360                      BNE     XJ2
    014362                      ERROR   \N              ;ERROR:NO INTERRUPT FROM TRANSMITTER
(1)                                                             ;******* ERROR 115 *******
(1) 014362 032777 040000 016020         BIT     #B14,@SR
(1) 014370 001005                       BNE     .+14
(1) 014372 012767 000115 016242         MOV     #115,ERRNUM
(1) 014400 004767 016010                JSR     PC,ERR
(1)        000116               N       =       N+1
    014404                      SCOPE   INTST
(1) 014404 004567 167616                JSR     R5,SCPRTN
(1) 014410 014162                       INTST
    014412                  XJ2:    CMP     XPRIO,TMPRIO            ;HAVE WE REACHED EXPECTED PRIORITY?
    014420                      BEQ     XJ3
    014422                      ERROR   \N              ;ERROR:DEVICE NOT JUMPERED TO EXPECTED PRIORITY
(1)                                                             ;******* ERROR 116 *******
(1) 014422 032777 040000 015760         BIT     #B14,@SR
```

```
 (1) 014430 001005                      BNE     .+14
 (1) 014432 012767 000116 016202        MOV     #116,ERRNUM
 (1) 014440 004767 015750               JSR     PC,ERR
 (1)        000117              N       =       N+1
1645 014444                             SCOPE   INTST
 (1) 014444 004567 167556               JSR     R5,SCPRTN
 (1) 014450 014162                      INTST
1646 014452 022767 000340 021434 XJ3:   CMP     #340,TMPRIO             ;IS PSW - 7?
1647 014460 001426                      BEQ     XJ4
1648 014462                             BDINIT  XMTR
1649 014470 062767 000040 021416        ADD     #40,TMPRIO
1650 014476 012777 014610 021416 XJ3S:  MOV     #INTB,@TXVEC            ;SET VECTOR FOR ERROR INTR.
1651 014504 052777 000100 021420        BIS     #B06,@TCR               ;ENABLE XMTR INTERRUPT
1652 014512 052777 000200 021414        BIS     #B07,@TSR               ;FORCE INTERRUPT REQUEST
1653 014520                             MTPS    TMPRIO                  ;SET CP TO NEXT PRIORITY
 (1) 014520 016737 021370 177776        MOV     TMPRIO,@#PS
1654 014526 000240                      NOP
1655 014530 000240                      NOP                             ;WAIT FOR POSSIBLE INTERRUPT
1656 014532 000167 177714               JMP     XJ3
1657 014536                     XJ4:    BDINIT  XMTR                    ;CLEAR BOARD
1658 014544 004767 015122               JSR     PC,MONIT
1659 014550 032777 010000 015632        BIT     #B12,@SR                ;SW 12 - 1?
1660 014556 001402                      BEQ     XJRT
1661 014560 000167 177376               JMP     INTST                   ;YES, DO TEST OVER
1662 014564 000207              XJRT:   RTS     PC                      ;NO, LEAVE THIS TEST
1663
1664 014566                     INTA:   BDINIT  XMTR                    ;CLR INTERRUPT ETC
1665 014574 062767 000040 021312        ADD     #40,TMPRIO              ;INCR TEMP PRIORITY
1666 014602 022626                      CMP     (SP)+,(SP)+             ;CORRECT STACK POINTER
1667 014604 000167 177510               JMP     XJ1                     ;TRY AGAIN
1668
1669 014610 022626              INTB:   CMP     (SP)+,(SP)+             ;CORRECT STACK
1670 014612                             ERROR   \N              ;ERROR:GOT INTR WHEN C.P. AT HIGHER PRIORITY
 (1)                                                            ;******* ERROR 117 *******
 (1) 014612 032777 040000 015570        BIT     #B14,@SR
 (1) 014620 001005                      BNE     .+14
 (1) 014622 012767 000117 016012        MOV     #117,ERRNUM
 (1) 014630 004767 015560               JSR     PC,ERR
 (1)        000120              N       =       N+1
1671 014634                             SCOPE   XJ3S
 (1) 014634 004567 167366               JSR     R5,SCPRTN
 (1) 014640 014476                      XJ3S
1672 014642 000167 177604               JMP     XJ3
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1674                                            .SBTTL  C.R.C. CHECK
1675
1676                                            ;CYCLIC REDUNDANCY CHECK CHARACTER TEST
1677
1678  014646                                    CRCTST: BDINIT  XMTR                    ;CLEAR BOARD
1679  014654  012777  177600  021256                    MOV     #-128.,@TSBC          ;SET UP BYTE COUNT TO FILL SILO
1680  014662  012777  033564  021252                    MOV     #SILDAT,@TSBA
1681  014670  052777  040000  021234                    BIS     #B14,@TCR             ;START NPR
1682  014676  005777  021236                    XK1:    TST     @TSBC                 ;IS BYTE COUNT 0?
1683  014702  001375                                    BNE     XK1                   ;WAIT FOR NPR TO FINISH
1684  014704  032777  040000  021220                    BIT     #B14,@TCR             ;NOW CHECK      TX NPR BIT
1685  014712  001414                                    BEQ     XK2
1686  014714                                            ERROR   \N              ;ERROR:TX NPR NOT CLR'D BY TSBC OFL
 (1)                                                                            ;******* ERROR 120 *******
 (1)  014714  032777  040000  015466                    BIT     #B14,@SR
 (1)  014722  001005                                    BNE     .+14
 (1)  014724  012767  000120  015710                    MOV     #120,ERRNUM
 (1)  014732  004767  015456                            JSR     PC,ERR
 (1)          000121                             N      -       N+1
1687  014736                                            SCOPE   CRCTST
 (1)  014736  004567  167264                            JSR     R5,SCPRTN
 (1)  014742  014646                                    CRCTST
1688  014744  052777  000200  021160            XK2:    BIS     #B07,@TCR             ;SET RD SILO BIT
1689  014752  012767  177700  021130                    MOV     #-64.,COUNT           ;COUNT READS
1690  014760  012704  033764                            MOV     #SILCRC,R4            ;R4 POINTS TO GOOD CRC'S
1691  014764  000240                            XK3:    NOP
1692  014766  017767  021156  015650                    MOV     @TSCRC,BAD            ;GET CRC CHAR FOR LAST SILO WORD
1693  014774  017703  021136                            MOV     @TSDB,R3              ;R3 HOLDS SILO DATA WORD
1694  015000  011467  015642                            MOV     (R4),GOOD             ;GET GOOD CRC FROM BUFFER
1695  015004  026767  015636  015632                    CMP     GOOD,BAD              ;IS CRC OK?
1696  015012  001427                                    BEQ     XK4
1697  015014  032777  040000  015366                    BIT     #B14,@SR              ;PRINT ALLOWED?
1698  015022  001020                                    BNE     XK3S                  ;IF NOT, SKIP IT
1699  015024                                            PNTM    SLOWD                 ;PRINT "SILO OUTPUT WORD WAS "
 (1)  015024  012700  034364                            MOV     #SLOWD,R0             ;PRINT MESSAGE
 (1)  015030  004767  015614                            JSR     PC,TYPOUT             ;POINTED TO BY SLOWD
1700  015034  010300                                    MOV     R3,R0
1701  015036  004767  016124                            JSR     PC,OCTPNT             ;PRINT SILO DATA WORD
1702  015042                                            DATERR  \N              ;ERROR:BAD CRC FOR ABOVE WORD
 (1)                                                                            ;******* ERROR 121 *******
 (1)  015042  032777  040000  015340                    BIT     #B14,@SR
 (1)  015050  001005                                    BNE     .+14
 (1)  015052  012767  000121  015562                    MOV     #121,ERRNUM
 (1)  015060  004767  015414                            JSR     PC,DERR
 (1)          000122                             N      =       N+1
1703  015064                                    XK3S:   SCOPE   CRCTST
 (1)  015064  004567  167136                            JSR     R5,SCPRTN
 (1)  015070  014646                                    CRCTST
1704  015072  062704  000002                    XK4:    ADD     #2,R4                 ;UPDATE CRC POINTER
1705  015076  005267  021006                            INC     COUNT                 ;HAVE WE CHECKED 64 WORDS?
1706  015102  001330                                    BNE     XK3                   ;NO, CONTINUE
1707  015104  004767  014562                            JSR     PC,MONIT
1708  015110  032777  010000  015272                    BIT     #B12,@SR              ;CHECK SW 12
1709  015116  001402                                    BEQ     XKRT                  ;IF CLR, EXIT
1710  015120  000167  177522                            JMP     CRCTST                ;IF SET STAY
1711  015124                                    XKRT:   BDINIT  XMTR
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1712  015132  000207                    RTS     P(
1713
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1715                                        .SBTTL RECEIVER TESTS
1716
1717                                    ;TEST 2: RECEIVER TESTS
1718                                    ;   (00) RESET TEST
1719                                    ;   (01) RCR REG TEST
1720                                    ;   (02) RDBC REG TEST
1721                                    ;   (03) RDBA REG TEST
1722                                    ;   (04) DATA SILO TESTS
1723                                    ;   (05) RSR & ERRORS TESTS
1724                                    ;   (06) INTERRUPT TEST
1725                                    ;   (07) C.R.C. TEST
1726
1727
1728          000200                    N       =       200                 ;RECEIVER ERRORS START AT 200
1729
1730    015134                          TEST2:  MTPS    #P7
 (1)    015134  012737  000340  177776         MOV     #P7,@#PS
1731    015142  012767  000010  020706         MOV     #10,ITER            ;INITIAL ITERATION OF 10 PER PASS
1732    015150  004767  014516                 JSR     PC,MONIT
 733    015154  032777  002000  015226         BIT     #B10,@SR            ;CHECK SW 10
1734    015162  001420                         BEQ     LOOPR               ;IF 0, RUN SEQUENTIALLY
1735    015164  017767  015220  020666         MOV     @SR,SWI         ;IF SET, GET TEST # FROM SWR
1736    015172  042767  177770  020660         BIC     #-10,SWI            ;MASK LOW DIGIT
1737    015200  000241                         CLC                         ;CLR C BIT BEFORE ROTATE
1738    015202  006167  020652                 ROL     SWI
1739    015206  006167  020646                 ROL     SWI                 ;MULTIPLY BY 4
1740    015212  062767  015224  020640         ADD     #LOOPR,SWI          ;GENERATE OFFSET
1741    015220  000177  020634                 JMP     @SWI                ;GO TO SELECTED TEST
1742    015224  004767  000142          LOOPR:  JSR     PC,RINIT            ;DO INITIAL CLEAR TEST
1743    015230  004767  000476                 JSR     PC,RCRTST           ;DO RCR REG TEST
1744    015234  004767  001176                 JSR     PC,RBCTST           ;DO BYTE COUNT REG TEST
1745    015240  004767  001354                 JSR     PC,RBATST           ;DO BYTE ADDR REG TEST
1746    015244  004767  001532                 JSR     PC,SLOTST           ;DO RECVR DATA SILO TEST
1747    015250  004767  003056                 JSR     PC,RSRTST           ;DO RSR REG & ERRORS TEST
1748    015254  004767  004646                 JSR     PC,RINTST           ;DO INTERRUPT TEST
1749    015260  004767  005360                 JSR     PC,RCRCTS           ;DO RCVR CRC GENERATION TEST
1750    015264  032777  004000  015116         BIT     #B11,@SR            ;CHECK SW 11
1751    015272  001003                         BNE     REND                ;PRINT END IF SET
1752    015274  005367  020556                 DEC     ITER                ;OTHERWISE, REITERATE
1753    015300  001351                         BNE     LOOPR
1754    015302  005767  020574          REND:  TST     $4FLAG              ;CAN WE PRINT END PASS?
1755    015306  001030                         BNE     REPEET              ;NO, LEAVE
1756    015310  005267  020554                 INC     PSNO2               ;UPDATE PASS NO.
1757    015314                                 PNTM    PEND                ;PRINT 'END PASS # ''
 (1)    015314  012700  034443                 MOV     #PEND,R0            ;PRINT MESSAGE
 (1)    015320  004767  015324                 JSR     PC,TYPOUT           ;POINTED TO BY PEND
1758    015324  016700  020540                 MOV     PSNO2,R0
1759    015330  004767  015736                 JSR     PC,DECPNT           ;PRINT PASS NO.
1760    015334  012700  000040                 MOV     #40,R0
1761    015340  004767  016126                 JSR     PC,TTO              ;PRINT A SPACE
1762    015344  012700  000101                 MOV     #101,R0
1763    015350  004767  016116                 JSR     PC,TTO              ;PRINT "A" (TO INDICATE RCVR TST)
1764    015354  005000                         CLR     R0
1765    015356  004767  016110                 JSR     PC,TTO
1766    015362  005000                         CLR     R0
1767    015364  004767  016102                 JSR     PC,TTO              ;NULLS IN CASE RESET FOLLOWS
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 1768  015370  000207                REPEET: RTS     PC                      ;RETURN
```

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1770                                        .SBTTL  INITIALIZE TEST
1771
1772                                    ;CHECK INITIAL CONDITIONS AFTER RESET
1773
1774  015372  000005                RINIT:  RESET                           ;CLEAR THE WORLD
1775  015374  017767  020560  015242        MOV     @RDBC,BAD               ;GET BYTE COUNT REG
1776  015402  005067  015240                CLR     GOOD
1777  015406  005767  015232                TST     BAD                     ;WAS RDBC 0?
1778  015412  001414                        BEQ     RA1
1779  015414                                DATERR  \N              ;ERROR:RDBC NOT CLR'D BY RESET
 (1)                                                                    ;******* ERROR 200 *******
 (1)  015414  032777  040000  014766        BIT     #B14,@SR
 (1)  015422  001005                        BNE     .+14
 (1)  015424  012767  000200  015210        MOV     #200,ERRNUM
 (1)  015432  004767  015042                JSR     PC,DERR
 (1)          000201                N       =       N+1
1780  015436                                SCOPE   RINIT
 (1)  015436  004567  166564                JSR     R5,SCPRTN
 (1)  015442  015372                        RINIT
1781  015444  017767  020512  015172  RA1:  MOV     @RDBA,BAD               ;GET BYTE ADDRESS REG
1782  015452  005067  015170                CLR     GOOD
1783  015456  005767  015162                TST     BAD                     ;WAS RDBA 0?
1784  015462  001414                        BEQ     RA2
1785  015464                                DATERR  \N              ;ERROR:RDBA NOT CLR'D BY RESET
 (1)                                                                    ;******* ERROR 201 *******
 (1)  015464  032777  040000  014716        BIT     #B14,@SR
 (1)  015472  001005                        BNE     .+14
 (1)  015474  012767  000201  015140        MOV     #201,ERRNUM
 (1)  015502  004767  014772                JSR     PC,DERR
 (1)          000202                N       =       N+1
1786  015506                                SCOPE   RINIT
 (1)  015506  004567  166514                JSR     R5,SCPRTN
 (1)  015512  015372                        RINIT
1787  015514  017767  020432  015122  RA2:  MOV     @RCR,BAD                ;GET RCR REGISTER
1788  015522  012767  000010  015116        MOV     #10,GOOD                ;SET UP GOOD FOR COMPARE
1789  015530  026767  015112  015106        CMP     GOOD,BAD
1790  015536  001414                        BEQ     RA3
1791  015540                                DATERR  \N              ;ERROR:RCR NOT INITIALIZED BY RESET
 (1)                                                                    ;******* ERROR 202 *******
 (1)  015540  032777  040000  014642        BIT     #B14,@SR
 (1)  015546  001005                        BNE     .+14
 (1)  015550  012767  000202  015064        MOV     #202,ERRNUM
 (1)  015556  004767  014716                JSR     PC,DERR
 (1)          000203                N       =       N+1
1792  015562                                SCOPE   RINIT
 (1)  015562  004567  166440                JSR     R5,SCPRTN
 (1)  015566  015372                        RINIT
1793  015570  017767  020370  015046  RA3:  MOV     @RDCRC,BAD              ;GET CRC REG
1794  015576  005067  015044                CLR     GOOD
1795  015602  005767  015036                TST     BAD                     ;IS CRC REG 0?
1796  015606  001414                        BEQ     RA4
1797  015610                                DATERR  \N              ;ERROR:RCVR CRC NOT CLR'D BY RESET
 (1)                                                                    ;******* ERROR 203 *******
 (1)  015610  032777  040000  014572        BIT     #B14,@SR
 (1)  015616  001005                        BNE     .+14
 (1)  015620  012767  000203  015014        MOV     #203,ERRNUM
```

```
   (1)  015626  004767  014646              JSR     PC,DERR
   (1)          000204              N      =       N+1
1798    015632                              SCOPE   RINIT
   (1)  015632  004567  166370              JSR     R5,SCPRTN
   (1)  015636  015372                      RINIT
1799    015640  017767  020310  014776  RA4:MOV     @RSR,BAD                ;GET RSR REG
1800    015646  005067  014774              CLR     GOOD
1801    015652  005767  014766              TST     BAD                     ;IS RSR REG 0?
1802    015656  001414                      BEQ     RA5
1803    015660                              DATERR  \N              ;ERROR:RSR REG NOT CLR'D BY RESET
   (1)                                              ;******* ERROR 204 *******
   (1)  015660  032777  040000  014522      BIT     #B14,@SR
   (1)  015666  001005                      BNE     .+14
   (1)  015670  012767  000204  014744      MOV     #204,ERRNUM
   (1)  015676  004767  014576              JSR     PC,DERR
   (1)          000205              N      =       N+1
1804    015702                              SCOPE   RINIT
   (1)  015702  004567  166320              JSR     R5,SCPRTN
   (1)  015706  015372                      RINIT
1805    015710  004767  013756  RA5:        JSR     PC,MONIT
1806    015714  032777  010000  014466      BIT     #B12,@SR                ;CHK SW 12 FOR EXIT VISA
1807    015722  001402                      BEQ     RART
1808    015724  000167  177442              JMP     RINIT                   ;IF SET,STAY IN THIS TEST
1809    015730  000207          RART:       RTS     PC                      ;OTHERWISE, EXIT
```

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1811                                        .SBTTL  RCR TEST
1812
1813                                        ;RECEIVER COMMAND REGISTER TEST
1814
1815  015732  005077  020214        RCRTST: CLR     @RCR                    ;CLEAR RCR REGISTER
1816  015736  012767  160375  014702 RD1:    MOV     #160375,GOOD            ;SET ALL SETTABLE BITS IN RCR
1817  015744  016777  014676  020200        MOV     GOOD,@RCR
1818  015752  017767  020174  014664        MOV     @RCR,BAD                ;AND READ THEM BACK
1819  015760  026767  014662  014656        CMP     GOOD,BAD                ;ALL BITS SET?
1820  015766  001414                        BEQ     RD2
1821  015770                                DATERR  \N              ;ERROR:CANNOT SET ALL SETTABLE RCR BITS
 (1)                                                                    ;******* ERROR 205 *******
 (1)  015770  032777  040000  014412        BIT     #B14,@SR
 (1)  015776  001005                        BNE     .+14
 (1)  016000  012767  000205  014634        MOV     #205,ERRNUM
 (1)  016006  004767  014466                JSR     PC,DERR
 (1)          000206                N       =       N+1
1822  016012                                SCOPE   RD1
 (1)  016012  004567  166210                JSR     R5,SCPRTN
 (1)  016016  015736                        RD1
1823  016020  005067  014622        RD2:    CLR     GOOD                    ;NOW CLR BITS AFTER SETTING THEM
1824  016024  005077  020122                CLR     @RCR
1825  016030  017767  020116  014606        MOV     @RCR,BAD                ;READ THEM BACK
1826  016036  042767  017412  014600        BIC     #17412,BAD              ;IGNORE R/O BITS
1827  016044  026767  014576  014572        CMP     GOOD,BAD                ;ALL CLR?
1828  016052  001414                        BEQ     RD3
1829  016054                                DATERR  \N              ;ERROR:CANNOT CLR ALL RCR BITS
 (1)                                                                    ;******* ERROR 206 *******
 (1)  016054  032777  040000  014326        BIT     #B14,@SR
 (1)  016062  001005                        BNE     .+14
 (1)  016064  012767  000206  014550        MOV     #206,ERRNUM
 (1)  016072  004767  014402                JSR     PC,DERR
 (1)          000207                N       =       N+1
1830  016076                                SCOPE   RD2
 (1)  016076  004567  166124                JSR     R5,SCPRTN
 (1)  016102  016020                        RD2
1831  016104  012777  160375  020040 RD3:    MOV     #160375,@RCR            ;SET ALL SETTABLE BITS IN RCR
1832  016112  012777  177777  020040        MOV     #-1,@RDBC               ;AND IN RDBC
1833  016120  012777  177777  020034        MOV     #-1,@RDBA               ;AND IN RDBA
1834  016126  012777  037200  020020        MOV     #37200,@RSR             ;AND IN RSR
1835  016134  052777  000002  020010        BIS     #B01,@RCR               ;B O A R D  I N I T
1836  016142  017767  020004  014474        MOV     @RCR,BAD                ;CHECK RCR
1837  016150  012767  000010  014470        MOV     #10,GOOD                ;SEE IF RCR - 10
1838  016156  026767  014464  014460        CMP     GOOD,BAD
1839  016164  001414                        BEQ     RD4
1840  016166                                DATERR  \N              ;ERROR:RCR NOT INIT'D BY BD INIT
 (1)                                                                    ;******* ERROR 207 *******
 (1)  016166  032777  040000  014214        BIT     #B14,@SR
 (1)  016174  001005                        BNE     .+14
 (1)  016176  012767  000207  014436        MOV     #207,ERRNUM
 (1)  016204  004767  014270                JSR     PC,DERR
 (1)          000210                N       =       N+1
1841  016210                                SCOPE   RD3
 (1)  016210  004567  166012                JSR     R5,SCPRTN
 (1)  016214  016104                        RD3
1842  016216  017767  017732  014420 RD4:    MOV     @RSR,BAD                ;CHECK RSR
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 1843  016224  005067  014416                 CLR     GOOD
 1844  016230  026767  014412  014406         CMP     GOOD,BAD                ;RSR = 0?
 1845  016236  001414                         BEQ     RD5
 1846  016240                                 DATERR  \N              ;ERROR:RSR NOT CLR'D BY BD INIT
  (1)                                                                ;******* ERROR 210 *******
  (1)  016240  032777  040000  014142         BIT     #B14,@SR
  (1)  016246  001005                         BNE     .+14
  (1)  016250  012767  000210  014364         MOV     #210,ERRNUM
  (1)  016256  004767  014216                 JSR     PC,DERR
  (1)          000211                 N       =       N+1
 1847  016262                                 SCOPE   RD3
  (1)  016262  004567  165740                 JSR     R5,SCPRTN
  (1)  016266  016104                         RD3
 1848  016270  017767  017664  014346  RD5:   MOV     @RDBC,BAD               ;CHECK RDBC
 1849  016276  005067  014344                 CLR     GOOD
 1850  016302  026767  014340  014334         CMP     GOOD,BAD                ;RDBC = 0?
 1851  016310  001414                         BEQ     RD6
 1852  016312                                 DATERR  \N              ;ERROR:RDBC NOT CLR'D BY BD INIT
  (1)                                                                ;******* ERROR 211 *******
  (1)  016312  032777  040000  014070         BIT     #B14,@SR
  (1)  016320  001005                         BNE     .+14
  (1)  016322  012767  000211  014312         MOV     #211,ERRNUM
  (1)  016330  004767  014144                 JSR     PC,DERR
  (1)          000212                 N       =       N+1
 1853  016334                                 SCOPE   RD3
  (1)  016334  004567  165666                 JSR     R5,SCPRTN
  (1)  016340  016104                         RD3
 1854  016342  017767  017614  014274  RD6:   MOV     @RDBA,BAD               ;CHECK RDBA
 1855  016350  005067  014272                 CLR     GOOD
 1856  016354  026767  014266  014262         CMP     GOOD,BAD                ;RDBA = 0?
 1857  016362  001414                         BEQ     RD7
 1858  016364                                 DATERR  \N              ;ERROR:RDBA NOT CLR'D BY BD INIT
  (1)                                                                ;******* ERROR 212 *******
  (1)  016364  032777  040000  014016         BIT     #B14,@SR
  (1)  016372  001005                         BNE     .+14
  (1)  016374  012767  000212  014240         MOV     #212,ERRNUM
  (1)  016402  004767  014072                 JSR     PC,DERR
  (1)          000213                 N       =       N+1
 1859  016406                                 SCOPE   RD3
  (1)  016406  004567  165614                 JSR     R5,SCPRTN
  (1)  016412  016104                         RD3
 1860  016414  004767  013252  RD7:           JSR     PC,MONIT
 1861  016420  032777  010000  013762         BIT     #B12,@SR                ;CHECK SW 12
 1862  016426  001402                         BEQ     RDRT
 1863  0 6430  000167  177276                 JMP     RCRTST                  ;STAY IN THIS LOOP IF SW 12 = 1
 1864  016434  000207                 RDRT:   RTS     PC
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                                        .SBTTL  RDBC TEST

                                ;BYTE COUNT REG DATA TEST

016436                  RBCTST: BDINIT  RCVR                    ;INIT RCVR MODULE
016444  012767  177777  017410        MOV     #-1,PAT           ;SET PATTERN
016452  012767  000001  017404        MOV     #BIT0,MASK        ;SET BIT MASK
016460  016767  017376  014160  RB1:   MOV     PAT,GOOD          ;LOAD "GOOD" WITH PATTERN
016466  016777  014154  017464        MOV     GOOD,@RDBC        ;LOAD PATTERN INTO RDBC
016474  017767  017460  014142        MOV     @RDBC,BAD         ;READ RDBC
016502  026767  014140  014134        CMP     GOOD,BAD          ;DATA OK?
016510  001414                        BEQ     RB2
016512                              .ERROR:BAD DATA IN RDBC
 (1)                                DATERR  \N                ;******* ERROR 213 *******
 (1)    016514  032767  040000  013670        BIT     #BIT14,@SR
 (1)    016520  001004                        BNE     .+14
 (1)    016522  012767  000213  014112        MOV     #213,ERRNUM
 (1)    016530  004767  013744                JSR     PC,DERR
 (1)            000214                  N     =       N+1
016534                                  SCOPE   RB1
 (1)    016534  004567  165466                JSR     R5,SCPRTN
 (1)    016540  016460                        RB1
016542  032767  100000  017312  RB2:   BIT     #BIT15,PAT        ;DONE WHOLE REGISTER?
016550  001412                        BEQ     RB3               ;IF YES, DONE
016552  012767  177777  017302        MOV     #-1,PAT
016560  046767  017300  017274        BIC     MASK,PAT          ;NO, PREPARE FOR NEXT BIT
016566  006367  017272                ASL     MASK              ;ROTATE MASK
016572  000167  177662                JMP     RB1               ;AND CONTINUE
016576  004767  013070  RB3:   JSR     PC,MONIT
016602  032777  010000  013600        BIT     #BIT12,@SR        ;IF SO, CONSIDER LEAVING
016610  001402                        BEQ     RBRT              ;EXIT IF SW 12 = 0
016612  000167  177620                JMP     RBCTST            ;STAY HERE IF SW 12 = 1
016616  000207          RBRT:   RTS     PC
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 1892                                           .SBTTL  RDBA TEST
 1893
 1894                                           ;BYTE ADDRESS REG DATA TEST
 1895
 1896  016620                                   RBATST: BDINIT  RCVR                    ;INIT RECEIVER MODULE
 1897  016626  012767  177777  017226                   MOV     #-1,PAT                ;SET PATTERN
 1898  016634  012767  000001  017222                   MOV     #B00,MASK              ;SET BIT MASK
 1899  016642  016767  017214  013776           RC1:    MOV     PAT,GOOD               ;LOAD "GOOD" WITH PATTERN
 1900  016650  016777  013772  017304                   MOV     GOOD,@RDBA             ;LOAD PATTERN INTO RDBA
 1901  016656  017767  017300  013760                   MOV     @RDBA,BAD              ;READ RDBA
 1902  016664  026767  013756  013752                   CMP     GOOD,BAD
 1903  016672  001414                                   BEQ     RC2
 1904  016674                                           DATERR  \N              ;ERROR:BAD DATA IN RDBA REG
  (1)                                                                                ;******* ERROR 214 *******
  (1)  016674  032777  040000  013506                   BIT     #B14,@SR
  (1)  016702  001005                                   BNE     .+14
  (1)  016704  012767  000214  013730                   MOV     #214,ERRNUM
  (1)  016712  004767  013562                           JSR     PC,DERR
  (1)          000215                           N       =       N+1
 1905  016716                                           SCOPE   RC1
  (1)  016716  004567  165304                           JSR     R5,SCPRTN
  (1)  016722  016642                                   RC1
 1906  016724  032767  100000  017130           RC2:    BIT     #B15,PAT               ;DONE WHOLE REGISTER?
 1907  016732  001412                                   BEQ     RC3                    ;IF YES, DONE
 1908  016734  012767  177777  017120                   MOV     #-1,PAT
 1909  016742  046767  017116  017112                   BIC     MASK,PAT               ;NO, PREPARE FOR NEXT BIT
 1910  016750  006367  017110                           ASL     MASK                   ;ROTATE MASK
 1911  016754  000167  177662                           JMP     RC1                    ;AND CONTINUE
 1912  016760  004767  012706           RC3:    JSR     PC,MONIT
 1913  016764  032777  010000  013416                   BIT     #B12,@SR               ;EXIT IF SW 12 = 0
 1914  016772  001402                                   BEQ     RCRT
 1915  016774  000167  177620                           JMP     RBATST                 ;STAY HERE IF SW 12 = 1
 1916  017000  000207                           RCRT:   RTS     PC
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                                        .SBTTL  DATA SILO TEST

                                ;RECEIVER DATA SILO TEST

017002                          SLOTST: BDINIT  RCVR                    ;CLEAR RCVR MODULE
017010  004567  165532                  JSR     R5,DELAY
017014  000010                          .WORD   10
017016  032777  000400  017130          BIT     #B08,@RSR               ;SILO OUTPUT READY?
017024  001414                          BEQ     RE1
017026                                  ERROR   \N              ;ERROR:BD INIT DID NOT CLR SILO
 (1)                                                                    ;******* ERROR 215 *******
 (1)    017026  032777  040000  013354          BIT     #B14,@SR
 (1)    017034  001005                  BNE     .+14
 (1)    017036  012767  000215  013576          MOV     #215,ERRNUM
 (1)    017044  004767  013344                  JSR     PC,ERR
 (1)            000216                  N       =       N+1
017050                                  SCOPE   SLOTST
 (1)    017050  004567  165152                  JSR     R5,SCPRTN
 (1)    017054  017002                          SLOTST
017056  032777  000010  017066  RE1:    BIT     #B03,@RCR               ;SILO INPUT RDY?
017064  001014                          BNE     RE2
017066                                  ERROR   \N              ;ERROR:BD INIT DID NOT SET SILO INPUT RDY
 (1)                                                                    ;******* ERROR 216 *******
 (1)    017066  032777  040000  013314          BIT     #B14,@SR
 (1)    017074  001005                  BNE     .+14
 (1)    017076  012767  000216  013536          MOV     #216,ERRNUM
 (1)    017104  004767  013304                  JSR     PC,ERR
 (1)            000217                  N       =       N+1
017110                                  SCOPE   SLOTST
 (1)    017110  004567  165112                  JSR     R5,SCPRTN
 (1)    017114  017002                          SLOTST
017116  052777  000200  017026  RE2:    BIS     #B07,@RCR               ;SET LD SILO BIT
017124  012777  177777  017024          MOV     #-1,@RDDB               ;LOAD 177777 INTO DATA SILO
017132  042777  000200  017012          BIC     #B07,@RCR               ;CLR LD SILO BIT
017140  004567  165402                  JSR     R5,DELAY
017144  000010                          .WORD   10
017146  032777  000400  017000          BIT     #B08,@RSR               ;SILO OUTPUT RDY NOW?
017154  001017                          BNE     RE3
017156                                  ERROR   \N              ;ERROR:NO SILO OUTPUT  AFTER LOAD
 (1)                                                                    ;******* ERROR 217 *******
 (1)    017156  032777  040000  013224          BIT     #B14,@SR
 (1)    017164  001005                  BNE     .+14
 (1)    017166  012767  000217  013446          MOV     #217,ERRNUM
 (1)    017174  004767  013214                  JSR     PC,ERR
 (1)            000220                  N       =       N+1
017200                                  BDINIT  RCVR                    ;CLR SILO
017206                                  SCOPE   RE2
 (1)    017206  004567  165014                  JSR     R5,SCPRTN
 (1)    017212  017116                          RE2
017214  017767  016736  013422  RE3:    MOV     @RDDB,BAD               ;POP WORD FROM SILO
017222  012767  177777  013416          MOV     #-1,GOOD
017230  026767  013412  013406          CMP     GOOD,BAD                ;SILO OUTPUT = 177777
017236  001417                          BEQ     RE4
017240                                  DATERR  \N              ;ERROR:DROPPED BITS IN DATA SILO
 (1)                                                                    ;******* ERROR 220 *******
 (1)    017240  032777  040000  013142          BIT     #B14,@SR
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                (1)  017246  001005                      BNE     .+14
                (1)  017250  012767  000220  013364      MOV     #220,ERRNUM
                (1)  017256  004767  013216              JSR     PC,DERR
                (1)          000221              N      =       N+1
1948            017262                                  BDINIT  RCVR
1949            017270                                  SCOPE   RE2
                (1)  017270  004567  164732              JSR     R5,SCPRTN
                (1)  017274  017116                      RE2
1950            017276  032777  000400  016650  RE4:    BIT     #B08,@RSR               ;SILO OUTPUT RDY?
1951            017304  001414                          BEQ     RE5
1952            017306                                  ERROR   \N              ;ERROR:WORD DID NOT GET POPPED FROM SILO
                (1)                                             ;******* ERROR 221 *******
                (1)  017306  032777  040000  013074      BIT     #B14,@SR
                (1)  017314  001005                      BNE     .+14
                (1)  017316  012767  000221  013316      MOV     #221,ERRNUM
                (1)  017324  004767  013064              JSR     PC,ERR
                (1)          000222              N      =       N+1
1953            017330                                  SCOPE   RE3
                (1)  017330  004567  164672              JSR     R5,SCPRTN
                (1)  017334  017214                      RE3
1954            017336  032777  000010  016606  RE5:    BIT     #B03,@RCR               ;SILO INPUT RDY?
1955            017344  001014                          BNE     RE6
1956            017346                                  ERROR   \N              ;ERROR:SILO INPUT NOT READY
                (1)                                             ;******* ERROR 222 *******
                (1)  017346  032777  040000  013034      BIT     #B14,@SR
                (1)  017354  001005                      BNE     .+14
                (1)  017356  012767  000222  013256      MOV     #222,ERRNUM
                (1)  017364  004767  013024              JSR     PC,ERR
                (1)          000223              N              N+1
1957            017370                                  SCOPE   RE5
                (1)  017370  004567  164632              JSR     R5,SCPRTN
                (1)  017374  017336                      RE5
1958            017376  052777  000200  016546  RE6:    BIS     #B07,@RCR               ;SET LD SILO BIT
1959            017404  005077  016546                  CLR     @RDDB                   ;LOAD 0'S INTO SILO
1960            017410  042777  000200  016534          BIC     #B07,@RCR               ;CLR LD SILO BIT
1961            017416  032777  000400  016530  RE7:    BIT     #B08,@RSR               ;SILO OUTPUT RDY?
1962            017424  001774                          BEQ     RE7                     ;WAIT FOR IT
1963            017426  017767  016524  013210          MOV     @RDDB,BAD               ;READ SILO OUTPUT
1964            017434  005067  013206                  CLR     GOOD
1965            017440  026767  013202  013176          CMP     GOOD,BAD                ;SILO OUTPUT = 0?
1966            017446  001417                          BEQ     RE7A
1967            017450                                  DATERR  \N              ;ERROR:PICKED UP BITS IN DATA SILO
                (1)                                             ;******* ERROR 223 *******
                (1)  017450  032777  040000  012732      BIT     #B14,@SR
                (1)  017456  001005                      BNE     .+14
                (1)  017460  012767  000223  013154      MOV     #223,ERRNUM
                (1)  017466  004767  013006              JSR     PC,DERR
                (1)          000224              N      -       N+1
1968            017472                                  BDINIT  RCVR                    ;CLR SILO
1969            017500                                  SCOPE   RE6
                (1)  017500  004567  164522              JSR     R5,SCPRTN
                (1)  017504  017376                      RE6
1970            017506  004767  000476  RE7A:   JSR     PC,CLRCBF               ;MAKE SURE BUFF IS CLR
1971            017512                  RE8:    BDINIT  RCVR                    ;CLR RCVR BOARD
1972            017520  052777  000200  016424          BIS     #B07,@RCR               ;SET LD SILO BIT
1973            017526  012704  033564                  MOV     #SILDAT,R4              ;R4 POINTS TO DATA FOR SILO
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 1974  017532  012703  177700              MOV     #-64.,R3                ;R3 COUNTS WORDS
 1975  017536  012477  016414      RE9:    MOV     (R4)+,@RDDB             ;LOAD DATA INTO SILO
 1976  017542  005203                      INC     R3
 1977  017544  001374                      BNE     RE9                     ;KEEP LOADING FOR 64 WORDS
 1978  017546  032777  000010  016376      BIT     #B03,@RCR               ;FULL...IS SILO INPUT RDY?
 1979  017554  001414                      BEQ     RE10
 1980  017556                              ERROR   \N              ;ERROR:FULL SILO STILL RDY FOR INPUT
  (1)                                                                 ;******* ERROR 224 *******
  (1)  017556  032777  040000  012624      BIT     #B14,@SR
  (1)  017564  001005                      BNE     .+14
  (1)  017566  012767  000224  013046      MOV     #224,ERRNUM
  (1)  017574  004767  012614              JSR     PC,ERR
  (1)          000225              N       -       N+1
 1981  017600                              SCOPE   RE8
  (1)  017600  004567  164422              JSR     R5,SCPRTN
  (1)  017604  017512                      RE8
 1982  017606  042777  000200  016336  RE10:   BIC     #B07,@RCR               ;CLR LD SILO BIT
 1983  017614  012777  177600  016336          MOV     #-128.,@RDBC            ;SET UP BYTE COUNT FOR 64 WORDS
 1984  017622  012777  034164  016332          MOV     #CMPBUF,@RDBA           ;POINT INTERF AT 64 WD BUFFER
 1985  017630  052777  040000  016314          BIS     #B14,@RCR               ;SET RC NPR
 1986  017636  016704  012550                  MOV     DLCON,R4
 1987  017642  012703  17750C      RE10A:  MOV     #177500,R3              ;SET UP FOR 2 MS DELAY
 1988  017646  005777  016306      RE11:   TST     @RDBC                   ;IS BYTE COUNT 0?
 1989  017652  001420                      BEQ     RE12
 1990  017654  005203                      INC     R3                      ;WAITED 2 MS ?
 1991  017656  001373                      BNE     RE11                    ;NO, KEEP LOOKING
 1992  017660  005304                      DEC     R4
 1993  017662  001367                      BNE     RE10A
 1994  017664                              ERROR   \N              ;ERROR:NPR NOT COMPLETE AFTER 2 MS
  (1)                                                                 ;******* ERROR 225 *******
  (1)  017664  032777  040000  012516      BIT     #B14,@SR
  (1)  017672  001005                      BNE     .+14
  (1)  017674  012767  000225  012740      MOV     #225,ERRNUM
  (1)  017702  004767  012506              JSR     PC,ERR
  (1)          000226              N       =       N+1
 1995  017706                              SCOPE   RE8
  (1)  017706  004567  164314              JSR     R5,SCPRTN
  (1)  017712  017512                      RE8
 1996  017714  042777  040000  016230  RE12:   BIC     #B14,@RCR               ;CLEAR RC NPR
 1997  017722  012702  033564              MOV     #SILDAT,R2              ;SET UP TO CHECK SILO OUTPUT
 1998  017726  012703  034164              MOV     #CMPBUF,R3              ;R2 & R3 ARE DATA POINTERS
 1999  017732  012704  177700              MOV     #-64.,R4                ;R4 IS COUNTER
 2000  017736  012267  012704      RE13:   MOV     (R2)+,GOOD              ;GET GOOD DATA
 2001  017742  012367  012676              MOV     (R3)+,BAD               ;GET SILO DATA
 2002  017746  026767  012674  012670      CMP     GOOD,BAD                ;COMPARE MEM BUFFERS
 2003  017754  001414                      BEQ     RE14
 2004  017756                              DATERR  \N              ;ERROR:DATA FROM SILO IS WRONG
  (1)                                                                 ;******* ERROR 226 *******
  (1)  017756  032777  040000  012424      BIT     #B14,@SR
  (1)  017764  001005                      BNE     .+14
  (1)  017766  012767  000226  012646      MOV     #226,ERRNUM
  (1)  017774  004767  012500              JSR     PC,DERR
  (1)          000227              N       -       N+1
 2005  020000                              SCOPE   RE8
  (1)  020000  004567  164222              JSR     R5,SCPRTN
  (1)  020004  017512                      RE8
```

```
 2006  020006  005204                 RE14:   INC     R4                      ;DONE COMPARE?
 2007  020010  001352                         BNE     RE13
 2008  020012  032777  000400  016134         BIT     #B08,@RSR               ;YES,SEE IF SILO WAS EMPTIED
 2009  020020  001414                         BEQ     RE15
 2010  020022                               ERROR   \N              ;ERROR:SILO OUT RDY, BUT SILO SHD BE EMPTY
  (1)                                                                 ;******* ERROR 227 *******
  (1)  020022  032777  040000  012360         BIT     #B14,@SR
  (1)  020030  001005                         BNE     .+14
  (1)  020032  012767  000227  012602         MOV     #227,ERRNUM
  (1)  020040  004767  012350                 JSR     PC,ERR
  (1)          000230                 N       =       N+1
 2011  020044                               SCOPE   RE8
  (1)  020044  004567  164156                 JSR     R5,SCPRTN
  (1)  020050  017512                         RE8
```

```
                                        .SBTTL  DATA SILO BLOCK COUNTER TEST

                                ;THIS TESTS THAT, AFTER PUTTING 200 (OCTAL) WORDS INTO THE DATA SILO
                                ;THE BLOCK COUNTER COUNTS THE 200 WORDS AND HOLDS SILO INPUT READY
                                ;IN THE FALSE STATE.

020052                          RE15:   BDINIT  RCVR                    ;CLEAR THE BOARD
020060  012702  000100                  MOV     #64.,R2
020064  004767  000140                  JSR     PC,RESR                 ;PUT 100 (OCTAL) WORDS INTO SILO
020070  004767  000166                  JSR     PC,REEMT                ;EMPTY IT VIA NPR
020074  012702  000020                  MOV     #20,R2
020100  004767  000124                  JSR     PC,RESR                 ;PUT 20 (OCTAL) WORDS INTO SILO
020104  004767  000152                  JSR     PC,REEMT                ;EMPTY IT AGAIN
020110  012702  000060                  MOV     #60,R2
020114  004767  000110                  JSR     PC,RESR                 ;PUT 60 (OCTAL) WORDS INTO SILO
                                                                        ;  MAKING A TOTAL OF 200 IN WHILE
                                                                        ;  THERE IS ROOM FOR 20 MORE.
020120  032777  000010  016024          BIT     #B03,@RCR               ;IS SILO INPUT READY?
020126  001414                          BEQ     PE16                    ;IF NOT, OKAY
020130                                  ERROR   \N              ;ERROR:INPUT READY AFTER A 200 WORD BLOCK
 (1)                                                                    ;******* ERROR 230 *******
 (1)    020130  032777  040000  012252          BIT     #B14,@SR
 (1)    020136  001003                  BNE     .+14
 (1)    020140  012767  000230  012474          MOV     #230,ERRNUM
 (1)    020146  004767  012242                  JSR     PC,ERR
 (1)            000231          N       =       N+1
020152                                  SCOPE   RE15
 (1)    020152  004567  164050                  JSR     R5,SCPRTN
 (1)    020156  020052                          RE15
020160                          RE16:   BDINIT  RCVR
020166  004767  011500                  JSR     PC,MONIT
020172  032777  010000  012210          BIT     #B12,@SR                ;CHECK SW 12
020200  001402                          BEQ     RERT
020202  000167  176574                  JMP     SLOTST                  ;STAY IN THIS TEST IF SW 12 = 1
020206  000207                  RERT:   RTS     PC
020210  012703  177700          CLRCBF: MOV     #-64.,R3                ;ROUTINE TO CLR BUFFER AREA
020214  012704  034164                  MOV     #CMPBUF,R4
020220  005024                  RECB:   CLR     (R4)+
020222  005203                          INC     R3
020224  001375                          BNE     RECB
020226  000207                          RTS     PC

                                ;ROUTINE TO FILL DATA SILO WITH (R2) NUMBER OF WORDS

020230  052777  000200  015714  RESR:   BIS     #B07,@RCR               ;SET LOAD SILO
020236  010203                          MOV     R2,R3
020240  012777  012345  015710  RESRW:  MOV     #12345,@RDDB            ;LOAD A WORD
020246  005303                          DEC     R3                      ;KEEP TRACK OF # OF WORDS
020250  001373                          BNE     RESRW
020252  042777  000200  015672          BIC     #B07,@RCR               ;LEAVE WITH LD SILO CLR
020260  000207                          RTS     PC

                                ;ROUTINE TO EMPTY DATA SILO VIA RC NPR

020262  012777  177600  015670  REEMT:  MOV     #-128.,@RDBC            ;SET BYTE COUNT TO EMPTY SILO
020270  012777  034164  015664          MOV     #CMPBUF,@RDBA           ;POINT SILO AT DAT BUFFER
```

```
 2061  020276  052777  040000  015646          BIS     #B14,@RCR               ;START NPR
 2062  020304  016704  012102                  MOV     DLCON,R4
 2063  020310  012703  175000          REEMT1: MOV     #175000,R3              ;SET UP TO WAIT FOR COMPL
 2064  020314  005203                  REMTW:  INC     R3
 2065  020316  001376                          BNE     REMTW                   ;WAIT FOR NPR COMPLETION
 2066  020320  005077  015626                  CLR     @RCR                    ;CLEAR RC NPR
 2067  020324  005304                          DEC     R4
 2068  020326  001370                          BNE     REEMT1
 2069  020330  000207                          RTS     PC                      ;RETURN WITH SILO EMPTY
```

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2071                                            .SBTTL  RSR TEST
2072
2073                                            ;RCVR STATUS REG & ERRORS TEST
2074
2075  020332                                    RSRTST: BDINIT  RCVR                    ;CLEAR THE BOARD
2076  020340  052777  020000  015604                    BIS     #B13,@RCR               ;SET RCV WD
2077  020346  032777  000100  015600                    BIT     #B06,@RSR               ;IS BUSY SET?
2078  020354  001014                                    BNE     RF1
2079  020356                                            ERROR   \N              ;ERROR:RCV WD DID NOT SET BUSY
  (1)                                                                               ;******* ERROR 231 *******
  (1)   020356  032777  040000  012024                    BIT     #B14,@SR
  (1)   020364  001005                                    BNE     .+14
  (1)   020366  012767  000231  012246                    MOV     #231,ERRNUM
  (1)   020374  004767  012014                            JSR     PC,ERR
  (1)           000232                            N       -       N+1
2080  020400                                            SCOPE   RSRTST
  (1)   020400  004567  163622                            JSR     R5,SCPRTN
  (1)   020404  020332                                    RSRTST
2081  020406  052777  000200  015540  RF1:              BIS     #B07,@RSR               ;SET SUC XFR
2082  020414  032777  000200  015532                    BIT     #B07,@RSR               ;IS SUC XFR SET?
2083  020422  001014                                    BNE     RF2
2084  020424                                            ERROR   \N              ;ERROR:CANNOT SET RSR BIT 07
  (1)                                                                               ;******* ERROR 232 *******
  (1)   020424  032777  040000  011756                    BIT     #B14,@SR
  (1)   020432  001005                                    BNE     .+14
  (1)   020434  012767  000232  012200                    MOV     #232,ERRNUM
  (1)   020442  004767  011746                            JSR     PC,ERR
  (1)           000233                            N       =       N+1
2085  020446                                            SCOPE   RF1
  (1)   020446  004567  163554                            JSR     R5,SCPRTN
  (1)   020452  020406                                    RF1
2086  020454  032777  020000  015470  RF2:              BIT     #B13,@RCR               ;IS RCV WD CLR?
2087  020462  001414                                    BEQ     RF3
2088  020464                                            ERROR   \N              ;ERROR:SUC XFR DID NOT CLR RCV WD
  (1)                                                                               ;******* ERROR 233 *******
  (1)   020464  032777  040000  011716                    BIT     #B14,@SR
  (1)   020472  001005                                    BNE     .+14
  (1)   020474  012767  000233  012140                    MOV     #233,ERRNUM
  (1)   020502  004767  011706                            JSR     PC,ERR
  (1)           000234                            N       =       N+1
2089  020506                                            SCOPE   RSRTST
  (1)   020506  004567  163514                            JSR     R5,SCPRTN
  (1)   020512  020332                                    RSRTST
2090  020514  042777  000200  015432  RF3:              BIC     #B07,@RSR               ;CLR SUC XFR
2091  020522  032777  000200  015424                    BIT     #B07,@RSR               ;SEE IF IT CLR'D
2092  020530  001414                                    BEQ     RF4
2093  020532                                            ERROR   \N              ;ERROR:CANNOT CLR SUC XFR
  (1)                                                                               ;******* ERROR 234 *******
  (1)   020532  032777  040000  011650                    BIT     #B14,@SR
  (1)   020540  001005                                    BNE     .+14
  (1)   020542  012767  000234  012072                    MOV     #234,ERRNUM
  (1)   020550  004767  011640                            JSR     PC,ERR
  (1)           000235                            N       =       N+1
2094  020554                                            SCOPE   RF3
  (1)   020554  004567  163446                            JSR     R5,SCPRTN
  (1)   020560  020514                                    RF3
```

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2095  020562                          RF4:    BDINIT  RCVR                    ;CLEAR THE BOARD
2096  020570  052777  020200  015354          BIS     #20200,@RCR             ;SET LD SILO & RCV WD
2097  020576  012703  177774                  MOV     #-4,R3
2098  020602  012777  177777  015346  RF5.    MOV     #-1,@RDDB               ;MOVE 4 -1'S INTO SILO
2099  020610  000240                          NOP
2100  020612  000240                          NOP
2101  020614  005203                          INC     R3
2102  020616  001371                          BNE     RF5
2103  020620  012777  177776  015332  RF6:    MOV     #-2,@RDBC               ;SET BYTE COUNT FOR 1 WORD
2104  020626  052777  000004  015316          BIS     #B02,@RCR               ;SET INH ADDR INC
2105  020634  012777  034164  015320          MOV     #CMPBUF,@RDBA           ;POINT NPR TO MEM BUFF.
2106  020642  052777  040000  015302          BIS     #B14,@RCR               ;START NPR
2107  020650  005777  015304          RF7:    TST     @RDBC                   ;BYTE COUNT   0?
2108  020654  001375                          BNE     RF7
2109  020656  032777  000400  015270          BIT     #B08,@RSR               ;SILO OUTPUT RDY?
2110  020664  001014                          BNE     RF8
2111  020666                                  ERROR   \N              ;ERROR:SILO SHOULD NOT BE EMPTY
  (1)                                                                   ;******* ERROR 235 *******
  (1)   020666  032777  040000  011514          BIT     #B14,@SR
  (1)   020674  001005                          BNE     .+14
  (1)   020676  012767  000235  011736          MOV     #235,ERRNUM
  (1)   020704  004767  011504                  JSR     PC,ERR
  (1)           000236                  N       =       N+1
2112  020710                                  SCOPE   RF4
  (1)   020710  004567  163312                  JSR     R5,SCPRTN
  (1)   020714  020562                          RF4
2113  020716  012767  034164  011722  RF8:    MOV     #CMPBUF,GOOD            ;BYTE ADDRESS SHD NOT INCREMENT
2114  020724  017767  015232  011712          MOV     @RDBA,BAD               ;READ BYTE ADDRESS
2115  020732  026767  011710  011704          CMP     GOOD,BAD                ;SAME AS BEFORE?
2116  020740  001414                          BEQ     RF9
2117  020742                                  DATERR  \N              ;ERROR:RCR BIT 2 DID NOT INH ADR INCREMENT
  (1)                                                                   ;******* ERROR 236 *******
  (1)   020742  032777  040000  011440          BIT     #B14,@SR
  (1)   020750  001005                          BNE     .+14
  (1)   020752  012767  000236  011662          MOV     #236,ERRNUM
  (1)   020760  004767  011514                  JSR     PC,DERR
  (1)           000237                  N               N+1
2118  020764                                  SCOPE   RF4
  (1)   020764  004567  163236                  JSR     R5,SCPRTN
  (1)   020770  020562                          RF4
2119  020772  032777  001000  015154  RF9:    BIT     #B09,@RSR               ;IS BYTE COUNT OFL SET?
2120  021000  001014                          BNE     RF9A
2121  021002                                  ERROR   \N              ;ERROR:RDBC -0, SILO NOT EMPTY, BUT BC OFL - 0
  (1)                                                                   ;******* ERROR 237 *******
  (1)   021002  032777  040000  011400          BIT     #B14,@SR
  (1)   021010  001005                          BNE     .+14
  (1)   021012  012767  000237  011622          MOV     #237,ERRNUM
  (1)   021020  004767  011370                  JSR     PC,ERR
  (1)           000240                  N       =       N+1
2122  021024                                  SCOPE   RF4
  (1)   021024  004567  163176                  JSR     R5,SCPRTN
  (1)   021030  020562                          RF4
2123  021032  032777  100000  015114  RF9A:   BIT     #B15,@RSR               ;IS RSR BIT 15 SET?
2124  021040  001014                          BNE     RF10                    ;IF YES, CHECK FOR INTR REQ
2125  021042                                  ERROR   \N              ;ERROR:BYTE COUNT OFL DID NOT SET RSR BIT 15
  (1)                                                                   ;******* ERROR 240 *******
```

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  (1)  021042  032777  040000  011340          BIT     #B14,@SR
  (1)  021050  001005                          BNE     .+14
  (1)  021052  012767  000240  011562          MOV     #240,ERRNUM
  (1)  021060  004767  011330                  JSR     PC,ERR
  (1)          000241                  N       =       N+1
2126   021064                                  SCOPE   RF4
  (1)  021064  004567  163136                  JSR     R5,SCPRTN
  (1)  021070  020562                          RF4
2127   021072  032777  020000  015052  RF10:   BIT     #B13,@RCR               ;IS RCV WD = 0?
2128   021100  001414                          BEQ     RF11
2129   021102                                  ERROR   \N              ;ERROR:BC OFL DID NOT REQUEST INTERRUPT
  (1)                                                                   ;******* ERROR 241 *******
  (1)  021102  032777  040000  011300          BIT     #B14,@SR
  (1)  021110  001005                          BNE     .+14
  (1)  021112  012767  000241  011522          MOV     #241,ERRNUM
  (1)  021120  004767  011270                  JSR     PC,ERR
  (1)          000242                  N       -       N+1
2130   021124                                  SCOPE   RF4
  (1)  021124  004567  163076                  JSR     R5,SCPRTN
  (1)  021130  020562                          RF4
2131   021132                          RF11:   BDINIT  RCVR
2132   021140  052777  020000  015004          BIS     #B13,@RCR               ;SET RCV WD
2133   021146  052777  002000  015000          BIS     #B10,@RSR               ;SET TIMEOUT
2134   021154  032777  002000  014772          BIT     #B10,@RSR               ;IS TIMEOUT SET?
2135   021162  001014                          BNE     RF12
2136   021164                                  ERRCR   \N              ;ERROR:CANNOT SET RSR BIT 10
  (1)                                                                   ;******* ERROR 242 *******
  (1)  021164  032777  040000  011216          BIT     #B14,@SR
  (1)  021172  001005                          BNE     .+14
  (1)  021174  012767  000242  011440          MOV     #242,ERRNUM
  (1)  021202  004767  011206                  JSR     PC,ERR
  (1)          000243                  N       =       N+1
2137   021206                                  SCOPE   RF11
  (1)  021206  004567  163014                  JSR     R5,SCPRTN
  (1)  021212  021132                          RF11
2138   021214  032777  100000  014732  RF12:   BIT     #B15,@RSR               ;IS ERROR BIT SET?
2139   021222  001014                          BNE     RF13
2140   021224                                  ERROR   \N              ;ERROR:TIMEOUT DIDN'T SET RSR BIT 15
  (1)                                                                   ;******* ERROR 243 *******
  (1)  021224  032777  040000  011156          BIT     #B14,@SR
  (1)  021232  001005                          BNE     .+14
  (1)  021234  012767  000243  011400          MOV     #243,ERRNUM
  (1)  021242  004767  011146                  JSR     PC,ERR
  (1)          000244                  N       -       N+1
2141   021246                                  SCOPE   RF11
  (1)  021246  004567  162754                  JSR     R5,SCPRTN
  (1)  021252  021132                          RF11
2142   021254  032777  020000  014670  RF13:   BIT     #B13,@RCR               ;IS RCV WD CLR?
2143   021262  001414                          BEQ     RF14
2144   021264                                  ERROR   \N              ;ERROR:RSR BIT 15 DIDN'T REQUEST INTERRUPT
  (1)                                                                   ;******* ERROR 244 *******
  (1)  021264  032777  040000  011116          BIT     #B14,@SR
  (1)  021272  001005                          BNE     .+14
  (1)  021274  012767  000244  011340          MOV     #244,ERRNUM
  (1)  021302  004767  011106                  JSR     PC,ERR
  (1)          000245                  N               N+1
```

```
2145  021306                                    SCOPE   RF11
 (1)  021306  004567  162714                   JSR     R5,SCPRTN
 (1)  021312  021132                           RF11
2146  021314  005077  014634          RF14:    CLR     @RSR                    ;CLEAR RSR
2147  021320  052777  004000  014626           BIS     #B11,@RSR               ;SET PAR (PARITY ERROR) BIT
2148  021326  032777  004000  014620           BIT     #B11,@RSR               ;IS IT SET?
2149  021334  001014                           BNE     RF15
2150  021336                                   ERROR   \N              ;ERROR:CANNOT SET RSR BIT 11
 (1)                                                                  ;******* ERROR 245 *******
 (1)  021336  032777  040000  011044           BIT     #B14,@SR
 (1)  021344  001005                           BNE     .+14
 (1)  021346  012767  000245  011266           MOV     #245,ERRNUM
 (1)  021354  004767  011034                   JSR     PC,ERR
 (1)          000246                  N        =       N+1
2151  021360                                    SCOPE   RF14
 (1)  021360  004567  162642                   JSR     R5,SCPRTN
 (1)  021364  021314                           RF14
2152  021366  032777  100000  014560  RF15:    BIT     #B15,@RSR               ;IS ERROR BIT SET?
2153  021374  001014                           BNE     RF16
2154  021376                                   ERROR   \N              ;ERROR:PAR ERR DIDN'T SET RSR BIT 15
 (1)                                                                  ;******* ERROR 246 *******
 (1)  021376  032777  040000  011004           BIT     #B14,@SR
 (1)  021404  001005                           BNE     .+14
 (1)  021406  012767  000246  011226           MOV     #246,ERRNUM
 (1)  021414  004767  010774                   JSR     PC,ERR
 (1)          000247                  N        =       N+1
2155  021420                                    SCOPE   RF14
 (1)  021420  004567  162602                   JSR     R5,SCPRTN
 (1)  021424  021314                           RF14
2156  021426  005077  014522          RF16:    CLR     @RSR                    ;CLEAR RSR
2157  021432  052777  010000  014514           BIS     #B12,@RSR               ;SET TXM ERR
2158  021440  032777  010000  014506           BIT     #B12,@RSR               ;IS IT SET?
2159  021446  001014                           BNE     RF17
2160  021450                                   ERROR   \N              ;ERROR:CANNOT SET RSR BIT 12
 (1)                                                                  ;******* ERROR 247 *******
 (1)  021450  032777  040000  010732           BIT     #B14,@SR
 (1)  021456  001005                           BNE     .+14
 (1)  021460  012767  000247  011154           MOV     #247,ERRNUM
 (1)  021466  004767  010722                   JSR     PC,ERR
 (1)          000250                  N        =       N+1
2161  021472                                    SCOPE   RF16
 (1)  021472  004567  162530                   JSR     R5,SCPRTN
 (1)  021476  021426                           RF16
2162  021500  032777  100000  014446  RF17:    BIT     #B15,@RSR               ;IS ERROR BIT SET?
2163  021506  001014                           BNE     RF18
2164  021510                                   ERROR   \N              ;ERROR:TXM ERR DIDN'T SET RSR BIT 15
 (1)                                                                  ;******* ERROR 250 *******
 (1)  021510  032777  040000  010672           BIT     #B14,@SR
 (1)  021516  001005                           BNE     .+14
 (1)  021520  012767  000250  011114           MOV     #250,ERRNUM
 (1)  021526  004767  010662                   JSR     PC,ERR
 (1)          000251                  N        -       N+1
2165  021532                                    SCOPE   RF16
 (1)  021532  004567  162470                   JSR     R5,SCPRTN
 (1)  021536  021426                           RF16
2166  021540  005077  014410          RF18:    CLR     @RSR                    ;CLEAR RSR
```

```
2167  021544  052777  020000  014402          BIS     #B13,@RSR               ;SET MEM OFL
2168  021552  032777  020000  014374          BIT     #B13,@RSR               ;IS IT SET?
2169  021560  001014                          BNE     RF19
2170  021562                                  ERROR   \N              ;ERROR:CANNOT SET RSR BIT 13
 (1)                                                                  ;******* ERROR 251 *******
 (1)  021562  032777  040000  010620          BIT     #B14,@SR
 (1)  021570  001005                          BNE     .+14
 (1)  021572  012767  000251  011042          MOV     #251,ERRNUM
 (1)  021600  004767  010610                  JSR     PC,ERR
 (1)          000252                  N       =       N+1
2171  021604                                  SCOPE   RF18
 (1)  021604  004567  162416                  JSR     R5,SCPRTN
 (1)  021610  021540                          RF18
2172  021612  032777  100000  014334  RF19:   BIT     #B15,@RSR               ;IS ERROR BIT SET?
2173  021620  001014                          BNE     RF20
2174  021622                                  ERROR   \N              ;ERROR:MEM OFL DIDN'T SET RSR BIT 15
 (1)                                                                  ;******* ERROR 252 *******
 (1)  021622  032777  040000  010560          BIT     #B14,@SR
 (1)  021630  001005                          BNE     .+14
 (1)  021632  012767  000252  011002          MOV     #252,ERRNUM
 (1)  021640  004767  010550                  JSR     PC,ERR
 (1)          000253                  N       =       N+1
2175  021644                                  SCOPE   RF18
 (1)  021644  004567  162356                  JSR     R5,SCPRTN
 (1)  021650  021540                          RF18
```

```
                                                     ;ERROR GENERATION TESTS

     021652                                 RF20:    BDINIT  RCVR                        ;CLEAR THE BOARD
     021660  052777  000200  014264                  BIS     #B07,@RCR                   ;SET LD SILO BIT
     021666  012777  177777  014262                  MOV     #-1,@RDDB                   ;LOAD A WORD INTO SILO
     021674  032777  000400  014252         RF21:    BIT     #B08,@RSR                   ;SILO OUTPUT RDY?
     021702  001774                                  BEQ     RF21                        ;WAIT FOR IT
     021704  042777  000200  014240                  BIC     #B07,@RCR                   ;CLEAR LD SILO BIT
     021712  012777  177774  014240                  MOV     #-4,@RDBC                   ;SET BYTE COUNT FOR 1 WD XFER
     021720  012777  160000  014234                  MOV     #160000,@RDBA               ;PUT NON-EXST LOC IN RDBA
     021726  052777  040060  014216                  BIS     #40060,@RCR                 ;START NPR AND SET EXT ADD BITS
     021734  000240                                  NOP
     021736  000240                                  NOP
     021740  005777  014214                          TST     @RDBC                       ;IS BYTE COUNT 0?
     021744  001014                                  BNE     RF22
     021746                                          ERROR   \N              ;ERROR:RCV NPR COMPL TO NEX ADDRESS
 (1)                                                                          ;******* ERROR 253 *******
 (1) 021746  032777  040000  010434                  BIT     #B14,@SR
 (1) 021754  001005                                  BNE     .+14
 (1) 021756  012767  000253  010656                  MOV     #253,ERRNUM
 (1) 021764  004767  010424                          JSR     PC,ERR
 (1)         000254                         N        =       N+1
     021770                                          SCOPE   RF20
 (1) 021770  004567  162232                          JSR     R5,SCPRTN
 (1) 021774  021652                                  RF20
     021776  032777  040000  014150         RF22:    BIT     #B14,@RSR                   ;IS NON EXST LOC SET?
     022004  001014                                  BNE     RF23
     022006                                          ERROR   \N              ;ERROR:NPR TO NXM DIDN'T SET NON-EXST LOC
 (1)                                                                          ;******* ERROR 254 *******
 (1) 022006  032777  040000  010374                  BIT     #B14,@SR
 (1) 022014  001005                                  BNE     .+14
 (1) 022016  012767  000254  010616                  MOV     #254,ERRNUM
 (1) 022024  004767  010364                          JSR     PC,ERR
 (1)         000255                         N        =       N+1
     022030                                          SCOPE   RF20
 (1) 022030  004567  162172                          JSR     R5,SCPRTN
 (1) 022034  021652                                  RF20
     022036  032777  100000  014110         RF23:    BIT     #B15,@RSR                   ;IS ERROR BIT SET?
     022044  001014                                  BNE     RF24
     022046                                          ERROR   \N              ;ERROR:NON-EXST LOC DIDN'T SET RSR BIT 15
 (1)                                                                          ;******* ERROR 255 *******
 (1) 022046  032777  040000  010334                  BIT     #B14,@SR
 (1) 022054  001005                                  BNE     .+14
 (1) 022056  012767  000255  010556                  MOV     #255,ERRNUM
 (1) 022064  004767  010324                          JSR     PC,ERR
 (1)         000256                         N        =       N+1
     022070                                          SCOPE   RF20
 (1) 022070  004567  162132                          JSR     R5,SCPRTN
 (1) 022074  021652                                  RF20
     022076                                 RF24:    BDINIT  RCVR                        ;CLR BOARD BEFORE LEAVING
     022104  004767  007562                          JSR     PC,MONIT
     022110  032777  010000  010272                  BIT     #B12,@SR                    ;IS SW 12 SET?
     022116  001402                                  BEQ     RFRT
     022120  000167  176206                          JMP     RSRTST                      ;YES,REPEAT THIS TEST
     022124  000207                         RFRT:    RTS     PC
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                                        .SBTTL  INTERRUPT TEST

                                ;RECEIVER INTERRUPT TEST

022126                  RINTST: MTPS    #P7                     ;DIS-ALLOW INTERRUPT
(1) 022126 012737 000340 177776         MOV     #P7,@#PS
022134                          BDINIT  RCVR                    ;CLEAR THE BOARD
022142 016700 013756            MOV     RCVEC,R0
022146 012760 000340 000002     MOV     #340,2(R0)              ;SET NEW PS = P7
022154 012777 022204 013742     MOV     #EROINT,@RCVEC          ;SET-UP FOR ERROR INTERRUPT
022162 052777 000100 013762     BIS     #B06,@RCR               ;SET INTERRUPT ENABLE
022170                          MTPS    #0                      ;ALLOW INTERRUPT
(1) 022170 012737 000000 177776         MOV     #0,@#PS
022176 000240                   NOP
022200 000167 000046            JMP     RH0                      SKIP ERROR IF NO INTERRUPT
022204                  EROINT: MTPS    #P7                     ;INTERRUPT OFF
(1) 022204 012737 000340 177776         MOV     #P7,@#PS
022212 022626                   CMP     (SP)+,(SP)+             ;CORRECT STACK
022214 042777 000100 013730     BIC     #B06,@RCR               ;CLR INTERRUPT ENABLE
022222                          ERROR   \N              ;ERROR:ERRONEOUS INTERRUPT;NO FLAGS SET
(1)                                                             ;******* ERROR 256 *******
(1) 022222 032777 040000 010160         BIT     #B14,@SR
(1) 022230 001005               BNE     .+14
(1) 022232 012767 000256 010402         MOV     #256,ERRNUM
(1) 022240 004767 010150        JSR     PC,ERR
(1)        000257               N       =       N+1
022244                          SCOPE   RINTST
(1) 022244 004567 161756        JSR     R5,SCPRTN
(1) 022250 022126               RINTST
022252 005067 013636            RH0:    CLR     TMPRIO                  ;START WITH CP AT PRIORITY 0
022256 012777 022556 013640             MOV     #INTRA,@RCVEC           ;SET VECTOR FOR GOOD INTERRUPT
022264                          RH1:    MTPS    #P7                     ;INTERRUPT OFF
(1) 022264 012737 000340 177776         MOV     #P7,@#PS
022272 052777 000100 013652     BIS     #B06,@RCR               ;ENABLE RCVR INTERRUPT
022300 052777 000200 013644     BIS     #B07,@RCR               ;SET LD SILO BIT
022306 012777 177777 013642     MOV     #-1,@RDDB               ;PUT A WORD INTO RCVR SILO
022314 042777 000200 013630     BIC     #B07,@RCR               ;CLR LD SILO BIT
022322 032777 000400 013624     RH1A:   BIT     #B08,@RSR               ;SILO OUTPUT READY?
022330 001774                   BEQ     RH1A                    ;WAIT FOR IT
022332                          MTPS    TMPRIO                  ;ALLOW INTERRUPT
(1) 022332 016737 013556 177776         MOV     TMPRIO,@#PS
022340 000240                   NOP
022342 000240                   NOP
022344 005767 013544            TST     TMPRIO                  ;NO INTERRUPT;IS PSW = 0?
022350 001014                   BNE     RH2
022352                          ERROR   \N              ;ERROR:NO INTERRUPT FROM RECEIVER
(1)                                                             ;******* ERROR 257 *******
(1) 022352 032777 040000 010030         BIT     #B14,@SR
(1) 022360 001005               BNE     .+14
(1) 022362 012767 000257 010252         MOV     #257,ERRNUM
(1) 022370 004767 010020        JSR     PC,ERR
(1)        000260               N       =       N+1
022374                          SCOPE   RINTST
(1) 022374 004567 161626        JSR     R5,SCPRTN
(1) 022400 022126               RINTST
022402 026767 013522 013504     RH2:    CMP     RPRIO,TMPRIO            ;HAVE WE REACHED EXPECTED PRIORITY?
```

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2244  022410  001414                        BEQ     RH3
2245  022412                                ERROR   \N              ;ERROR:DEVICE NOT JUMPERED TO EXPECTED PRIORITY
 (1)                                                                ;******* ERROR 260 *******
 (1)  022412  032777  040000  007770        BIT     #B14,@SR
 (1)  022420  001005                        BNE     .+14
 (1)  022422  012767  000260  010212        MOV     #260,ERRNUM
 (1)  022430  004767  007760                JSR     PC,ERR
 (1)          000261                N       =       N+1
2246  022434                                SCOPE   RINTST
 (1)  022434  004567  161566                JSR     R5,SCPRTN
 (1)  022440  022126                        RINTST
2247  022442  022767  000340  013444  RH3:  CMP     #340,TMPRIO             ;IS PSW - 7?
2248  022450  001426                        BEQ     RH4
2249  022452                                BDINIT  RCVR
2250  022460  062767  000040  013426        ADD     #40,TMPRIO
2251  022466  012777  022600  013430  RH3S: MOV     #INTRB,@RCVEC           ;SET VECTOR FOR ERROR INTERRUPT
2252  022474  052777  000100  013450        BIS     #B06,@RCR               ;ENABLE RCVR INTERRUPT
2253  022502  052777  000200  013444        BIS     #B07,@RSR               ;FORCE INTERRUPT REQUEST
2254  022510                                MTPS    TMPRIO                  ;SET CP TO NEXT PRIORITY
 (1)  022510  016737  013400  177776        MOV     TMPRIO,@#PS
2255  022516  000240                        NOP
2256  022520  000240                        NOP
2257  022522  000167  177714                JMP     RH3
2258  022526                          RH4:  BDINIT  RCVR                    ;CLEAR THE BOARD
2259  022534  004767  007132                JSR     PC,MONIT
2260  022540  032777  010000  007642        BIT     #B12,@SR                ;SW 12 = 1?
2261  022546  001402                        BEQ     RHRT
2262  022550  000167  177352                JMP     RINTST                  ;YES,DO THIS TEST OVER
2263  022554  000207                  RHRT: RTS     PC                      ;NO,EXIT
2264
2265  022556                          INTRA: BDINIT  RCVR                   ;CLR INTERRUPT ETC.
2266  022564  062767  000040  013322        ADD     #40,TMPRIO              ;INCR TEMP PRIORITY
2267  022572  022626                        CMP     (SP)+,(SP)+             ;CORRECT STACK POINTER
2268  022574  000167  177464                JMP     RH1                     ;TRY AGAIN
2269
2270  022600  022626                  INTRB: CMP     (SP)+,(SP)+             ;POP THE STACK
2271  022602                                BDINIT  RCVR                    ;CLR EVRYTHING
2272  022610                                ERROR   \N              ;ERROR:GOT INTR WHITH CP AT HIGHER PRIORITY
 (1)                                                                ;******* ERROR 261 *******
 (1)  022610  032777  040000  007572        BIT     #B14,@SR
 (1)  022616  001005                        BNE     .+14
 (1)  022620  012767  000261  010014        MOV     #261,ERRNUM
 (1)  022626  004767  007562                JSR     PC,ERR
 (1)          000262                N       =       N+1
2273  022632                                SCOPE   RH3S
 (1)  022632  004567  161370                JSR     R5,SCPRTN
 (1)  022636  022466                        RH3S
2274  022640  000167  177576                JMP     RH3
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2276                                        .SBTTL  C.R.C. CHECK
2277
2278                                    ;CYCLIC REDUNDANCY CHECK CHARACTER TEST
2279
2280  022644                            RCRCTS: BDINIT  RCVR                    ;CLR THE BOARD
2281  022652  052777  000200  013272          BIS     #B07,@RCR               ;SET LD SILO BIT
2282  022660  012702  033764                  MOV     #SILCRC,R2              ;R2 POINTS TO GOOD CRC'S
2283  022664  012703  033564                  MOV     #SILDAT,R3              ;R3 POINTS TO MEM DATA
2284  022670  012704  177700                  MOV     #-64.,R4                ;R4 IS WORD COUNTER
2285  022674  011367  013212          RJ1:    MOV     (R3),DATWD              ;SAVE INPUT WORD
2286  022700  016777  013206  013250          MOV     DATWD,@RDDB             ;LOAD SILO
2287  022706  011267  007734                  MOV     (R2),GOOD               ;GET GOOD CRC FOR COMPARISON
2288  022712  017767  013246  007724          MOV     @RDCRC,BAD              ;GET GENERATED CRC
2289  022720  026767  007722  007716          CMP     GOOD,BAD                ;IS CRC OK?
2290  022726  001430                          BEQ     RJ2
2291  022730  032777  040000  007452          BIT     #B14,@SR                ;PRINT ALLOWED?
2292  022736  001021                          BNE     RJ1S                    ;IF NOT, SKIP IT
2293  022740                                  PNTM    SLIWD                   ;PRINT "SILO INPUT WORD WAS "
 (1)  022740  012700  034414                  MOV     #SLIWD,R0               ;PRINT MESSAGE
 (1)  022744  004767  007700                  JSR     PC,TYPOUT               ;POINTED TO BY SLIWD
2294  022750  016700  013136                  MOV     DATWD,R0
2295  022754  004767  010206                  JSR     PC,OCTPNT               ;PRINT SILO INPUT WORD
2296  022760                                  DATERR  \N               ;ERROR:BAD CRC FOR ABOVE WORD
 (1)                                                                    ;******* ERROR 262 *******
 (1)  022760  032777  040000  007422          BIT     #B14,@SR
 (1)  022766  001005                          BNE     .+14
 (1)  022770  012767  000262  007644          MOV     #262,ERRNUM
 (1)  022776  004767  007476                  JSR     PC,DERR
 (1)          000263                  N       =       N+1
2297  023002                            RJ1S:   SCOPE   RCRCTS
 (1)  023002  004567  161220                  JSR     R5,SCPRTN
 (1)  023006  022644                          RCRCTS
2298  023010  062702  000002          RJ2:    ADD     #2,R2                   ;UPDATE CRC POINTER
2299  023014  062703  000002                  ADD     #2,R3                   ;UPDATE DATA POINTER
2300  023020  005204                          INC     R4                      ;HAVE WE CHECKED 64 WDS?
2301  023022  001324                          BNE     RJ1
2302  023024  004767  006642                  JSR     PC,MONIT
2303  023030  032777  010000  007352          BIT     #B12,@SR                ;CHECK SW 12
2304  023036  001402                          BEQ     RJRT                    ;IF 0, EXIT
2305  023040  000167  177600                  JMP     RCRCTS                  ;IF 1, STAY
2306  023044                            RJRT:   BDINIT  RCVR                    ;CLR BOARD BEFORE EXIT
2307  023052  000207                          RTS     PC
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                                        .SBTTL XMTR-RCVR LOOP TESTS

                                ;TEST 3 - XMTR - RCVR LOOP TESTS
                                ;  (00) NPR TESTS SILO TO SILO
                                ;  (01) DATA LOOPS TESTS
                                ;  (02) TXM ERRORS TESTS
                                ;  (03) REJECT & TRUNCATE TESTS

000300                          N       =       300             ;LOOP TEST ERRORS START AT 300

023054                          TEST3:  MTPS    #P7
(1) 023054 012737 000340 177776         MOV     #P7,@#PS
023062 012767 000010 012766             MOV     #10,ITER        ;INITIAL ITERATION OF 10 PER PASS
023070 004767 006576                    JSR     PC,MONIT
023074 032777 002000 007306             BIT     #B10,@SR        ;CHECK SW 10
023102 001424                           BEQ     LOOPL           ;IF CLR, RUN ALL TESTS
023104 017767 007300 012746             MOV     @SR,SWI         ;IF SET, START AT TEST # IN SW'S <1:0>
023112 042767 177770 012740             BIC     #-10,SWI
023120 026727 012734 000003             CMP     SWI,#3          ;DON'T ALLOW SWI > 3
023126 003012                           BGT     LOOPL
023130 000241                           CLC                     ;CLR C-BIT BEFORE ROTATE
023132 006167 012722                    ROL     SWI
023136 006167 012716                    ROL     SWI
023142 062767 023154 012710             ADD     #LOOPL,SWI      ;GENERATE CORRECT OFFSET
023150 000177 012704                    JMP     @SWI            ;GO TO SELECTED TEST
023154 004767 000120            LOOPL:  JSR     PC,NPRTST       ;CHECK NPR ..SILO TO SILO
023160 004767 000710                    JSR     PC,DATLPS       ;DO DATA LOOPS TEST
023164 004767 003236                    JSR     PC,TXMERS       ;CHECK TXM ERRORS
023170 004767 005520                    JSR     PC,XRC20        ;DO REJECT AND TRUNCATE TEST
023174 032777 004000 007206             BIT     #B11,@SR        ;CHECK SW 11
023202 001003                           BNE     TREND           ;PRINT END IF SET
023204 005367 012646                    DEC     ITER            ;OTHERWISE, RE-ITERATE
023210 001361                           BNE     LOOPL
023212 005767 012664            TREND:  TST     $4FLAG          ;TEST END PASS INHIBIT FLAG
023216 001027                           BNE     REPETL          ;CAN'T PRINT, EXIT.
023220 005267 012646                    INC     PSNO3           ;UPDATE PASS NO.
023224                                  PNTM    PEND            ;PRINT 'END PASS # ''
(1) 023224 012700 034443                MOV     #PEND,R0        ;PRINT MESSAGE
(1) 023230 004767 007414                JSR     PC,TYPOUT       ;POINTED TO BY PEND
023234 016700 012632                    MOV     PSNO3,R0
023240 004767 010026                    JSR     PC,DECPNT       ;PRINT PASS NO.
023244 012700 000040                    MOV     #40,R0
023250 004767 010216                    JSR     PC,TTO          ;PRINT A SPACE
023254 012700 000102                    MOV     #'B,R0
023260 004767 010206                    JSR     PC,TTO          ;PRINT 'B'' (TO INDICATE 'LOOP TEST')
023264 005000                           CLR     R0
023266 004767 010200                    JSR     PC,TTO          ;PRINT NULLS TO ALLOW PRINT
023272 004767 010174                    JSR     PC,TTO          ;OF PASS NO. IN CASE RESET FOLLOWS
023276 000207                   REPETL: RTS     PC              ;RETURN
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                                                .SBTTL  NPR TESTS
                                        NPRTST: BDINIT  RCVR            ;CLEAR RECEIVER
                                                BDINIT  XMTR            ;CLEAR XMTR
023314  012777  010400  012622                  MOV     #10400,@TMMR    ;SET MASTER AND AUTO ADDR
023322  004767  000424                          JSR     PC,FILRCV       ;FILL RCVR SILO
023326  012777  177600  012624                  MOV     #-128.,@RDBC    ;SET UP RCVR TO INITIATE
023334  016777  012576  012620                  MOV     TSDB,@RDBA      ;NPR TO XMTR SILO
023342  012777  040064  012602                  MOV     #40064,@RCR     ;START NPR, INHIB ADDR INCR
023350  016702  007036                          MOV     DLCON,R2
023354  005003                          NPTST1: CLR     R3
023356  012704  177777                          MOV     #-1,R4          ;SET UP FOR  DELAY
023362  022777  000200  012550          XRA1:   CMP     #128 .,@TSBC    ;TRANSFERRED 64 WORDS?
023370  001422                                  BEQ     XRA2            ;NO, KEEP LOOKING FOR A SECOND
023372  005203                                  INC     R3
023374  001372                                  BNE     XRA1
023376  005204                                  INC     R4
023400  001370                                  BNE     XRA1
023402  005302                                  DEC     R2
023404  001363                                  BNE     NPTST1
023406                                          ERROR   \N              ;ERROR:RCVR NPR NOT COMPLETE IN TIME
                                                                        ;******* ERROR 300 *******
023406  032777  040000  006774                  BIT     #B14,@SR
023414  001005                                  BNE     .+14
023416  012767  000300  007216                  MOV     #300,ERRNUM
023424  004767  006764                          JSR     PC,ERR
        000301                          N       =       N+1
023430                                          SCOPE   NPRTST
023430  004567  160572                          JSR     R5,SCPRTN
023434  023300                                  NPRTST
023436  004767  000352                  XRA2:   JSR     PC,CHXDAT       ;CHECK DATA IN XMTR SILO
023442  000414                                  BR      XRA2A           ;DATA O.K.  , CONTINUE
023444                                          DATERR  \N              ;ERROR:BAD DATA NPR'D TO XMTR SILO
                                                                        ;******* ERROR 301 *******
023444  032777  040000  006736                  BIT     #B14,@SR
023452  001005                                  BNE     .+14
023454  012767  000301  007160                  MOV     #301,ERRNUM
023462  004767  007012                          JSR     PC,DERR
        000302                          N       =       N+1
023466                                          SCOPE   NPRTST
023466  004567  160534                          JSR     R5,SCPRTN
023472  023300                                  NPRTST
023474  005777  012460                  XRA2A:  TST     @RDBC           ;CHECK THAT RDBC = 0
023500  001421                                  BEQ     XRA3
023502  005067  007140                          CLR     GOOD
023506  017767  012446  007130                  MOV     @RDBC,BAD
023514                                          DATERR  \N              ;ERROR:RCV BYTE COUNT SHD BE 0 AT END [illegible]
                                                                        ;******* ERROR 302 *******
023514  032777  040000  006666                  BIT     #B14,@SR
023522  001005                                  BNE     .+14
023524  012767  000302  007110                  MOV     #302,ERRNUM
023532  004767  006742                          JSR     PC,DERR
        000303                          N       =       N+1
023536                                          SCOPE   NPRTST
023536  004567  160464                          JSR     R5,SCPRTN
023542  023300                                  NPRTST
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2388  023544                                  xRA3:   BDINIT  XMTR                    ;CLR    XMTR
2389  023552                                          BDINIT  RCVR                    ;CLR RCVR
2390  023560  004767  000166                          JSR     PC,FILRCV               ;FILL RECEIVER SILO
2391  023564  012777  177600  012346                  MOV     #-128.,@TSBC            ;SET UP FOR XMTR TO INITIATE
2392  023572  016777  012360  012342                  MOV     RDDB,@TSBA              ;NPR FROM RCVR SILO
2393  023600  012777  040064  012324                  MOV     #40064,@TCR             ;SET TX NPR, INHIB ADR INC
2394  023606  016702  006600                          MOV     DLCON,R2
2395  023612  005003                          xRA3A:  CLR     R3
2396  023614  012704  177777                          MOV     #-1,R4                  ;SET UP FOR 1 SEC DELAY
2397  023620  005777  012314                  xRA4:   TST     @TSBC                   ;TRANSFERRED 64 WORDS?
2398  023624  001422                                  BEQ     XRA5
2399  023626  005203                                  INC     R3                      ;IF NOT, WATCH FOR A SECOND
2400  023630  001373                                  BNE     XRA4
2401  023632  005204                                  INC     R4
2402  023634  001371                                  BNE     XRA4
2403  023636  005302                                  DEC     R2
2404  023640  001364                                  BNE     XRA3A
2405  023642                                          ERROR   \N              ;ERROR:XMTR NPR NOT COMPLETE IN 1 SEC
  (1)                                                                           ;******* ERROR 303 *******
  (1)   023642  032777  040000  006540                BIT     #B14,@SR
  (1)   023650  001005                                BNE     .+14
  (1)   023652  012767  000303  006762                MOV     #303,ERRNUM
  (1)   023660  004767  006530                        JSR     PC,ERR
  (1)           000304                  N       -       N+1
2406  023664                                          SCOPE   XRA3
  (1)   023664  004567  160336                        JSR     R5,SCPRTN
  (1)   023670  023544                                XRA3
2407  023672  004767  000116                  XRA5:   JSR     PC,CHXDAT               ;CHK DATA IN XMTR SILO
2408  023676  000414                                  BR      XRA6
2409  023700                                          DATERR  \N              ;ERROR:BAD DATA NPR'D TO XMTR SILO
  (1)                                                                           ;******* ERROR 304 *******
  (1)   023700  032777  040000  006502                BIT     #B14,@SR
  (1)   023706  001005                                BNE     .+14
  (1)   023710  012767  000304  006724                MOV     #304,ERRNUM
  (1)   023716  004767  006556                        JSR     PC,DERR
  (1)           000305                  N               N+1
2410  023722                                          SCOPE   XRA3
  (1)   023722  004567  160300                        JSR     R5,SCPRTN
  (1)   023726  023544                                XRA3
2411  023730  004767  005736                  XRA6:   JSR     PC,MONIT
2412  023734  032777  010000  006446                BIT     #B12,@SR                ;SW 12 - 1?
2413  023742  001402                                  BEQ     XRART                   ;NO, EXIT
2414  023744  000167  177330                          JMP     NPRTST                  ;YES, STAY HERE
2415  023750  000207                          XRART:  RTS     PC
2416  023752  012700  033564                  FILRCV: MOV     #SILDAT,R0              ;R0 IS DATA POINTER
2417  023756  012777  000200  012166                  MOV     #B07,@RCR               ;SET RCVR 'LD SILO"
2418  023764  012701  000100                          MOV     #64.,R1                 ;R1 IS WORD COUNTER
2419  023770  012077  012162                  LDLP:   MOV     (R0)+,@RDDB             ;MOVE WORDS INTO SILO
2420  023774  004567  160546                          JSR     R5,DELAY                ;WAIT FOR INPUT RDY
2421  024000  000005                                  .WORD   5
2422  024002  005301                                  DEC     R1                      ;LOADED ALL 64 WORDS?
2423  024004  001371                                  BNE     LDLP                    ;IF NOT, CONTINUE LOADING
2424  024006  005077  012140                          CLR     @RCR                    ;CLR RCR AND EXIT
2425  024012  000207                                  RTS     PC
2426
2427  024014  012702  000100                  CHXDAT: MOV     #64.,R2                 ;R2 IS WORD COUNTER
```

```
2428  024020  012701  033564                MOV     #SILDAT,R1          ;R1 POINTS TO GOOD DATA
2429  024024  052777  000200  012100        BIS     #B07,@TCR           ;SET 'RD SILO' IN XMTR
2430  024032  017767  012100  006604  XRCNT: MOV     @TSDB,BAD           ;POP SILO WORD INTO BAD
2431  024040  012167  006602                MOV     (R1)+,GOOD          ;POP LIST WORD INTO GOOD
2432  024044  026767  006576  006572        CMP     GOOD,BAD
2433  024052  001005                        BNE     XRERXT              ;IF DATA BAD, ERROR EXIT
2434  024054  005302                        DEC     R2                  ;DONE CHECKING SILO?
2435  024056  001365                        BNE     XRCNT               ;NO, CONTINUE
2436  024060  005077  012046          XRLV: CLR     @TCR                ;CLR COMMAND REG
2437  024064  000207                        RTS     PC                  ;EXIT
2438  024066  062716  000002          XRERXT: ADD   #2,(SP)             ;FIX PC FOR ERROR RETURN
2439  024072  000772                        BR      XRLV
```

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                                        .SBTTL  DATA LOOPS TESTS

024074                          DATLPS: BDINIT  XMTR                    ;CLR XMTR
024102                                  BDINIT  RCVR                    ;CLR RCVR
024110  012777  177777  012020        MOV     #-1,@TSDB               ;LOAD A WORD INTO TXM SILO
024116  012777  010400  012020        MOV     #10400,@TMMR            ;SET MASTER FLOP & SET AUTO ADDR
024124  012777  177776  012026        MOV     #-2,@RDBC               ;SET BYTE COUNT FOR 1 WORD
024132  016777  011746  011772        MOV     RCAD,@TCR               ;LOAD DESTINATION CODE
024140  052777  020000  012004        BIS     #B13,@RCR               ;SET RCV WD
024146  012777  177776  011764        MOV     #-2,@TSBC               ;SET XMTR BYTE CNT FOR 1 WORD
024154  052777  020000  011750        BIS     #B13,@TCR               ;SET SEND WORD
024162  016704  006224                MOV     DLCON,R4
024166  012703  177500          DTLPS1: MOV     #177500,R3              ;SET UP 2 MS DELAY
024172  005777  011756          XRB1:   TST     @RSR                    ;ANY ERRORS?
024176  100427                          BMI     2$                      ;YES
024200  032777  000400  011746        BIT     #B08,@RSR               ;IS DAT OUTP RDY SET IN RCVR?
024206  001020                        BNE     1$
024210  005203                        INC     R3                      ;WAIT A COUPLE OF MS FOR IT
024212  001367                        BNE     XRB1
024214  005304                        DEC     R4
024216  001363                        BNE     DTLPS1
024220                                ERROR   \N              ;ERROR:DAT OUTP RDY IN RCVR NOT SET IN 2 MS.
  (1)                                                                   ;******* ERROR 305 *******
  (1)   024220  032777  040000  006162        BIT     #B14,@SR
  (1)   024226  001005                        BNE     .+14
  (1)   024230  012767  000305  006404        MOV     #305,ERRNUM
  (1)   024236  004767  006152                JSR     PC,ERR
  (1)           000306                  N     =       N+1
024242                                  SCOPE   DATLPS
  (1)   024242  004567  157760                JSR     R5,SCPRTN
  (1)   024246  024074                        DATLPS
024250  005777  011700          1$:     TST     @RSR                    ;ANY HARD ERRORS?
024254  100030                          BPL     XRB2
024256                          2$:     ERROR   \N              ;ERROR; HARD ERROR ON 1 WD XFER
  (1)                                                                   ;******* ERROR 306 *******
  (1)   024256  032777  040000  006124        BIT     #B14,@SR
  (1)   024264  001005                        BNE     .+14
  (1)   024266  012767  000306  006346        MOV     #306,ERRNUM
  (1)   024274  004767  006114                JSR     PC,ERR
  (1)           000307                  N     =       N+1
024300  032777  040000  006102        BIT     #B14,@SR                ;CHECK FOR PRINT INHIBIT
024306  001010                        BNE     XRB1S                   ;SKIP EXT PRINTOUT IF SW 14 1
024310                                PNTM    RCSTAT                  ;ELSE PRINT 'RECEIVER STATUS - ''
  (1)   024310  012700  034607                MOV     #RCSTAT,R0              ;PRINT MESSAGE
  (1)   024314  004767  006330                JSR     PC,TYPOUT               ;POINTED TO BY RCSTAT
024320  017700  011630                MOV     @RSR,R0
024324  004767  006636                JSR     PC,OCTPNT               ;PRINT CONTENTS OF RSR
024330                          XRB1S:  SCOPE   DATLPS
  (1)   024330  004567  157672                JSR     R5,SCPRTN
  (1)   024334  024074                        DATLPS
024336  105777  011572          XRB2:   TSTB    @TSR                    ;IS SUC TXF SET IN XMTR?
024342  100433                          BMI     XRB3
024344                                  ERROR   \N              ;ERROR:SUC TXF IN XMTR NOT SET IN 2 MS.
  (1)                                                                   ;******* ERROR 307 *******
  (1)   024344  032777  040000  006036        BIT     #B14,@SR
  (1)   024352  001005                        BNE     .+14
```

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  (1)  024354  012767  000307  006260          MOV     #307,ERRNUM
  (1)  024362  004767  006026                  JSR     PC,ERR
  (1)          000310                  N       =       N+1
2476   024366  005777  011542                  TST     @TSR                    ;ANY HARD ERRORS?
2477   024372  100014                          BPL     XRBS2
2478   024374  032777  040000  006006          BIT     #B14,@SR                ;CHECK IF PRINT ALLOWED
2479   024402  001010                          BNE     XRBS2                   ;IF NOT, SKIP IT.
2480   024404                          PNTM    TXSTAT                          ;IF SO, PRINT 'TRANSMITTER STATUS = ''
  (1)  024404  012700  034554                  MOV     #TXSTAT,R0              ;PRINT MESSAGE
  (1)  024410  004767  006234                  JSR     PC,TYPOUT               ;POINTED TO BY TXSTAT
2481   024414  017700  011514                  MOV     @TSR,R0
2482   024420  004767  006542                  JSR     PC,OCTPNT               ;PRINT CONTENTS OF TSR
2483   024424                          XRBS2:  SCOPE   DATLPS
  (1)  024424  004567  157576                  JSR     R5,SCPRTN
  (1)  024430  024074                          DATLPS
2484   024432  012767  177777  006206  XRB3:   MOV     #-1,GOOD
2485   024440  017767  011512  006176          MOV     @RDDB,BAD               ;CHECK DATA RECEIVED
2486   024446  026767  006174  006170          CMP     GOOD,BAD                ;IS IT O.K. ?
2487   024454  001414                          BEQ     XRB4
2488   024456                                  DATERR  \N              ;ERROR:DATA RECEIVED IS WRONG (DROPPED BITS)
  (1)                                                                     ;******* ERROR 310 *******
  (1)  024456  032777  040000  005724          BIT     #B14,@SR
  (1)  024464  001005                          BNE     .+14
  (1)  024466  012767  000310  006146          MOV     #310,ERRNUM
  (1)  024474  004767  006000                  JSR     PC,DERR
  (1)          000311                  N       =       N+1
2489   024500                                  SCOPE DATLPS
  (1)  024500  004567  157522                  JSR     R5,SCPRTN
  (1)  024504  024074                          DATLPS
2490   024506  016767  011374  006132  XRB4:   MOV     TRAD,GOOD               ;GET TRANSMITTER TDM BUS ADDRESS
2491   024514  017767  011432  006122          MOV     @RCR,BAD                ;READ IDENT BITS IN RCR
2492   024522  042767  160377  006114          BIC     #160377,BAD             ;IGNORE ALL OTHER BITS
2493   024530  026767  006112  006106          CMP     GOOD,BAD                ;D.C. RECEIVED OK?
2494   024536  001414                          BEQ     XRB4C
2495   024540                                  DATERR  \N              ;ERROR:XMTR IDENT BITS NOT REC'D BY RCVR
  (1)                                                                     ;******* ERROR 311 *******
  (1)  024540  032777  040000  005642          BIT     #B14,@SR
  (1)  024546  001005                          BNE     .+14
  (1)  024550  012767  000311  006064          MOV     #311,ERRNUM
  (1)  024556  004767  005716                  JSR     PC,DERR
  (1)          000312                  N       -       N+1
2496   024562                                  SCOPE   DATLPS
  (1)  024562  004567  157440                  JSR     R5,SCPRTN
  (1)  024566  024074                          DATLPS
2497   024570                          XRB4C:  BDINIT  XMTR                    ;CLR XMTR
2498   024576                                  BDINIT  RCVR                    ;CLR RCVR
2499   024604  012777  000000  011324          MOV     #0,@TSDB                ;LOAD A WORD OF 0'S INTO SILO
2500   024612  012777  177776  011320          MOV     #-2,@TSBC               ;SET BYTE CNT FOR 1 WORD
2501   024620  012777  177776  011332          MOV     #-2,@RDBC
2502   024626  016777  011252  011276          MOV     RCAD,@TCR               ;POINT XMTR AT RCVR
2503   024634  052777  020000  011310          BIS     #B13,@RCR               ;SET RCV WD
2504   024642  052777  020000  011262          BIS     #B13,@TCR               ;SET SND WD
2505   024650  016704  005536                  MOV     DLCON,R4
2506   024654  012703  177570          XRB4D:  MOV     #177570,R3              ;SET UP 2 MS DELAY
2507   024660  005777  011270          XRB5:   TST     @RSR                    ;ANY ERRORS?
2508   024664  100427                          BMI     2$                      ;YES, ERROR
```

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 2509  024666  032777  000400  011260          BIT     #B08,@RSR               ;DATA OUTPUT READY YET?
 2510  024674  001020                          BNE     1$
 2511  024676  005203                          INC     R3                      ;WAIT A COUPLE OF MS FOR IT
 2512  024700  001367                          BNE     XRB5
 2513  024702  005304                          DEC     R4
 2514  024704  001363                          BNE     XRB4D
 2515  024706                                  ERROR   \N              ;ERROR:DAT OUTP RDY IN RCVR NOT SET IN 2 MS.
                                                                         ;******* ERROR 312 *******
   (1)
   (1)  024706  032777  040000  005474          BIT     #B14,@SR
   (1)  024714  001005                          BNE     .+14
   (1)  024716  012767  000312  005716          MOV     #312,ERRNUM
   (1)  024724  004767  005464                  JSR     PC,ERR
   (1)          000313                  N       =       N+1
 2516  024730                                  SCOPE   XRB4C
   (1)  024730  004567  157272                  JSR     R5,SCPRTN
   (1)  024734  024570                          XRB4C
 2517  024736  005777  011212          1$:     TST     @RSR                    ;ANY HARD ERRORS IN RCVR?
 2518  024742  100030                          BPL     XRB6
 2519  024744                          2$:     ERROR   \N              ;ERROR:HARD ERROR ON 1 WD XFER
                                                                         ;******* ERROR 313 *******
   (1)
   (1)  024744  032777  040000  005436          BIT     #B14,@SR
   (1)  024752  001005                          BNE     .+14
   (1)  024754  012767  000313  005660          MOV     #313,ERRNUM
   (1)  024762  004767  005426                  JSR     PC,ERR
   (1)          000314                  N       =       N+1
 2520  024766  032777  040000  005414          BIT     #B14,@SR                ;CHECK IF PRINT ALLOWED
 2521  024774  001013                          BNE     XRB6                    ;IF NOT, SKIP IT.
 2522  024776                                  PNTM    RCSTAT                  ;IF SO, PRINT 'RECEIVER STATUS   ''
   (1)  024776  012700  034607                  MOV     #RCSTAT,R0              ;PRINT MESSAGE
   (1)  025002  004767  005642                  JSR     PC,TYPOUT               ;POINTED TO BY RCSTAT
 2523  025006  017700  011142                  MOV     @RSR,R0
 2524  025012  004767  006150                  JSR     PC,OCTPNT               ;PRINT CONTENTS OF RSR
 2525  025016                                  SCOPE   XRB4C
   (1)  025016  004567  157204                  JSR     R5,SCPRTN
   (1)  025022  024570                          XRB4C
 2526  025024  105777  011104          XRB6:   TSTB    @TSR                    ;IS SUC TXF SET IN XMTR?
 2527  025030  100433                          BMI     XRB7
 2528  025032                                  ERROR   \N              ;ERROR:SUC TXF IN XMTR NOT SET IN 2 MS.
                                                                         ;******* ERROR 314 *******
   (1)
   (1)  025032  032777  040000  005350          BIT     #B14,@SR
   (1)  025040  001005                          BNE     .+14
   (1)  025042  012767  000314  005572          MOV     #314,ERRNUM
   (1)  025050  004767  005340                  JSR     PC,ERR
   (1)          000315                  N       N+1
 2529  025054  005777  011054                  TST     @TSR                    ;ANY HARD ERRORS IN XMTR?
 2530  025060  100014                          BPL     XRB6S
 2531  025062  032777  040000  005320          BIT     #B14,@SR                ;CHECK IF PRINT ALLOWED
 2532  025070  001010                          BNE     XRB6S                   ;IF NOT, SKIP IT
 2533  025072                                  PNTM    TXSTAT                  ;IF SO, PRINT 'TRANSMITTER STATUS = ''
   (1)  025072  012700  034554                  MOV     #TXSTAT,R0              ;PRINT MESSAGE
   (1)  025076  004767  005546                  JSR     PC,TYPOUT               ;POINTED TO BY TXSTAT
 2534  025102  017700  011026                  MOV     @TSR,R0
 2535  025106  004767  006054                  JSR     PC,OCTPNT               ;PRINT CONTENTS OF TSR
 2536  025112                          XRB6S:  SCOPE   XRB4C
   (1)  025112  004567  157110                  JSR     R5,SCPRTN
   (1)  025116  024570                          XRB4C
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 2537  025120  005067  005522          XRB7:   CLR     GOOD
 2538  025124  017767  011026  005512          MOV     @RDDB,BAD               ;CHECK DATA RECEIVED
 2539  025132  026767  005510  005504          CMP     GOOD,BAD                ;IS IT O.K.?
 2540  025140  001414                          BEQ     XRB8
 2541  025142                                  DATERR  \N              ;ERROR:DATA RECEIVED IS WRONG (PICKED UP BITS)
  (1)                                                                    ;******* ERROR 315 *******
  (1)  025142  032777  040000  005240          BIT     #B14,@SR
  (1)  025150  001005                          BNE     .+14
  (1)  025152  012767  000315  005462          MOV     #315,ERRNUM
  (1)  025160  004767  005314                  JSR     PC,DERR
  (1)          000316                  N               N+1
 2542  025164                                  SCOPE   XRB4C
  (1)  025164  004567  157036                  JSR     R5,SCPRTN
  (1)  025170  024570                          XRB4C
 2543  025172  004767  173012          XRB8:   JSR     PC,CLRCBF               ;MAKE SURE CMPBUF IS CLEAR
 2544  025176                                  BDINIT  XMTR                    ;CLR XMTR
 2545  025204                                  BDINIT  RCVR                    ;CLR RCVR
 2546  025212  012777  033564  010722          MOV     #SILDAT,@TSBA           ;GET XMTR DATA FROM SILDAT
 2547  025220  012777  034164  010734          MOV     #CMPBUF,@RDBA           ;PUT RCV'D DATA IN CMPBUF
 2548  025226  012777  177600  010704          MOV     #-128.,@TSBC            ;SET UP TO SEND 64 WORDS
 2549  025234  012777  177600  010716          MOV     #-128.,@RDBC            ;SET UP TO RECEIVE 64 WORDS
 2550  025242  016777  010636  010662          MOV     RCAD,@TCR               ;POINT XMTR AT RCVR
 2551  025250  052777  060001  010674          BIS     #60001,@RCR             ;SET RC NPR, RCV WD, & ST TXF IN RCVR
 2552  025256  052777  060001  010646          BIS     #60001,@TCR             ;AND IN XMTR
 2553  025264  016702  005122                  MOV     DLCON,R2
 2554  025270  005003                  XRB8A:  CLR     R3
 2555  025272  012704  177777                  MOV     #-1,R4                  ;SET UP 1 SEC DELAY
 2556  025276  105777  010632          XRB9:   TSTB    @TSR                    ;IS SUC TXF SET IN XMTR?
 2557  025302  100447                          BMI     XRB10                   ;YES, GO CHECK RECEIVER
 2558  025304  005777  010624                  TST     @TSR                    ;ERROR BIT SET?
 2559  025310  100411                          BMI     $2$
 2560  025312  005777  010636                  TST     @RSR                    ;RCVR ERROR BIT SET?
 2561  025316  100444                          BMI     $3$
 2562  025320  005203                          INC     R3                      ;NO, WATCH FOR A SECOND
 2563  025322  001365                          BNE     XRB9
 2564  025324  005204                          INC     R4
 2565  025326  001363                          BNE     XRB9
 2566  025330  005302                          DEC     R2
 2567  025332  001356                          BNE     XRB8A
 2568  025334                          $2$:    ERROR   \N              ;ERROR:NO SUC TXF IN XMTR IN 1 SEC
  (1)                                                                    ;******* ERROR 316 *******
  (1)  025334  032777  040000  005046          BIT     #B14,@SR
  (1)  025342  001005                          BNE     .+14
  (1)  025344  012767  000316  005270          MOV     #316,ERRNUM
  (1)  025352  004767  005036                  JSR     PC,ERR
  (1)          000317                  N       =       N+1
 2569  025356  005777  010552                  TST     @TSR                    ;ANY HARD ERRORS IN XMTR?
 2570  025362  100014                          BPL     XRB9S
 2571  025364  032777  040000  005016          BIT     #B14,@SR                ;CHECK IF PRINT ALLOWED
 2572  025372  001010                          BNE     XRB9S                   ;IF NOT, SKIP IT
 2573  025374                                  PNTM    TXSTAT                  ;IF SO, PRINT "TRANSMITTER STATUS = "
  (1)  025374  012700  034554                  MOV     #TXSTAT,R0              ;PRINT MESSAGE
  (1)  025400  004767  005244                  JSR     PC,TYPOUT               ;POINTED TO BY TXSTAT
 2574  025404  017700  010524                  MOV     @TSR,R0
 2575  025410  004767  005552                  JSR     PC,OCTPNT               ;PRINT CONTENTS OF TSR
 2576  025414                          XRB9S:  SCOPE   XRB8
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  (1) 025414 004567 156606            JSR     R5,SCPRTN
  (1) 025420 025172                   XRB8
2577  025422 105777 010526  XRB10:     TSTB    @RSR                ;IS SUC TXF SET IN RCVR?
2578  025426 100433                     BMI     XRB11               ;YES, GO CHECK DATA
2579  025430                  $3$:      ERROR   \N          ;ERROR:NO SUC TXF IN RCVR IN 1 SEC
  (1)                                                               ;******* ERROR 317 *******
  (1) 025430 032777 040000 004752     BIT     #B14,@SR
  (1) 025436 001005                   BNE     .+14
  (1) 025440 012767 000317 005174     MOV     #317,ERRNUM
  (1) 025446 004767 004742            JSR     PC,ERR
  (1)        000320           N       =       N+1
2580  025452 005777 010476            TST     @RSR                ;ANY HARD ERRORS IN RCVR?
2581  025456 100014                     BPL     XRB10S
2582  025460 032777 040000 004722      BIT     #B14,@SR            ;CHECK IF PRINT ALLOWED
2583  025466 001010                     BNE     XRB10S              ;IF NOT, SKIP IT
2584  025470                            PNTM    RCSTAT              ;IF SO, PRINT 'RECEIVER STATUS   ''
  (1) 025470 012700 034607            MOV     #RCSTAT,R0          ;PRINT MESSAGE
  (1) 025474 004767 005150            JSR     PC,TYPOUT           ;POINTED TO BY RCSTAT
2585  025500 017700 010450            MOV     @RSR,R0
2586  025504 004767 005456            JSR     PC,OCTPNT           ;PRINT CONTENTS OF RSR
2587  025510                  XRB10S:   SCOPE   XRB8
  (1) 025510 004567 156512            JSR     R5,SCPRTN
  (1) 025514 025172                   XRB8
2588  025516 012703 000100  XRB11:     MOV     #64.,R3             ;R3 IS WORD COUNTER
2589  025522 012701 033564            MOV     #SILDAT,R1          ;R1 IS GOOD DATA POINTER
2590  025526 012702 034164            MOV     #CMPBUF,R2          ;R2 IS 'BAD'DATA POINTER
2591  025532 012167 005110  XRB11L:    MOV     (R1)+,GOOD
2592  025536 012267 005102            MOV     (R2)+,BAD
2593  025542 026767 005100 005074     CMP     GOOD,BAD            ;DATA WORD OK?
2594  025550 001420                     BEQ     XRB11C              ;IF SO, CONTINUE
2595  025552                            DATERR  \N          ;ERROR:BAD DATA RECEIVED FROM XMTR
  (1)                                                               ;******* ERROR 320 *******
  (1) 025552 032777 040000 004630     BIT     #B14,@SR
  (1) 025560 001005                   BNE     .+14
  (1) 025562 012767 000320 005052     MOV     #320,ERRNUM
  (1) 025570 004767 004704            JSR     PC,DERR
  (1)        000321           N       =       N+1
2596  025574 005303                     DEC     R3                  ;CHECKED ALL WORDS?
2597  025576 001355                     BNE     XRB11L
2598  025600                            SCOPE   XRB8                ;RE-TRY BECAUSE OF ERROR
  (1) 025600 004567 156422            JSR     R5,SCPRTN
  (1) 025604 025172                   XRB8
2599  025606 000167 000004            JMP     XRB12
2600  025612 005303           XRB11C:   DEC     R3                  ;CHECKED ALL WORDS?
2601  025614 001346                     BNE     XRB11L
2602  025616                  XRB12:    BDINIT  XMTR                ;CLR XMTR
2603  025624                            BDINIT  RCVR                ;CLR RCVR
2604  025632 012777 036200 010302      MOV     #TSTWRD,@TSBA       ;POINT XMTR AT LOC WITH TEST WORD
2605  025640 012777 177200 010272      MOV     #-600,@TSBC         ;SET UP FOR 300 WORD XFR
2606  025646 016777 010232 010256      MOV     RCAD,@TCR           ;POINT XMTR AT RCVR
2607  025654 012777 020001 010270      MOV     #20001,@RCR         ;SET RCV WD, RCV DAT, IN RCVR
2608  025662 052777 060005 010242      BIS     #60005,@TCR         ;SET TX NPR, INH ADR INC, ST TXM,&SND WD
2609  025670 012701 000300             MOV     #300,R1             ;R1 COUNTS WORDS RECEIVED
2610  025674 016704 004512  XRB12L:    MOV     DLCON,R4
2611  025700 012703 177700  XRB12K:    MOV     #-100,R3            ;SET UP 10 MS COUNTER
2612  025704 032777 000400 010242 XRB12M: BIT   #B08,@RSR          ;RCVR SILO RDY FOR OUTPUT?
```

```
2613  025712  001063                          BNE     XRB13                   ;YES. LOOK AT WORD
2614  025714  005203                          INC     R3
2615  025716  001372                          BNE     XRB12M                  ;IF NOT, WAIT 10 MS.
2616  025720  005304                          DEC     R4
2617  025722  001366                          BNE     XRB12K
2618  025724                                  ERROR   \N              ;ERROR:NO DATA WORD IN RCVR SILO IN 10 MS.
  (1)                                                                   ;******* ERROR 321 *******
  (1)   025724  032777  040000  004456        BIT     #B14,@SR
  (1)   025732  001005                        BNE     .+14
  (1)   025734  012767  000321  004700        MOV     #321,ERRNUM
  (1)   025742  004767  004446                JSR     PC,ERR
  (1)           000322                N       =       N+1
2619  025746  005777  010162                XRB12R: TST     @TSR                    ;ANY HARD ERRORS IN XMTR?
2620  025752  100014                          BPL     XRB12R
2621  025754  032777  040000  004426        BIT     #B14,@SR                ;CHECK IF PRINT ALLOWED
2622  025762  001034                          BNE     XRB12S                  ;IF NOT, SKIP IT
2623  025764                                  PNTM    TXSTAT                  ;IF SO, PRINT 'TRANSMITTER STATUS = ''
  (1)   025764  012700  034554                MOV     #TXSTAT,R0              ;PRINT MESSAGE
  (1)   025770  004767  004654                JSR     PC,TYPOUT               ;POINTED TO BY TXSTAT
2624  025774  017700  010134                MOV     @TSR,R0
2625  026000  004767  005162                JSR     PC,OCTPNT               ;PRINT CONTENTS OF TSR
2626  026004  005777  010144                XRB12R: TST     @RSR                    ;ANY HARD ERRORS IN RCVR?
2627  026010  100010                          BPL     XRB12T
2628  026012                                  PNTM    RCSTAT                  ;IF SO, PRINT 'RECEIVER STATUS = ''
  (1)   026012  012700  034607                MOV     #RCSTAT,R0              ;PRINT MESSAGE
  (1)   026016  004767  004626                JSR     PC,TYPOUT               ;POINTED TO BY RCSTAT
2629  026022  017700  010126                MOV     @RSR,R0
2630  026026  004767  005134                JSR     PC,OCTPNT               ;PRINT CONTENTS OF RSR
2631  026032                                XRB12T: PNTM    RCBTCN                  ;PRINT 'NO. OF WORDS RECEIVED = ''
  (1)   026032  012700  034637                MOV     #RCBTCN,R0              ;PRINT MESSAGE
  (1)   026036  004767  004606                JSR     PC,TYPOUT               ;POINTED TO BY RCBTCN
2632  026042  012700  000300                MOV     #300,R0
2633  026046  160100                          SUB     R1,R0                   ;CALCULATE WORDS RECV'D
2634  026050  004767  005112                JSR     PC,OCTPNT               ;PRINT RESULT
2635  026054                                XRB12S: SCOPE   XRB12                   ;START ALL OVER
  (1)   026054  004567  156146                JSR     R5,SCPRTN
  (1)   026060  025616                        XRB12
2636  026062  016767  010112  004556  XRB13:  MOV     TSTWRD,GOOD
2637  026070  017767  010062  004546          MOV     @RDDB,BAD               ;GET WORD FROM SILO
2638  026076  026767  004544  004540          CMP     GOOD,BAD                ;WAS IT = TEST WORD?
2639  026104  001431                          BEQ     XRB13C
2640  026106                                  DATERR  \N              ;ERROR:DATA WORD IN RCVR SILO WRONG
  (1)                                                                   ;******* ERROR 322 *******
  (1)   026106  032777  040000  004274        BIT     #B14,@SR
  (1)   026114  001005                        BNE     .+14
  (1)   026116  012767  000322  004516        MOV     #322,ERRNUM
  (1)   026124  004767  004350                JSR     PC,DERR
  (1)           000323                N       =       N+1
2641  026130  032777  040000  004252          BIT     #B14,@SR                ;CHECK IF PRINT ALLOWED
2642  026136  001011                          BNE     XRB13L                  ;IF NOT, SKIP IT.
2643  026140                                  PNTM    RCBTCN                  ;PRINT 'NO. OF WORDS RECEIVED = ''
  (1)   026140  012700  034637                MOV     #RCBTCN,R0              ;PRINT MESSAGE
  (1)   026144  004767  004500                JSR     PC,TYPOUT               ;POINTED TO BY RCBTCN
2644  026150  012700  000301                MOV     #301,R0
2645  026154  160100                          SUB     R1,R0                   ;CALCULATE WORDS RECV'D
2646  026156  004767  005004                JSR     PC,OCTPNT               ;PRINT RESULT
```

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2647  026162                          XRB13L: SCOPE   XRB12                   ;START ALL OVER
 (1)  026162  004567  156040                  JSR     R5,SCPRTN
 (1)  026166  025616                          XRB12
2648  026170  005301                  XRB13C: DEC     R1                      ;UPDATE RCVR WORD COUNT
2649  026172  001240                          BNE     XRB12L                  ;GET ANOTHER WORD
2650  026174  016704  004212                  MOV     DLCON,R4
2651  026200  012703  177000          XRB13E: MOV     #177000,R3              ;SET UP TO WAIT FOR TXFR
2652  026204  005203                  XRB13D: INC     R3
2653  026206  001376                          BNE     XRB13D                  ;WAIT FOR LATEST POSSIBLE TIMSL
2654  026210  105777  007720                  TSTB    @TSR                    ;XMTR SUC TXF SET?
2655  026214  100435                          BMI     XRB14                   ;YES,GO CHECK RCVR
2656  026216  005304                          DEC     R4
2657  026220  001367                          BNE     XRB13E
2658  026222                                  ERROR   \N              ;ERROR:XMTR SUC TXF NOT SET
 (1)                                                                  ;******* ERROR 323 *******
 (1)  026222  032777  040000  004160          BIT     #B14,@SR
 (1)  026230  001005                          BNE     .+14
 (1)  026232  012767  000323  004402          MOV     #323,ERRNUM
 (1)  026240  004767  004150                  JSR     PC,ERR
 (1)          000324                  N       =       N+1
2659  026244  005777  007664                  TST     @TSR                    ;ANY HARD ERRORS IN XMTR?
2660  026250  100014                          BPL     XRB13S
2661  026252  032777  040000  004130          BIT     #B14,@SR                ;CHECK IF PRINT ALLOWED
2662  026260  001010                          BNE     XRB13S                  ;IF NOT, SKIP IT.
2663  026262                                  PNTM    TXSTAT                  ;IF SO, PRINT 'TRANSMITTER STATUS = ''
 (1)  026262  012700  034554                  MOV     #TXSTAT,R0              ;PRINT MESSAGE
 (1)  026266  004767  004356                  JSR     PC,TYPOUT               ;POINTED TO BY TXSTAT
2664  026272  017700  007636                  MOV     @TSR,R0
2665  026276  004767  004664                  JSR     PC,OCTPNT               ;PRINT CONTENTS OF TSR
2666  026302                          XRB13S: SCOPE   XRB12                   ;START OVER
 (1)  026302  004567  155720                  JSR     R5,SCPRTN
 (1)  026306  025616                          XRB12
2667  026310  105777  007640          XRB14:  TSTB    @RSR                    ;RCVR SUC TXF SET?
2668  026314  100433                          BMI     XRB15                   ;YES, ALL DONE
2669  026316                                  ERROR   \N              ;ERROR:RCVR SUC TXF NOT SET
 (1)                                                                  ;******* ERROR 324 *******
 (1)  026316  032777  040000  004064          BIT     #B14,@SR
 (1)  026324  001005                          BNE     .+14
 (1)  026326  012767  000324  004306          MOV     #324,ERRNUM
 (1)  026334  004767  004054                  JSR     PC,ERR
 (1)          000325                  N       =       N+1
2670  026340  005777  007610                  TST     @RSR                    ;ANY HARD ERRORS IN RCVR?
2671  026344  100014                          BPL     XRB14S
2672  026346  032777  040000  004034          BIT     #B14,@SR                ;CHECK IF PRINT ALLOWED
2673  026354  001010                          BNE     XRB14S                  ;IF NOT, SKIP IT.
2674  026356                                  PNTM    RCSTAT                  ;IF SO, PRINT 'RECEIVER STATUS = ''
 (1)  026356  012700  034607                  MOV     #RCSTAT,R0              ;PRINT MESSAGE
 (1)  026362  004767  004262                  JSR     PC,TYPOUT               ;POINTED TO BY RCSTAT
2675  026366  017700  007562                  MOV     @RSR,R0
2676  026372  004767  004570                  JSR     PC,OCTPNT               ;PRINT CONTENTS OF RSR
2677  026376                          XRB14S: SCOPE   XRB12                   ;START OVER
 (1)  026376  004567  155624                  JSR     R5,SCPRTN
 (1)  026402  025616                          XRB12
2678  026404  004767  003262          XRB15:  JSR     PC,MONIT
2679  026410  032777  010000  003772          BIT     #B12,@SR                ;SW 12 = 1?
2680  026416  001402                          BEQ     XRBRT                   ;NO, EXIT
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 2681  026420  000167  175450                JMP     DATLPS                  ;YES, DON'T EXIT
 2682  026424  000207                XRBRT:  RTS     PC
```

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2684                                        .SBTTL  TRANSMISSION ERRORS TESTS
2685
2686                                        ;TEST TO CHECK FOR RCVR TIMEOUT.
2687                                        ;OPEN CHANNEL, THEN DON'T SEND ANY DATA FOR
2688                                        ; 3 SECONDS.
2689
2690
2691  026426                                TXMERS: BDINIT  XMTR                    ;CLR XMTR
2692  026434                                        BDINIT  RCVR                    ;CLR RCVR
2693  026442  052777  010400  007474                BIS     #10400,@TMMR            ;SET MASTER & AUTO ADDR
2694  026450  012777  177774  007462                MOV     #-4,@TSBC               ;INDICATE 2 WD XFR
2695  026456  012777  177777  007452                MOV     #-1,@TSDB               ;PUT 1 WD IN XMTR SILO
2696  026464  016777  007414  007440                MOV     RCAD,@TCR               ;POINT XMTR AT RCVR
2697  026472  052777  020000  007452                BIS     #B13,@RCR               ;SET RCV WD
2698  026500  052777  020000  007424                BIS     #B13,@TCR               ;SET SND WD
2699  026506  016702  003700                       MOV     DLCON,R2
2700  026512  005003                        TXMR1:  CLR     R3
2701  026514  012704  177775                       MOV     #-3,R4                  ;SET UP 1 SEC DELAY
2702  026520  032777  002000  007426        XRC1:   BIT     #B10,@RSR               ;IS RCVR TIMEOUT SET?
2703  026526  001022                               BNE     XRC2
2704  026530  005203                               INC     R3                      ;IF NOT, WAIT 3 SEC FOR IT
2705  026532  001372                               BNE     XRC1
2706  026534  005204                               INC     R4
2707  026536  001370                               BNE     XRC1
2708  026540  005302                               DEC     R2
2709  026542  001363                               BNE     TXMR1
2710  026544                                       ERROR   \N              ;ERROR:NO TIMEOUT IN 3 SEC WITH NULL ON INPUT
  (1)                                                                          ;******* ERROR 325 *******
  (1)  026544  032777  040000  003636            BIT     #B14,@SR
  (1)  026552  001005                            BNE     .+14
  (1)  026554  012767  000325  004060            MOV     #325,ERRNUM
  (1)  026562  004767  003626                    JSR     PC,ERR
  (1)          000326                    N       =       N+1
2711  026566                                       SCOPE   TXMERS
  (1)  026566  004567  155434                    JSR     R5,SCPRTN
  (1)  026572  026426                            TXMERS
2712
2713                                        ;TEST TO DETERMINE THAT ADDRESSING RCVR AND GENERATING A NULL
2714                                        ;CYCLE FIRST PROPERLY GENERATES CORRECT RESPONSE CODES
2715                                        ;AND THAT THE RECEIVER DOES NOT RESPOND.
2716                                        ;CHANNEL IS OPENED BY POPPING A WORD FROM XMTR SILO.
2717
2718  026574                                XRC2:   BDINIT  XMTR                    ;CLR XMTR
2719  026602                                        BDINIT  RCVR                    ;CLR RCVR
2720  026610  012777  177774  007322                MOV     #-4,@TSBC               ;SET UP FOR 1 WD XFR
2721  026616  016777  007262  007306                MOV     RCAD,@TCR               ;POINT XMTR AT RCVR
2722  026624  012777  177777  007304                MOV     #-1,@TSDB               ;PUT 1 WD INTO TXM SILO
2723  026632  052777  000200  007272                BIS     #B07,@TCR               ;SET RD SILO
2724  026640  052777  020001  007304                BIS     #B13+B00,@RCR           ;SET RCV WD AND RCV DATA
2725  026646  004567  155674                       JSR     R5,DELAY                ;WAIT FOR WORD TO HIT BOTTOM
2726  026652  000010                               .WORD   10
2727  026654  005777  007256                       TST     @TSDB                   ;POP WORD OUT
2728  026660  042777  000200  007244                BIC     #B07,@TCR               ;CLR RD SILO
2729  026666  016704  003520                       MOV     DLCON,R4
2730  026672  012703  177757                XRC2D:  MOV     #177757,R3              ;SET UP TO STALL 100 US.
2731  026676  005203                        XRC2A:  INC     R3
```

```
 2732  026700  001376                          BNE     XRC2A                   ;STALL (WAIT FOR TIME SLICE
 2733  026702  005304                          DEC     R4
 2734  026704  001372                          BNE     XRC2D
 2735  026706  012767  000000  003732          MOV     #0,GOOD
 2736  026714  017767  007234  003722          MOV     @RSR,BAD                ;CHK RESPONSE CODES IN RCVR
 2737  026722  042767  177760  003714          BIC     #177760,BAD
 2738  026730  026767  003712  003706          CMP     GOOD,BAD                ;RSP CODES = 00 & 00 ?
 2739  026736  001414                          BEQ     XRC3
 2740  026740                                  DATERR  \N              ;ERROR:RESPONSE CODES AT RECEIVER WRONG
   (1)                                                                   ;******* ERROR 326 *******
   (1)  026740  032777  040000  003442          BIT     #B14,@SR
   (1)  026746  001005                          BNE     .+14
   (1)  026750  012767  000326  003664          MOV     #326,ERRNUM
   (1)  026756  004767  003516                  JSR     PC,DERP
   (1)          000327                  N               N+1
 2741  026762                                  SCOPE   XRC2
   (1)  026762  004567  155240                  JSR     R5,SCPRTN
   (1)  026766  026574                          XRC2
 2742  026770  012767  000001  003650  XRC3:   MOV     #1,GOOD
 2743  026776  017767  007132  003640          MOV     @TSR,BAD                ;CHECK RESPONSE CODES IN XMTR
 2744  027004  042767  177760  003632          BIC     #177760,BAD
 2745  027012  026767  003630  003624          CMP     GOOD,BAD                ;RSP CODES = 00 & 01 ?
 2746  027020  001414                          BEQ     XRC4
 2747  027022                                  DATERR  \N              ;ERROR:RSP CODES AT XMTR WRONG
   (1)                                                                   ;******* ERROR 327 *******
   (1)  027022  032777  040000  003360          BIT     #B14,@SR
   (1)  027030  001005                          BNE     .+14
   (1)  027032  012767  000327  003602          MOV     #327,ERRNUM
   (1)  027040  004767  003434                  JSR     PC,DERR
   (1)          000330                  N       =       N+1
 2748  027044                                  SCOPE   XRC2
   (1)  027044  004567  155156                  JSR     R5,SCPRTN
   (1)  027050  026574                          XRC2
 2749  027052  032777  010000  007074  XRC4:   BIT     #B12,@RSR               ;IS RSR BIT 12 (TXM ERR) SET?
 2750  027060  001414                          BEQ     XRC5            ;ERROR:RCVR SHOULD NOT BE ADDRESSED
 2751  027062                                  ERROR   \N              ;UPON OPENING A CHANNEL WITH INVALID WORD
   (1)                                                                   ;******* ERROR 330 *******
   (1)  027062  032777  040000  003320          BIT     #B14,@SR
   (1)  027070  001005                          BNE     .+14
   (1)  027072  012767  000330  003542          MOV     #330,ERRNUM
   (1)  027100  004767  003310                  JSR     PC,ERR
   (1)          000331                  N       =       N+1
 2752  027104                                  SCOPE   XRC2
   (1)  027104  004567  155116                  JSR     R5,SCPRTN
   (1)  027110  026574                          XRC2
 2753
 2754                                  ;TEST TO DETERMINE THAT CHANNEL OPEN CAN BE ACHEIVED LEGALLY
 2755                                  ;AND THAT, ONCE ACHIEVED, KNOCKING DOWN THE TRANSMITTER BY
 2756                                  ;FAKING A XMTR TXM ERROR CAUSES THE CORRECT RESPONSES AND
 2757                                  ;CAUSES A RECVR TXM ERROR.
 2758
 2759  027112                          XRC5:   BDINIT  XMTR                    ;CLR XMTR
 2760  027120                                  BDINIT  RCVR                    ;CLR RCVR
 2761  027126  012777  177774  007004          MOV     #-4,@TSBC               ;SET UP FOR 2 WD XFR
 2762  027134  012777  177777  006774          MOV     #-1,@TSDB               ;LOAD A WORD INTO XMTR SILO
 2763  027142  016777  006736  006762          MOV     RCAD,@TCR               ;POINT XMTR AT RCVR
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 2764  027150  012777  177777  006760          MOV     #-1,@TSDB               ;LOAD 2ND WORD
 2765  027156  052777  020000  006766          BIS     #B13,@RCR               ;SET RCV WORD
 2766  027164  052777  020000  006740          BIS     #B13,@TCR               ;SET SND WORD
 2767  027172  016704  003214                  MOV     DLCON,R4
 2768  027176  012703  177500          XRC5A:  MOV     #177500,R3              ;SET UP FOR DELAY
 2769  027202  132777  000010  006736  XRC6:   BITB    #B03,@TMMRH             ;CHECK FOR CHANNEL OPEN
 2770  027210  001020                          BNE     XRC6A
 2771  027212  005203                          INC     R3                      ;WAIT A BIT
 2772  027214  001372                          BNE     XRC6
 2773  027216  005304                          DEC     R4
 2774  027220  001366                          BNE     XRC5A
 2775  027222                                  ERROR   \N              ;ERROR:CANNOT GET ''CHAN OPEN'' IN XMTR
   (1)                                                                   ;******* ERROR 331 *******
   (1)  027222  032777  040000  003160          BIT     #B14,@SR
   (1)  027230  001005                          BNE     .+14
   (1)  027232  012767  000331  003402          MOV     #331,ERRNUM
   (1)  027240  004767  003150                  JSR     PC,ERR
   (1)          000332                  N               N+1
 2776  027244                                  SCOPE   XRC5
   (1)  027244  004567  154756                  JSR     R5,SCPRTN
   (1)  027250  027112                          XRC5
 2777  027252  132777  000020  006674  XRC6A:  BITB    #B04,@RSR               ;CHECK FOR CHANNEL OPEN IN RCVR
 2778  027260  001014                          BNE     XRC7
 2779  027262                                  ERROR   \N              ;ERROR:CANNOT GET ''CHANNEL OPEN'' IN RCVR
   (1)                                                                   ;******* ERROR 332 *******
   (1)  027262  032777  040000  003120          BIT     #B14,@SR
   (1)  027270  001005                          BNE     .+14
   (1)  027272  012767  000332  003342          MOV     #332,ERRNUM
   (1)  027300  004767  003110                  JSR     PC,ERR
   (1)          000333                  N               N+1
 2780  027304                                  SCOPE   XRC5
   (1)  027304  004567  154716                  JSR     R5,SCPRTN
   (1)  027310  027112                          XRC5
 2781
 2782  027312  052777  010000  006614  XRC7:   BIS     #B12,@TSR               ;[illegible]
 2783  027320  016704  003066                  MOV     DLCON,R4
 2784  027324  012703  177757          XRC7D:  MOV     #177757,R3              ;[illegible]
 2785  027330  005203                  XRC7A:  INC     R3
 2786  027332  001376                          BNE     XRC7A                   ;[illegible]
 2787  027334  005304                          DEC     R4
 2788  027336  001372                          BNE     XRC7D
 2789  027340  012767  000004  003300          MOV     #4,GOOD
 2790  027346  017767  006602  003270          MOV     @RSR,BAD
 2791  027354  042767  177760  003262          BIC     #177760,BAD             ;[illegible]
 2792  027362  026767  003260  003254          CMP     GOOD,BAD
 2793  027370  001414                          BEQ     XRC8
 2794  027372                                  DATERR  \N              ;[illegible]
   (1)                                                                   ;******* [illegible] *******
   (1)  027372  032777  040000  003010          BIT     #B14,@SR
   (1)  027400  001005                          BNE     .+14
   (1)  027402  012767  000333  003232          MOV     #333,ERRNUM
   (1)  027410  004767  003064                  JSR     PC,DERR
   (1)          000334                  N               N+1
 2795  027414                                  SCOPE   XRC5
   (1)  027414  004567  154606                  JSR     R5,SCPRTN
   (1)  027420  027112                          XRC5
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2796  027422  032777  010000  006524  XR.8:   BIT     #B12,@RSR               ;IS RSR BIT 12 (TXM ERR) SET
2797  027430  001014                          BNE     XRC9            ;ERROR:XMTR OFF LINE WHILE CHAN OPEN
2798  027432                                  ERROR   \N                      ;DIDN'T SET RCVR TXM ERR
 (1)                                                                      ;******* ERROR 334 *******
 (1)  027432  032777  040000  002750          BIT     #B14,@SR
 (1)  027440  001005                          BNE     .+14
 (1)  027442  012767  000334  003172          MOV     #334,ERRNUM
 (1)  027450  004767  002740                  JSR     PC,ERR
 (1)          000335                  N       =       N+1
2799  027454                                  SCOPE   XRC5
 (1)  027454  004567  154546                  JSR     R5,SCPRTN
 (1)  027460  027112                          XRC5
2800
2801                                    ;TEST TO DETERMINE IF INCORRECT CRC WILL CAUSE A CHECK-FAIL
2802                                    ;AND GENERATE CORRECT RESPONSES IN RCVR AND XMTR THEREBY CAUSING
2803                                    ;TRANSMISSION ERRORS IN BOTH.
2804
2805  027462                            XRC9:   BDINIT  XMTR                    ;CLR XMTR
2806  027470                                    BDINIT  RCVR                    ;CLR RCVR
2807  027476  012777  177772  006434            MOV     #-6,@TSBC               ;SET UP FOR 3 WD XFR
2808  027504  012777  177777  006424            MOV     #-1,@TSDB               ;LOAD A WORD INTO XMTR SILO
2809  027512  012777  000002  006416            MOV     #2,@TSDB                ;LOAD 2ND WORD INTO XMTR SILO
2810  027520  012777  177772  006432            MOV     #-6,@RDBC
2811  027526  012777  177775  006402            MOV     #-3,@TSDB               ;LOAD 3RD WORD INTO XMTR SILO
2812  027534  016777  006344  006370            MOV     RCAD,@TCR               ;POINT XMTR AT RCVR
2813  027542  052777  020000  006402            BIS     #B13,@RCR               ;SET RCV WD
2814  027550  052777  020000  006354            BIS     #B13,@TCR               ;SET SND WD
2815  027556  105777  006352          XRC10:    TSTB    @TSR                    ;WAIT FOR SUC TXF
2816  027562  100375                            BPL     XRC10
2817  027564  052777  000200  006340            BIS     #B07,@TCR               ;SET XMTR RD SILO
2818  027572  005777  006340                    TST     @TSDB                   ;POP A WORD FROM SILO
2819  027576  042777  000200  006326            BIC     #B07,@TCR               ;CLR RD SILO
2820  027604  052777  000200  006340            BIS     #B07,@RCR               ;SET RCVR LD SILO
2821  027612  012777  000014  006336            MOV     #14,@RDDB               ;LOAD DIFFERENT 2ND WORD
2822  027620  042777  000200  006324            BIC     #B07,@RCR               ;CLR LD SILO
2823  027626  042777  000200  006300            BIC     #B07,@TSR               ;CLR SUC TXF
2824  027634  042777  000200  006312            BIC     #B07,@RSR
2825  027642  052777  000001  006302            BIS     #B00,@RCR               ;SET RCV DATA
2826  027650  052777  000001  006254            BIS     #B00,@TCR               ;SET ST TXM
2827  027656  016704  002530                    MOV     DLCON,R4
2828  027662  012703  177000          XRC10B:   MOV     #177000,R3              ;SET UP TO STALL
2829  027666  005203                  XRC10A:   INC     R3
2830  027670  001376                            BNE     XRC10A                  ;STALL (WAIT FOR LAST 2 WORDS)
2831  027672  005304                            DEC     R4
2832  027674  001372                            BNE     XRC10B
2833  027676  012767  000013  002742            MOV     #13,GOOD
2834  027704  017767  006244  002732            MOV     @RSR,BAD                ;CHECK RCVR RSP CODES
2835  027712  042767  177760  002724            BIC     #177760,BAD
2836  027720  026767  002722  002716            CMP     GOOD,BAD                ;ARE RSP CODES = 10 & 11 ?
2837  027726  001414                            BEQ     XRC11
2838  027730                                    DATERR  \N              ;ERROR:RCVR RSP CODES WRONG
 (1)                                                                      ;******* ERROR 335 *******
 (1)  027730  032777  040000  002452            BIT     #B14,@SR
 (1)  027736  001005                            BNE     .+14
 (1)  027740  012767  000335  002674            MOV     #335,ERRNUM
 (1)  027746  004767  002526                    JSR     PC,DFRR
```

```
  (1)                000336                  N          =          N+1
 2839      027752                                       SCOPE      XRC9
  (1)      027752    004567    154250                   JSR        R5,SCPRTN
  (1)      027756    027462                             XRC9
 2840      027760    017767    006150    002656  XRC11: MOV        @TSR,BAD
 2841      027766    042767    177760    002650         BIC        #177760,BAD              ;CHK XMTR RSP CODES
 2842      027774    026767    002646    002642         CMP        GOOD,BAD                 ;ARE THEY 10 & 11 ?
 2843      030002    001414                             BEQ        XRC12
 2844      030004                                       DATERR     \N               ;ERROR:XMTR RSP CODES WRONG
  (1)                                                                                         ;******* ERROR 336 *******
  (1)      030004    032777    040000    002376         BIT        #B14,@SR
  (1)      030012    001005                             BNE        .+14
  (1)      030014    012767    000336    002620         MOV        #336,ERRNUM
  (1)      030022    004767    002452                   JSR        PC,DERR
  (1)                000337                  N          =          N+1
 2845      030026                                       SCOPE      XRC9
  (1)      030026    004567    154174                   JSR        R5,SCPRTN
  (1)      030032    027462                             XRC9
 2846      030034    032777    010000    006072  XRC12: BIT        #B12,@TSR                ;IS TXM ERR SET IN THE XMTR ?
 2847      030042    001014                             BNE        XRC13
 2848      030044                                       ERROR      \N               ;ERROR:XMTR TXM ERR NOT SET WITH INVALID DATA
  (1)                                                                                         ;******* ERROR 337 *******
  (1)      030044    032777    040000    002336         BIT        #B14,@SR
  (1)      030052    001005                             BNE        .+14
  (1)      030054    012767    000337    002560         MOV        #337,ERRNUM
  (1)      030062    004767    002326                   JSR        PC,ERR
  (1)                000340                  N          =          N+1
 2849      030066                                       SCOPE      XRC9
  (1)      030066    004567    154134                   JSR        R5,SCPRTN
  (1)      030072    027462                             XRC9
 2850      030074    032777    010000    006052  XRC13: BIT        #B12,@RSR                ;IS TXM ERR SET IN THE RCVR?
 2851      030102    001014                             BNE        XRC14
 2852      030104                                       ERROR      \N               ;ERROR:RCVR TXM ERR NOT SET WITH INVALID DATA
  (1)                                                                                         ;******* ERROR 340 *******
  (1)      030104    032777    040000    002276         BIT        #B14,@SR
  (1)      030112    001005                             BNE        .+14
  (1)      030114    012767    000340    002520         MOV        #340,ERRNUM
  (1)      030122    004767    002266                   JSR        PC,ERR
  (1)                000341                  N          =          N+1
 2853      030126                                       SCOPE      XRC9
  (1)      030126    004567    154074                   JSR        R5,SCPRTN
  (1)      030132    027462                             XRC9
 2854
 2855                                            ;TEST THAT IF THE CHANNEL IS OPENED AND THE RECEIVER RESPONDS
 2856                                            ;TO THE FIRST VALID WORD WITH A NULL, A XMTR TXM ERR RESULTS
 2857                                            ;  NULL ON FIRST WORD IS ACHEIVED BY MANUALLY FILLING UP THE
 2858                                            ;RECVR SILO, THEN TRYING TO SEND A WORD FROM XMTR TO RCVR.
 2859
 2860      030134                                XRC14: BDINIT     XMTR
 2861      030142                                       BDINIT     RCVR
 2862      030150    052777    000200    005774         BIS        #B07,@RCR                ;SET LD SILO IN RCVR
 2863      030156    012703    000100                   MOV        #64.,R3                  ;R3 IS WORD COUNTER
 2864      030162    012704    033564                   MOV        #SILDAT,R4               ;R4 IS CURRENT ADDRESS
 2865      030166    012477    005764           XRC15: MOV        (R4)+,@RDDB              ;FILL UP RCVR SILO
 2866      030172    005303                             DEC        R3                       ;FULL?
 2867      030174    001374                             BNE        XRC15
```

```
2868  030174  016777  005702  005726          MOV     RCAD,@TCR               ;POINT XMTR AT RCVR
2869  030204  042777  000200  005740          BIC     #B07,@RCR               ;CLR LD SILO IN RCVR
2870  030212  012777  177777  005716          MOV     #-1,@TSDB               ;LOAD A WORD INTO XMTR SILO
2871  030220  012777  177774  005712          MOV     #-4,@TSBC               ;SET UP TO XFR 2 WDS
2872  030226  012777  177777  005702          MOV     #-1,@TSDB               ;LOAD 2ND WORD INTO XMTR SILO
2873  030234  052777  020001  005710          BIS     #B13+B00,@RCR           ;SET RCV WD & RCV DATA
2874  030242  052777  020001  005662          BIS     #B13+B00,@TCR           ;SET SND WD & ST TXM
2875  030250  016704  002136                  MOV     DLCON,R4
2876  030254  012703  177000          XRC15B: MOV     #177000,R3              ;SET UP TO STALL
2877  030260  005203                  XRC15A: INC     R3
2878  030262  001376                          BNE     XRC15A                  ;STALL (WAIT FOR TIME SLICE)
2879  030264  005304                          DEC     R4
2880  030266  001372                          BNE     XRC15B
2881  030270  012767  000006  002350          MOV     #6,GOOD                 ;CHK TXM RSP CODES
2882  030276  017767  005632  002340          MOV     @TSR,BAD
2883  030304  042767  177760  002332          BIC     #177760,BAD
2884  030312  026767  002330  002324          CMP     GOOD,BAD                ;ARE THEY 01 & 10 ?
2885  030320  001414                          BEQ     XRC16
2886  030322                                  DATERR  \N              ;ERROR:XMTR RSP CODES WRONG
  (1)                                                                   ;******* ERROR 341 *******
  (1)   030322  032777  040000  002060          BIT     #B14,@SR
  (1)   030330  001005                          BNE     .+14
  (1)   030332  012767  000341  002302          MOV     #341,ERRNUM
  (1)   030340  004767  002134                  JSR     PC,DERR
  (1)           000342                  N       -       N+1
2887  030344                                  SCOPE   XRC14
  (1)   030344  004567  153656                  JSR     R5,SCPRTN
  (1)   030350  030134                          XRC14
2888  030352  032777  010000  005554  XRC16:  BIT     #B12,@TSR               ;IS XMTR TXM ERR SET?
2889  030360  001014                          BNE     XRC17           ;ERROR:XMISSION TO FULL RCVR SILO
2890  030362                                  ERROR   \N                      ;DID NOT SET TXM ERR IN XMTR
  (1)                                                                   ;******* ERROR 342 *******
  (1)   030362  032777  040000  002020          BIT     #B14,@SR
  (1)   030370  001005                          BNE     .+14
  (1)   030372  012767  000342  002242          MOV     #342,ERRNUM
  (1)   030400  004767  002010                  JSR     PC,ERR
  (1)           000343                  N       =       N+1
2891  030404                                  SCOPE   XRC14
  (1)   030404  004567  153616                  JSR     R5,SCPRTN
  (1)   030410  030134                          XRC14
2892
2893                                    ;TEST TO DETERMINE IF , WITH CHANNEL OPEN, THE RECVR IS KNOCKED DOWN
2894                                    ;THE CORRECT RESPONSE CODES ARE GENERATED AND THE XMTR
2895                                    ;GETS A TXM ERROR.
2896                                    ;  THE RECVR IS KNOCKED DOWN VIA FORCING A TIMEOUT IN THE RCVR.
2897
2898  030412                    XRC17:  BDINIT  XMTR
2899  030420                            BDINIT  RCVR
2900  030426  012777  177777  005502          MOV     #-1,@TSDB               ;LOAD A WORD INTO XMTR SILO
2901  030434  012777  177774  005476          MOV     #-4,@TSBC               ;SETUP FOR 2 WD XFR
2902  030442  012777  177777  005466          MOV     #-1,@TSDB               ;LOAD 2ND WD INTO XMTR SILO
2903  030450  016777  005430  005454          MOV     RCAD,@TCR               ;POINT XMTR AT RCVR
2904  030456  052777  020000  005466          BIS     #B13,@RCR               ;SET RCV WD
2905  030464  052777  020000  005440          BIS     #B13,@TCR               ;SET SND WD
2906  030472  132777  000010  005446  XRC18:  BITB    #B03,@TMMRH             ;IS CHANNEL OPEN SET?
2907  030500  001774                          BEQ     XRC18                   ;WAIT FOR IT
```

```
 2908  030502  016704  001704                  MOV     DLCON,R4
 2909  030506  012703  177000          XRC18X: MOV     #177000,R3              ;DELAY FOR SYNC
 2910  030512  005203                  XRC18L: INC     R3
 2911  030514  001376                          BNE     XRC18L
 2912  030516  005304                          DEC     R4
 2913  030520  001372                          BNE     XRC18X
 2914  030522  052777  002000  005424          BIS     #B10,@RSR               ;KNOCK DOWN RCVR WITH TIMEOUT
 2915  030530  016704  001656                  MOV     DLCON,R4
 2916  030534  012703  177000          XRC18Y: MOV     #177000,R3              ;SET UP FOR STALL
 2917  030540  005203                  XRC18A: INC     R3
 2918  030542  001376                          BNE     XRC18A                  ;STALL (WAIT FOR TIME SLICE)
 2919  030544  005304                          DEC     R4
 2920  030546  001372                          BNE     XRC18Y
 2921  030550  012767  000001  002070          MOV     #1,GOOD
 2922  030556  017767  005352  002060          MOV     @TSR,BAD                ;CHECK TXM RESP CODES
 2923  030564  042767  177760  002052          BIC     #177760,BAD
 2924  030572  026767  002050  002044          CMP     GOOD,BAD                ;ARE THEY 00 & 01 ?
 2925  030600  001414                          BEQ     XRC19
 2926  030602                                  DATERR  \N              ;ERROR:XMTR RSP CODES WRONG
  (1)                                                                    ;******* ERROR 343 *******
  (1)  030602  032777  040000  001600          BIT     #B14,@SR
  (1)  030610  001005                          BNE     .+14
  (1)  030612  012767  000343  002022          MOV     #343,ERRNUM
  (1)  030620  004767  001654                  JSR     PC,DERR
  (1)          000344                  N       =       N+1
 2927  030624                                  SCOPE   XRC17
  (1)  030624  004567  153376                  JSR     R5,SCPRTN
  (1)  030630  030412                          XRC17
 2928  030632  032777  010000  005274  XRC19:  BIT     #B12,@TSR               ;IS TX ERR SET IN XMTR
 2929  030640  001014                          BNE     XRC19A          ;ERROR:XMIT TO OFFLINE RCVR DIDN'T
 2930  030642                                  ERROR   \N                      ;CAUSE TXM ERR IN XMTR
  (1)                                                                    ;******* ERROR 344 *******
  (1)  030642  032777  040000  001540          BIT     #B14,@SR
  (1)  030650  001005                          BNE     .+14
  (1)  030652  012767  000344  001762          MOV     #344,ERRNUM
  (1)  030660  004767  001530                  JSR     PC,ERR
  (1)          000345                  N       =       N+1
 2931  030664                                  SCOPE   XRC17
  (1)  030664  004567  153336                  JSR     R5,SCPRTN
  (1)  030670  030412                          XRC17
 2932  030672  004767  000774          XRC19A: JSR     PC,MONIT
 2933  030676  032777  010000  001504          BIT     #B12,@SR                ;IS SW 12 SET?
 2934  030704  001402                          BEQ     XRCRET                  ;NO, EXIT
 2935  030706  000167  175514                  JMP     TXMERS                  ;YES, STAY HERE
 2936  030712  000207                  XRCRET: RTS     PC
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                                        .SBTTL  REJECT TEST


                                ;TEST OF THE REJECT-RELATED HARDWARE
                                ; CAUSE A REJECT IN THE RECVR AND CHECK ALL RELATED
                                ;RESPONSES IN RCVR AND XMTR

030714                          XRC20:  BDINIT  XMTR                    ;CLR XMTR
030722                                  BDINIT  RCVR                    ;CLR RCVR
030730  012777  177777  005200          MOV     #-1,@TSDB               ;LOAD A WORD INTO SILO
030736  012777  177774  005174          MOV     #-4,@TSBC               ;BYTE COUNT FOR 2 WD XFR
030744  012777  177777  005164          MOV     #-1,@TSDB               ;LOAD 2ND WD INTO SILO
030752  012777  177774  005200          MOV     #-4,@RDBC
030760  016777  005120  005144          MOV     RCAD,@TCR               ;POINT XMTR AT RCVR
030766  052777  020000  005156          BIS     #B13,@RCR               ;SET RCV WD
030774  052777  020001  005130          BIS     #B13+B00,@TCR           ;SET SND WD & ST TXM
031002  032777  000400  005144  XRC21:  BIT     #B08,@RSR               ;DAT OUTP RDY IN XMTR?
031010  001774                        BEQ     XRC21
031012  052777  100000  005132          BIS     #B15,@RCR               ;SET R E J E C T
031020  016704  001366                  MOV     DLCON,R4
031024  012703  177500          XRC21A: MOV     #177500,R3
031030  032777  000040  005116  XRC22:  BIT     #B05,@RSR               ;CHECK FOR RECOM IN RCVR
031036  001020                        BNE     XRC23
031040  005203                        INC     R3
031042  001372                        BNE     XRC22                   ;WAIT A COUPLE OF MS FOR IT
031044  005304                        DEC     R4
031046  001366                        BNE     XRC21A
031050                                ERROR   \N              ;ERROR:REJECT DID NOT RESULT IN SETTING RSR-05
                                                                ;******* ERROR 345 *******
 (1)
 (1)    031050  032777  040000  001332          BIT     #B14,@SR
 (1)    031056  001005                  BNE     .+14
 (1)    031060  012767  000345  001554          MOV     #345,ERRNUM
 (1)    031066  004767  001322                  JSR     PC,ERR
 (1)            000346                  N       =       N+1
031072                                  SCOPE   XRC20
 (1)    031072  004567  153130                  JSR     R5,SCPRTN
 (1)    031076  030714                          XRC20
031100  032777  000001  005024  XRC23:  BIT     #B00,@TCR               ;IS ST TXM CLR (CLR'D BY INTR REQ)?
031106  001414                        BEQ     XRC24
031110                                  ERROR   \N              ;ERROR: SORE DID NOT INTERRUPT XMTR
                                                                ;******* ERROR 346 *******
 (1)
 (1)    031110  032777  040000  001272          BIT     #B14,@SR
 (1)    031116  001005                  BNE     .+14
 (1)    031120  012767  000346  001514          MOV     #346,ERRNUM
 (1)    031126  004767  001262                  JSR     PC,ERR
 (1)            000347                  N       -       N+1
031132                                  SCOPE   XRC20
 (1)    031132  004567  153070                  JSR     R5,SCPRTN
 (1)    031136  030714                          XRC20
031140  032777  100000  005004  XRC24:  BIT     #B15,@RCR               ;CHECK IF REJECT GOT CLR'D
031146  001414                        BEQ     XRC25
031150                                  ERROR   \N              ;ERROR:RECOM DID NOT CLR REJECT
                                                                ;******* ERROR 347 *******
 (1)
 (1)    031150  032777  040000  001232          BIT     #B14,@SR
 (1)    031156  001005                  BNE     .+14
 (1)    031160  012767  000347  001454          MOV     #347,ERRNUM
```

```
  (1) 031166 004767 001222            JSR     PC,ERR
  (1)        000350           N       =       N+1
2974 031172                           SCOPE   XRC20
  (1) 031172 004567 153030            JSR     R5,SCPRTN
  (1) 031176 030714                   XRC20
2975 031200 032777 000040 004726 XRC25: BIT     #B05,@TSR               ;CHECK IF REJECT SET SORE IN XMTR
2976 031206 001014                    BNE     XRC26
2977 031210                           ERROR   \N              ;ERROR:REJECT DID NOT SET SORE IN XMTR
  (1)                                                                   ;******* ERROR 350 *******
  (1) 031210 032777 040000 001172     BIT     #B14,@SR
  (1) 031216 001005                   BNE     .+14
  (1) 031220 012767 000350 001414     MOV     #350,ERRNUM
  (1) 031226 004767 001162            JSR     PC,ERR
  (1)        000351           N       =       N+1
2978 031232                           SCOPE   XRC20
  (1) 031232 004567 152770            JSR     R5,SCPRTN
  (1) 031236 030714                   XRC20
2979 031240                     XRC26: BDINIT  RCVR
2980 031246                           BDINIT  XMTR
2981 031254 052777 020000 004670      BIS     #B13,@RCR               ;SET RCV WD IN RCVR
2982 031262 052777 000040 004664      BIS     #B05,@RSR               ;SET RECOM
2983 031270 032777 020000 004654      BIT     #B13,@RCR               ;CHECK IF RCV WD GOT CLR'D
2984 031276 001414                    BEQ     XRC27
2985 031300                           ERROR   \N              ;ERROR:RECOM DID NOT INTERRUPT RCVR
  (1)                                                                   ;******* ERROR 351 *******
  (1) 031300 032777 040000 001102     BIT     #B14,@SR
  (1) 031306 001005                   BNE     .+14
  (1) 031310 012767 000351 001324     MOV     #351,ERRNUM
  (1) 031316 004767 001072            JSR     PC,ERR
  (1)        000352           N       =       N+1
2986 031322                           SCOPE   XRC26
  (1) 031322 004567 152700            JSR     R5,SCPRTN
  (1) 031326 031240                   XRC26
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                                        .SBTTL  TRUNCATION TEST


                                ;TEST OF THE TRUNCATE-RELATED HARDWARE
                                ; CAUSE A TRUNCATE IN THE RECVR AND CHECK ALL RELATED
                                ;RESPONSES IN RCVR AND XMTR.

031330                          XRC27:  BDINIT  XMTR                    ;CLR XMTR
031336                                  BDINIT  RCVR                    ;CLR RCVR
031344  012777  177754  004566          MOV     #-20.,@TSBC             ;SET TXM BYTE CNT FOR 10 WORD XFR
031352  012777  177770  004600          MOV     #-8.,@RDBC              ;SET RCVR BYTE CNT FOR 4 WORDS
031360  012777  033564  004554          MOV     #SILDAT,@TSBA           ;POINT XMTR SILO AT DATA BUFFER
031366  012777  034164  004566          MOV     #CMPBUF,@RDBA           ;POINT RCVR SILO TO DATA BUFFER
031374  016777  004504  004530          MOV     RCAD,@TCR               ;POINT XMTR AT RCVR
031402  052777  060001  004542          BIS     #B14+B13+B00,@RCR       ;SET RCV WD & RCV DATA &START NPR
031410  052777  060001  004514          BIS     #B14+B13+B00,@TCR       ;SET SND WD & ST TXM & START NPR
031416  032777  001000  004530  XRC29:  BIT     #B09,@RSR
031424  001774                          BEQ     XRC29                   ;WAIT FOR BYTE COUNT OVERFLOW
031426  052777  100000  004516          BIS     #B15,@RCR               ;SET REJECT (TRUNCATE MESSAGE)
031434  016704  000752                  MOV     DLCON,R4
031440  012703  175000          XRC29A: MOV     #175000,R3
031444  105777  004464          XRC30:  TSTB    @TSR                    ;LOOK FOR XMTR SUC TXF
031450  100420                          BMI     XRC31
031452  005203                          INC     R3
031454  001373                          BNE     XRC30                   ;WAIT ABOUT 20 MS
031456  005304                          DEC     R4
031460  001367                          BNE     XRC29A
031462                                  ERROR   \N              ;ERROR:NO SUC TXF AFTER TRUNCATION
 (1)                                                                    ;******* ERROR 352 *******
 (1)    031462  032777  040000  000720          BIT     #B14,@SR
 (1)    031470  001005                  BNE     .+14
 (1)    031472  012767  000352  001142          MOV     #352,ERRNUM
 (1)    031500  004767  000710                  JSR     PC,ERR
 (1)            000353          N       =       N+1
031504                                  SCOPE   XRC27
 (1)    031504  004567  152516                  JSR     R5,SCPRTN
 (1)    031510  031330                          XRC27
031512  032777  000040  004414  XRC31:  BIT     #B05,@TSR               ;IS SORE SET?
031520  001014                          BNE     XRC32
031522                                  ERROR   \N              ;ERROR:SORE NOT SET BY TRUNCATION
 (1)                                                                    ;******* ERROR 353 *******
 (1)    031522  032777  040000  000660          BIT     #B14,@SR
 (1)    031530  001005                  BNE     .+14
 (1)    031532  012767  000353  001102          MOV     #353,ERRNUM
 (1)    031540  004767  000650                  JSR     PC,ERR
 (1)            000354          N       =       N+1
031544                                  SCOPE   XRC27
 (1)    031544  004567  152456                  JSR     R5,SCPRTN
 (1)    031550  031330                          XRC27
031552  105777  004376          XRC32:  TSTB    @RSR                    ;IS RCVR SUC TXF SET?
031556  100414                          BMI     XRC33
031560                                  ERROR   \N              ;ERROR:NO RCVR SUC TXF AFTER TRUNCATION
 (1)                                                                    ;******* ERROR 354 *******
 (1)    031560  032777  040000  000622          BIT     #B14,@SR
 (1)    031566  001005                  BNE     .+14
 (1)    031570  012767  000354  001044          MOV     #354,ERRNUM
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```
 (1)  031576  004767  000612            JSR     PC,ERR
 (1)          000355            N       =       N+1
3024  031602                            SCOPE   XRC27
 (1)  031602  004567  152420            JSR     R5,SCPRTN
 (1)  031606  031330                    XRC27
3025  031610  032777  000040  004336  XRC33:  BIT     #B05,@RSR               ;IS RECOM SET?
3026  031616  001014                    BNE     XRC34
3027  031620                            ERROR   VM              ;ERROR:RECOM NOT SET BY TRUNCATION
 (1)                                                            ;******* ERROR 355 *******
 (1)  031620  032777  040000  000562            BIT     #B14,@RSR
 (1)  031626  001005                            BNE     .+14
 (1)  031630  012767  000355  001004            MOV     #355,ERRNUM
 (1)  031636  004767  000552                    JSR     PC,ERR
 (1)          000356            N       =       N+1
3028  031642                            SCOPE   XRC27
 (1)  031642  004567  152360            JSR     R5,SCPRTN
 (1)  031646  031330                    XRC27
3029  031650  004767  000016          XRC34:  JSR     PC,MONIT
3030  031654  032777  010000  000526          BIT     #B12,@RSR               ;IS SW 12 SET?
3031  031662  001402                          BEQ     XRCRT                   ;NO, EXIT
3032  031664  000167  177024                  JMP     XRC20                   ;YES, STAY HERE
3033  031670  000207                  XRCRT:  RTS     PC
```

```
                                .SBTTL  'SWITCH' MONITOR ROUTINE

                        ;ENTER AT MONIT FROM EVERY SUB-TEST TO SEE IF CNTRL-S OR CNTRL-C WAS TYPED
                        ;ENTER AT SWDMP FROM ERROR HALTS IF SW 15 = 0
                        ;ALSO MONITORS THE FOLLOWING CONTROL FUNCTIONS:
                        ;       CNTRL-T RESTART TEST SELECTOR
                        ;       CNTRL-D ALLOW CHANGING OF DELAY
                        ;       CNTRL-P CONTINUE (PROCEED)

031672  005000          MONIT:  CLR     R0
031674  105777  004266          TSTB    @KBS            ;CHECK KEYBOARD FLAG
031700  100402                  BMI     MONIC           ;IF SET, CHECK WHAT CHAR.
031702  000167  000372          JMP     EX5             ;OTHERWISE, EXIT
031706  017700  004256  MONIC:  MOV     @KBD,R0
031712  042700  177600  MONCH:  BIC     #177600,R0      ;TRIM OFF PARITY BIT
031716  020027  000023          CMP     R0,#23          ;WAS IT ^S?
031722  001056                  BNE     EX1             ;NO, EXIT
031724          SWDMP:  PNTM    SWRMSG          ;PRINT 'SWR = '
 (1)    031724  012700  032302          MOV     #SWRMSG,R0      ;PRINT MESSAGE
 (1)    031730  004767  000714          JSR     PC,TYPOUT       ;POINTED TO BY SWRMSG
031734  017700  000450          MOV     @SR,R0          ;GET CONTENTS OF SR
031740  004767  001222          JSR     PC,OCTPNT       ;PRINT IT
031744          PNTM    TWOSP           ;SPACE AND PROMPT (:)
 (1)    031744  012700  032401          MOV     #TWOSP,R0       ;PRINT MESSAGE
 (1)    031750  004767  000674          JSR     PC,TYPOUT       ;POINTED TO BY TWOSP
031754  017767  000430  001202          MOV     @SR,KBBUF       ;LOAD OLD SWITCHES
031762  004767  000724          JSR     PC,INPKB        ;GET KBD INPUT
031766  016777  001172  000414          MOV     KBBUF,@SR       ;LOAD NEW SWITCHES
031774          CCRTN:  PNTM    TYPCTP          ;PRINT ''CNTRL-P TO CONTINUE''
 (1)    031774  012700  032335          MOV     #TYPCTP,R0      ;PRINT MESSAGE
 (1)    032000  004767  000644          JSR     PC,TYPOUT       ;POINTED TO BY TYPCTP
032004  105777  004156  CONTW1: TSTB    @KBS
032010  100375                  BPL     CONTW1
032012  017700  004152          MOV     @KBD,R0
032016  042700  177600          BIC     #177600,R0      ;TRIM OFF PARITY BIT
032022  020027  000023          CMP     R0,#23          ;^S?
032026  001736                  BEQ     SWDMP           ;YES, GET SWR AGAIN
032030  020027  000020          CMP     R0,#20          ;^P?
032034  001363                  BNE     CONTW1          ;NO, KEEP LOOKING
032036  012700  000015          MOV     #15,R0          ;RETURN LINE
032042  004767  001424          JSR     PC,TTO
032046  005000                  CLR     R0              ;FILL CHARACTERS
032050  004767  001416          JSR     PC,TTO
032054  004767  001412          JSR     PC,TTO
032060  020027  000024  EX1:    CMP     R0,#24          ;WAS A ^T TYPED?
032064  001004                  BNE     EX2             ;NO, EXIT
032066  012706  002000          MOV     #ISP,SP         ;YES,  RENEW STACK
032072  000167  151250          JMP     BCONT           ;BACK TO DISPATCHER
032076  020027  000004  EX2:    CMP     R0,#4           ;CNTRL-D TYPED?
032102  001026                  BNE     EX3             ;NO, KEEP LOOKING
032104          EX2A:   PNTM    DELYMG          ;PRINT 'DELAY CONSTANT = ''
 (1)    032104  012700  032312          MOV     #DELYMG,R0      ;PRINT MESSAGE
 (1)    032110  004767  000534          JSR     PC,TYPOUT       ;POINTED TO BY DELYMG
032114  016767  000272  001042          MOV     DLCON,KBBUF     ;DEFAULT OLD VALUE
032122  016700  000264          MOV     DLCON,R0        ;GET CONSTANT
```

```
3083  032126  004767  001034                    JSR     PC,OCTPNT               ;PRINT IT
3084  032132                                    PNTM    TWOSP                   ;SPACE AND PROMPT
 (1)  032132  012700  032401                    MOV     #TWOSP,R0               ;PRINT MESSAGE
 (1)  032136  004767  000506                    JSR     PC,TYPOUT               ;POINTED TO BY TWOSP
3085  032142  004767  000544                    JSR     PC,INPKB                ;GET KBD INPUT
3086  032146  016767  001012  000236  EX2B:     MOV     KBBUF,DLCON             ;LOAD NEW CONSTANT
3087  032154  000167  177614                    JMP     CCRTN                   ;NOW WAIT FOR CNTRL-P
3088
3089  032160  020027  000003          EX3:      CMP     R0,#3                   ;WAS CNTRL-C TYPED?
3090  032164  001004                            BNE     EX4                     ;NO,
3091  032166  012706  002000                    MOV     #ISP,SP                 ;YES, REFRESH STACK
3092  032172  000167  150674                    JMP     RESTRT                  ;AND RESTART
3093  032176  020027  000006          EX4:      CMP     R0,#6                   ;WAS CNTRL-F TYPED?
3094  032202  001036                            BNE     EX5                     ;NO, EXIT
3095  032204                            EX4B:   PNTM    FILMSG                  ;PRINT 'FILL COUNT = ''
 (1)  032204  012700  032362                    MOV     #FILMSG,R0              ;PRINT MESSAGE
 (1)  032210  004767  000434                    JSR     PC,TYPOUT               ;POINTED TO BY FILMSG
3096  032214  016700  001340                    MOV     FILL,R0                 ;PRINT THE FILL COUNT
3097  032220  004767  000742                    JSR     PC,OCTPNT
3098  032224                                    PNTM    TWOSP
 (1)  032224  012700  032401                    MOV     #TWOSP,R0               ;PRINT MESSAGE
 (1)  032230  004767  000414                    JSR     PC,TYPOUT               ;POINTED TO BY TWOSP
3099  032234  016767  001320  000722            MOV     FILL,KBBUF              ;LOAD DEFAULT
3100  032242  004767  000444                    JSR     PC,INPKB                ;GET NEW INPUT
3101  032246  026727  000712  000500            CMP     KBBUF,#500              ;NO NEED TO PASS 500
3102  032254  101406                            BLOS    2$
3103  032256                                    PNTM    AGAIN
 (1)  032256  012700  035211                    MOV     #AGAIN,R0               ;PRINT MESSAGE
 (1)  032262  004767  000362                    JSR     PC,TYPOUT               ;POINTED TO BY AGAIN
3104  032266  000167  177712                    JMP     EX4B
3105  032272  016767  000666  001260  2$:       MOV     KBBUF,FILL              ;LOAD NEW FILL COUNT
3106  032300  000207                    EX5:    RTS     PC
3107
3108
3109
3110                                    ;ASSOCIATED ASCII FOR THIS MODULE:
3111
3112  032302  051446  051127  036440  SWRMSG: .ASCII  /&SWR = @/
      032310  040040
3113  032312  042046  046105  054501  DELYMG: .ASCII  /&DELAY CONSTANT - @/
      032320  041440  047117  052123
      032326  047101  020124  020075
      032334     100
3114  032335     046  047103  051124  TYPCTP: .ASCII  /&CNTRL-P TO CONTINUE@/
      032342  026514  020120  047524
      032350  041440  047117  044524
      032356  052516  040105
3115  032362  043046  046111  020114  FILMSG: .ASCII  /&FILL COUNT - @/
      032370  047503  047125  020124
      032376  020075     100
3116  032401     040  035040     100  TWOSP:  .ASCII  /  :@/
3117
3118
3119          032406                            .EVEN
3120                                    ;OTHER VARIABLES:
3121
```

```
3122  032406  000000                SWREG:  .WORD   0               ; SOFTWARE SWITCH REGISTER
3123
3124  032410  000000                SR:     .WORD   0               ; SWITCH REGISTER POINTER
3125
3126  032412  000006                DLCON:  .WORD   6               ;DELAY CONSTANT
```

```
                                        .SBTTL COMMON SUBROUTINES

                                ;ERROR ROUTINE

032414  011667  000220          ERR:    MOV     (SP),ERRAD          ;GET ADDRESS OF ERROR CALL
032420  162767  000022  000212          SUB     #22,ERRAD           ;OFFSET IT
032426                        ERR1:     PNTM    ERRM                ;PRINT "**ERROR "
(1) 032426  012700  032564              MOV     #ERRM,R0            ;PRINT MESSAGE
(1) 032432  004767  000212              JSR     PC,TYPOUT           ;POINTED TO BY ERRM
032436  016700  000200                  MOV     ERRNUM,R0
032442  004767  000520                  JSR     PC,OCTPNT           ;PRINT ERROR NUMBER (P)
032446                                  PNTM    WDAT                ;PRINT "AT LOCATION "
(1) 032446  012700  032577              MOV     #WDAT,R0            ;PRINT MESSAGE
(1) 032452  004767  000172              JSR     PC,TYPOUT           ;POINTED TO BY WDAT
032456  016700  000156                  MOV     ERRAD,R0
032462  004767  000500                  JSR     PC,OCTPNT           ;PRINT ADDRESS OF ERROR
032466  004767  177200                  JSR     PC,MONIT
032472  004767  000652                  JSR     PC,NULLS            ;PRINT NULLS IN CASE OF 'RESET'
032476  000207                          RTS     PC                  ;RETURN

                                ;DATA ERROR ROUTINE

032500  011667  000134          DERR:   MOV     (SP),ERRAD          ;GET ADDRESS OF ERROR CALL
032504  162767  000022  000126          SUB     #22,ERRAD           ;OFFSET IT
032512  004767  177710                  JSR     PC,ERR1             ;PRINT "**ERROR (P) AT LOCATION XXX
032516                                  PNTM    WDSDB               ;PRINT "SHOULD BE "
(1) 032516  012700  032615              MOV     #WDSDB,R0           ;PRINT MESSAGE
(1) 032522  004767  000122              JSR     PC,TYPOUT           ;POINTED TO BY WDSDB
032526  016700  000114                  MOV     GOOD,R0
032532  004767  000430                  JSR     PC,OCTPNT           ;PRINT GOOD DATA
032536                                  PNTM    WDWAS               ;PRINT ", WAS "
(1) 032536  012700  032631              MOV     #WDWAS,R0           ;PRINT MESSAGE
(1) 032542  004767  000102              JSR     PC,TYPOUT           ;POINTED TO BY WDWAS
032546  016700  000072                  MOV     BAD,R0
032552  004767  000410                  JSR     PC,OCTPNT           ;PRINT BAD DATA
032556  004767  000566                  JSR     PC,NULLS            ;PRINT NULLS IN CASE OF 'RESET'
032562  000207                          RTS     PC



                                ;ASSOCIOATED ASCII FOR THIS MODULE:

032564  023046  025052  051105  ERRM:   .ASCII  /&&**ERROR @/
032572  047522  020122    100
032577     040  052101  046040  WDAT:   .ASCII  / AT LOCATION @/
032604  041517  052101  047511
032612  020116     100
032615     046  044123  052517  WDSDB:  .ASCII  /&SHOULD BE @/
032622  042114  041040  020105
032630     100
032631     054  053440  051501  WDWAS:  .ASCII  /, WAS @/
032636  040040



                                        .EVEN
                                ;OTHER VARIABLES:
```

```
 3170
 3171  032640  000000                ERRAD:   .WORD   0
 3172  032642  000000                ERRNUM:  .WORD   0
 3173  032644  000000                BAD:     .WORD   0
 3174  032646  000000                GOOD:    .WORD   0
```

```
3176                                    .SBTTL  MESSAGE PRINT ROUTINE
3177
3178                                    ;MESSAGE TYPOUT ROUTINE (CALLED BY MACRO PNTM A)
3179                                    ;MESSAGES ARE IN THE FORMAT:
3180                                    ;   MESG:     .ASCII     /@MESSAGE&@/
3181                                    ;
3182                                    ;WHERE: & IS TRANSLATED INTO CR. AND LF.
3183                                    ;
3184                                    ;USES THE SUBROUTINE 'TTO'
3185                                    ;WHICH PRINTS CR. & LF. UPON SEEING A CR. CODE.
3186                                    ;AND    @ IS MESSAGE TERMINATOR
3187                                    ;
3188                                    ;ENTER WITH ADDRESS OF MESSAGE IN R0
3189
3190  032650  010046                    TYPOUT: MOV     R0,-(SP)            ;STACK ADDRESS OF MESSAGE
3191  032652  117600  000000            TPOFCH: MOVB    @(SP),R0            ;FETCH ASCII BYTE
3192  032656  022700  000100                    CMP     #100,R0             ;IS IT @ (TERMINATOR)?
3193  032662  001411                            BEQ     TPOUTX              ;YES-EXIT
3194  032664  022700  000046                    CMP     #46,R0              ;IS IT CRLF FLAG?
3195  032670  001002                            BNE     TPCONT              ;NO-TYPE CHARACTER
3196  032672  012700  000015                    MOV     #15,R0              ;YES, CHANGE DATA TO CR
3197  032676  004767  000570            TPCONT: JSR     PC,TTO              ;TYPE IT
3198  032702  005216                            INC     (SP)                ;MOVE POINTER TO NEXT BYTE
3199  032704  000762                            BR      TPOFCH              ;FETCH NEXT CHARACTER
3200  032706  005726                    TPOUTX: TST     (SP)+               ;POP STACK TO REACH RETURN VECTOR
3201  032710  000207                            RTS     PC
3202
```

```
                                        .SBTTL  KEYBOARD INPUT ROUTINE

                                ;KEYBOARD INPUT ROUTINE CALLED BY JSR   PC,INPKB
                                ;ENTERED WITH OLD CONTENTS IN KBBUF
                                ;IF JUST <CR> TYPED, EXIT WITH SAME CONTENTS IN KBBUF
                                ;IF NEW NUMBER TYPED, EXIT WITH NEW CONTENTS IN KBBUF

032712  005067  000244      INPKB:  CLR     NOKEFL          ;CLEAR NO NUMBER FLAG
032716  010146                  MOV     R1,-(SP)        ;STACK OLD R1
032720  016746  000240          MOV     KBBUF,-(SP)     ;STACK "OLD CONTENTS"
032724  005067  000234          CLR     KBBUF           ;CLEAR INPUT BUFFER
032730  004767  000206      GETCHR: JSR     PC,KBRD         ;FETCH A CHARACTER IN R0
032734  004767  000532          JSR     PC,TTO          ;ECHO IT
032740  020027  000012          CMP     R0,#12          ;WAS IT A <CR> OR <LF>?
032744  001002                  BNE     1$              ;NO
032746  000167  000144          JMP     NRTRN           ;YES, RETURN WITH PROPER KBBUF
032752  010001              1$:     MOV     R0,R1           ;SET UP TO CHECK FOR A NUMBER
032754  042701  177407          BIC     #177407,R1      ;MASK ALL BUT # CODE
032760  020127  000060          CMP     R1,#60          ;IS IT A # FROM 0-7?
032764  001435                  BEQ     3$              ;YES, PACK IT
032766  020027  000177          CMP     R0,#177         ;WAS IT A DELETE/RUBOUT?
032772  001024                  BNE     2$              ;NO, MUST BE GARBAGE
032774  012700  000057          MOV     #57,R0          ;YES, BUT PRINT "\"
033000  004767  000466          JSR     PC,TTO
033004  000241                  CLC                     ;CLEAR THE C-BIT
033006  006067  000152          ROR     KBBUF           ;DELETE LAST DIGIT
033012  000241                  CLC
033014  006067  000144          ROR     KBBUF           ;  THAT WAS STUFFED
033020  000241                  CLC
033022  006067  000136          ROR     KBBUF           ;  INTO KBBUF
033026  005767  000132          TST     KBBUF           ;HAVE WE DELETED EVERYTHING?
033032  001002                  BNE     11$             ;NO
033034  005067  000122          CLR     NOKEFL          ;YES, BACK TO NO NUMBER INPUT
033040  000167  177664      11$:    JMP     GETCHR          ;GO FOR MORE INPUT
033044  012700  000077      2$:     MOV     #77,R0          ;ECHO "?" FOR ERRONEOUS INPUT
033050  004767  000416          JSR     PC,TTO
033054  000167  177650          JMP     GETCHR          ;AND GET ANOTHER CHARACTER
033060  012767  177777  000074  3$:     MOV     #-1,NOKEFL      ;GOT A DIGIT, SET FLAG
033066  042700  177770          BIC     #177770,R0      ;GET THE DIGIT PART OF THE CHARACTER
033072  006367  000066          ASL     KBBUF           ;SHIFT KBBUF BUFFER
033076  006367  000062          ASL     KBBUF           ;  TO ACCEPT THE
033102  006367  000056          ASL     KBBUF           ;  NEW DIGIT.
033106  050067  000052          BIS     R0,KBBUF        ;ADD THE NEW DIGIT
033112  000167  177612          JMP     GETCHR          ;GO FOR MORE INPUT

033116  005767  000040      NRTRN:  TST     NOKEFL          ;WAS THERE NEW DATA?
033122  001004                  BNE     NEK             ;YES, GO BACK WITH IT
033124  012667  000034          MOV     (SP)+,KBBUF     ;NO, RETRIEVE OLD DATA
033130  012601                  MOV     (SP)+,R1        ;RESTORE R1
033132  000207                  RTS     PC              ;AND RETURN
033134  005726              NEK:    TST     (SP)+           ;DUMP OLD DATA
033136  012601                  MOV     (SP)+,R1        ;RESTORE R1
033140  000207                  RTS     PC              ;AND RETURN

033142  105777  003020      KBRD:   TSTB    @KBS            ;WAIT FOR INPUT FROM CONSOLE
033146  100375                  BPL     KBRD
```

```
3260 033150 017700 003014              MOV     @KBD,R0                 ;PUT THE CHAR INTO R0
3261 033154 042700 177600      KBRET:  BIC     #177600,R0              ;TRIM PARITY
3262 033160 000207                     RTS     PC
```

```
 3264                                   ;ASSOCIATED VARIABLE STORAGE:
 3265
 3266  033162  000000                   NOKEFL: .WORD   0
 3267  033164  000000                   KBBUF:  .WORD   0
```

```
                        .SBTTL BINARY TO ASCII CONVERSION ROUTINES

                ;CONVERTS BINARY TO BINARY, BINARY TO
                ;OCTAL, AND BINARY TO DECIMAL; EITHER
                ;UNJUSTIFIED WITH LEADING ZERO'S SUPPRESSED
                ;OR RIGHT JUSTIFIED WITH LEADING 0'S
                ;SUPPRESSED


                ;REGILAR BIN-OCTAL UNJUSTIFIED:

033166          OCTPNT: REGSAV
 (1) 033166 004567 151420       JSR     R5,REGSAV
033172 005067 000356            CLR     RJFLG                   ;CLEAR RIGHT JUSTIFY FLAG
033176 012701 000010            MOV     #10,R1                  ;SET RADIX FOR OCTAL
033202 004767 000156            JSR     PC,NUMPNT               ;CONVERT & PRINT
033206          REGRES
 (1) 033206 004567 151414       JSR     R5,REGRES
033212 000207                   RTS     PC                      ;RETURN

                ;BIN-OCTAL JUSTIFIED:

033214          OCTJSP: REGSAV
 (1) 033214 004567 151372       JSR     R5,REGSAV
033220 012767 177777 000326     MOV     #-1,RJFLG               ;SET RIGHT JUSTIFY FLAG
033226 012701 000010            MOV     #10,R1                  ;SET RADIX FOR OCTAL
033232 004767 000126            JSR     PC,NUMPNT               ;CONVERT & PRINT
033236          REGRES
 (1) 033236 004567 151364       JSR     R5,REGRES
033242 000207                   RTS     PC

                ;BIN-BIN

033244          BINPNT: REGSAV
 (1) 033244 004567 151342       JSR     R5,REGSAV
033250 005067 000300            CLR     RJFLG                   ;CLEAR RIGHT JUSTIFY FLAG
033254 012701 000002            MOV     #2,R1                   ;SET RADIX FOR BINARY
033260 004767 000100            JSR     PC,NUMPNT               ;CONVERT & PRINT
033264          REGRES
 (1) 033264 004567 151336       JSR     R5,REGRES
033270 000207                   RTS     PC

                ;BIN-DECIMAL UNJUSTIFIED:

033272          DECPNT: REGSAV
 (1) 033272 004567 151314       JSR     R5,REGSAV
033276 005067 000252            CLR     RJFLG                   ;CLEAR RIGHT JUSTIFY FLAG
033302 012701 000012            MOV     #12,R1                  ;SET RADIX FOR DECIMAL
033306 004767 000052            JSR     PC,NUMPNT               ;CONVERT & PRINT
033312          REGRES
 (1) 033312 004567 151310       JSR     R5,REGRES
033316 000207                   RTS     PC

                ;BIN-DECIMAL JUSTIFIED (6 PLACES)

033320          DECJSP: REGSAV
```

```
  (1)  033320  004567  151266                    JSR     R5,REGSAV
3317   033324  012767  177777  000222            MOV     #-1,RJFLG       ;SET RIGHT JUSTIFY FLAG
3318   033332  012701  000012                    MOV     #12,R1          ;SET RADIX FOR DECIMAL
3319   033336  004767  000022                    JSR     PC,NUMPNT       ;CONVERT & PRINT
3320   033342                                    REGRES
  (1)  033342  004567  151260                    JSR     R5,REGRES
3321   033346  000207                            RTS     PC
3322
3323
3324   033350  005000                NULLS:      CLR     R0
3325   033352  004767  000114                    JSR     PC,TTO
3326   033356  004767  000110                    JSR     PC,TTO
3327   033362  000207                NULOUT:     RTS     PC
```

```
 3329                                   ;UNSIGNED CONVERT-PRINT ROUTINE (BIN - ASCII)
 3330
 3331  033364  010167  000166  NUMPNT: MOV     R1,RADIX                ;SAVE RADIX
 3332  033370  005002                  CLR     R2                      ;CLEAR TAB COUNTER
 3333  033372  005001          DIVSET: CLR     R1                      ;CLEAR WORK REGISTER
 3334  033374  020067  000156  DIVID:  CMP     R0,RADIX                ;IS NUMBER BELOW RADIX?
 3335  033400  103404                  BLO     GETDG                   ;IF YES, STORE DIGIT
 3336  033402  166700  000150          SUB     RADIX,R0                ;ELSE, KEEP SUBTRACTING
 3337  033406  005201                  INC     R1                      ;AND KEEP COUNT
 3338  033410  000771                  BR      DIVID
 3339  033412  010046  GETDG:  MOV     R0,-(SP)                ;STACK REMAINDER
 3340  033414  010100                  MOV     R1,R0
 3341  033416  001403                  BEQ     PNTEXT                  ;PRINT IF HIGHEST ORDER STACKED
 3342  033420  005202                  INC     R2                      ;ELSE COUNT DIGITS FOR R. JUSTIFY
 3343  033422  004767  177744          JSR     PC,DIVSET
 3344
 3345  033426  012703  000006  PNTEXT: MOV     #6,R3                   ;GET DIGIT COUNT CONSTANT
 3346  033432  160203                  SUB     R2,R3                   ;HAVE WE PRODUCED 6 DIGITS?
 3347  033434  003413                  BLE     PNT                     ;YES, JUSTIFICATION UNNECESSARY
 3348  033436  005767  000112          TST     RJFLG                   ;IS THE JUSTIFY FLAG SET?
 3349  033442  001410                  BEQ     PNT                     ;NO-DON'T JUSTIFY
 3350  033444  012700  000040  JUST:   MOV     #40,R0                  ;YES, PRINT LEADING SPACES
 3351  033450  004767  000016          JSR     PC,TTO
 3352  033454  005303                  DEC     R3
 3353  033456  001372                  BNE     JUST
 3354  033460  005067  000070          CLR     RJFLG                   ;CLEAR JUSTIFY FLG WHEN DONE
 3355  033464  012600  PNT:    MOV     (SP)+,R0                ;GET REST OF DIGITS OFF STACK
 3356  033466  052700  000060          BIS     #'0,R0                  ;MAKE THEM ASCII
 3357                                   ;TYPE OUT ROUTINE
 3358                                   ;PRINTS A CHARACTER WHICH IS IN R0
 3359                                   ;IF THE CHARACTER IS ''CR.'', ALSO PRINT A 'LF.'.
 3360
 3361
 3362  033472  010077  002476  TTO:    MOV     R0,@TTB                 ;PRINT CONTENTS OF R0
 3363  033476  105777  002470  TTOLP:  TSTB    @TTS                    ;WAIT TILL PRINT DONE
 3364  033502  100375                  BPL     TTOLP
 3365  033504  022700  000015          CMP     #15,R0                  ;WAS IT A <CR>?
 3366  033510  001401                  BEQ     TTOLF                   ;YES, ECHO A LF AS WELL
 3367  033512  000207                  RTS     PC                      ;NO, JUST RETURN
 3368  033514  012700  000012  TTOLF:  MOV     #12,R0
 3369  033520  004767  177746          JSR     PC,TTO
 3370  033524  016767  000030  000030  MOV     FILL,FILCNT             ;PREPARE TO PRINT NULLS
 3371  033532  005000                  CLR     R0
 3372  033534  004767  177732  1$:     JSR     PC,TTO
 3373  033540  005367  000016          DEC     FILCNT                  ;AS MANY AS FILL COUNT
 3374  033544  003373                  BGT     1$
 3375  033546  012700  000012          MOV     #12,R0                  ;RESTORE LOST R0
 3376  033552  000207                  RTS     PC                      ;AND RETURN
 3377
 3378
 3379                                   ;ASSOCIATED VARIABLE STORAGE:
 3380
 3381  033554  000000  RJFLG:  .WORD   0
 3382  033556  000000  RADIX:  .WORD   0
 3383  033560  000010  FILL:   .WORD   10
 3384  033562  000000  FILCNT: .WORD   0
```

```
                                .SBTTL  TEST BUFFERS

                                ;DATA USED  DATA-BUFFER

        033564  125252          SSLDAT: 125252
        033566  052525                  052525
        033570  125252                  125252
        033572  052525                  052525
        033574  125252                  125252
        033576  052525                  052525
        033600  125252                  125252
        033602  052525                  052525
        033604  125252                  125252
        033606  052525                  052525

        033610  177400                  177400
        033612  000377                  000377
        033614  177400                  177400
        033616  000377                  000377
        033620  177400                  177400
        033622  000377                  000377
        033624  177400                  177400
        033626  000377                  000377
        033630  177400                  177400
        033632  000377                  000377

        033634  000000                  000000
        033636  177777                  177777
        033640  000000                  000000
        033642  177777                  177777
        033644  000000                  000000
        033646  177777                  177777
        033650  000000                  000000
        033652  177777                  177777
        033654  000000                  000000
        033656  177777                  177777

        033660  010421                  010421
        033662  021042                  021042
        033664  031463                  031463
        033666  042104                  042104
        033670  052525                  052525
        033672  063146                  063146
        033674  073567                  076567
        033676  104210                  104210
        033700  114631                  114631
        033702  125252                  125252

        033704  000001                  000001
        033706  177776                  177776
        033710  000002                  000002
        033712  177775                  177775
        033714  000003                  000003
        033716  177774                  177774
        033720  000004                  000004
        033722  177773                  177773
```

```
3442 033724 000005        000005
3443 033726 177772        177772
3444
3445 033730 000000        000000
3446 033732 000000        000000
3447 033734 000000        000000
3448 033736 000000        000000
3449 033740 000000        000000
3450 033742 111111        111111
3451 033744 111111        111111
3452 033746 111111        111111
3453 033750 111111        111111
3454 033752 111111        111111
3455
3456 033754 125252        125252
3457 033756 052525        052525
3458 033760 177777        177777
3459 033762 000000        000000
```

```
                                  ;CRC TEST BUFFER

033764  125252                    SILCRC: 125252
033766  050521                            050521
033770  124200                            124200
033772  000665                            000665
033774  141436                            141436
033776  164003                            164003
034000  075106                            075106
034002  027371                            027371
034004  002562                            002562
034006  135105                            135105

034010  002640                            002640
034012  045405                            045405
034014  060152                            060152
034016  013403                            013403
034020  153756                            153756
034022  072577                            072577
034024  164176                            164176
034026  025435                            025435
034030  111272                            111272
034032  052673                            052673

034034  157140                            157140
034036  102461                            102461
034040  066234                            066234
034042  016141                            016141
034044  175726                            175726
034046  121477                            121477
034050  036420                            036420
034052  122203                            122203
034054  045272                            045272
034056  016435                            016435

034060  010703                            010703
034062  103142                            103142
034064  177121                            177121
034066  016654                            016654
034070  033047                            033047
034072  042734                            042734
034074  046205                            046205
034076  014300                            014300
034100  024677                            024677
034102  103302                            103302

034104  106245                            106245
034106  124160                            124160
034110  132304                            132304
034112  015025                            015025
034114  017305                            017305
034116  044754                            044754
034120  044406                            044406
034122  061203                            061203
034124  140621                            140621
034126  054620                            054620
```

```

034130  110312                        110312
034132  130174                        130174
034134  116116                        116116
034136  120462                        120462
034140  021446                        021446
034142  114411                        114411
034144  133325                        133325
034146  050737                        050737
034150  106501                        106501
034152  007625                        007625

034154  117626                        117626
034156  041245                        041245
034160  031477                        031477
034162  014726                        014726
```

```
                                ;RECEIVER DATA COMPARE BUFFER
                                        .EVEN
3536  034164  000100            CMPBLF: .BLKW   64.
```

```
3538                                            .SBTTL ASCII STORAGE
3539
3540  034364  023046  044523  047514  SLOWD:  .ASCII  /&&SILO OUTPUT WORD WAS @/
      034372  047440  052125  052520
      034400  020124  047527  042122
      034406  053440  051501  040040
3541  034414  023046  044523  047514  SLIWD:  .ASCII  /&&SILO INPUT WORD WAS @/
      034422  044440  050116  052125
      034430  053440  051117  020104
      034436  040527  020123     100
3542  034443     046  047105  020104  PEND:   .ASCII  /&END PASS #@/
      034450  040520  051523  021440
      034456     100
3543  034457     046  041523  050117  SCSEC:  .ASCII  /&SCOPE SECTION FOR SLICE TIMING&SET SW 09 TO EXIT THIS LOOP.@/
      034464  020105  042523  052103
      034472  047511  020116  047506
      034500  020122  046123  041511
      034506  020105  044524  044515
      034514  043516  051446  052105
      034522  051440  020127  034460
      034530  052040  020117  054105
      034536  052111  052040  044510
      034544  020123  047514  050117
      034552  040056
3544  034554  052046  040522  051516  TXSTAT: .ASCII  /&TRANSMITTER STATUS REG = @/
      034562  044515  052124  051105
      034570  051440  040524  052524
      034576  020123  042522  020107
      034604  020075     100
3545  034607     046  042522  042503  RCSTAT: .ASCII  /&RECEIVER STATUS REG = @/
      034614  053111  051105  051440
      034622  040524  052524  020123
      034630  042522  020107  020075
      034636     100
3546  034637     046  047516  020056  RCBTCN: .ASCII  /&NO. OF WORDS RECEIVED = @/
      034644  043117  053440  051117
      034652  051504  051040  041505
      034660  044505  042526  020104
      034666  020075     100
3547  034671     046  041520  030514  TXHDR:  .ASCII  /&PCL11 TRANSMITTER TEST &  @/
      034676  020061  051124  047101
      034704  046523  052111  042524
      034712  020122  042524  052123
      034720  023040  020040     100
3548  034725     046  041520  030514  RCHDR:  .ASCII  /&PCL11 RECEIVER TEST&   @/
      034732  020061  042522  042503
      034740  053111  051105  052040
      034746  051505  023124  020040
      034754  040040
3549  034756  052046  040522  051516  XRHDR:  .ASCII  /&TRANSMITTER - RECEIVER LOOP TESTS&   @/
      034764  044515  052124  051105
      034772  026440  051040  041505
      035000  044505  042526  020122
      035006  047514  050117  052040
      035014  051505  051524  020046
      035022  020040     100
```

```
3550 035025    046 041520 030514 AUTHOR: .ASCII  &P   TESTS 1 - 3 SEQUENCE&   @/
     035032 020061 042524 052123
     035040 020123 020061 020055
     035046 020063 042523 052521
     035054 047105 042503 020046
     035062 020040    100
3551 035065    046 046530 051124 XMTR:   .ASCII  /&XMTR @/
     035072 040040
3552 035074 051046 053103 020122 RECVR:  .ASCII  /&RCVR @/
     035102    100
3553 035103    061 052123 052440 FRAD:   .ASCII  /1ST UNIBUS ADDR..@/
     035110 044516 052502 020123
     035116 042101 051104 027056
     035124    100
3554 035125    046 044124 052101 TOOLOW: .ASCII  /&THAT WAS TOO LOW. I'LL GIVE YOU ANOTHER CHANCE...&@/
     035132 053440 051501 052040
     035140 047517 046040 053517
     035146 020041 023511 046114
     035154 043440 053111 020105
     035162 047531 020125 047101
     035170 052117 042510 020122
     035176 044103 047101 042503
     035204 027056 023056    100
3555 035211    046 044124 052101 AGAIN:  .ASCII  /&THAT WON'T DO. TRY AGAIN!&@/
     035216 053440 047117 052047
     035224 042040 027117 052040
     035232 054522 040440 040507
     035240 047111 023041    100
3556 035245    126 041505 047524 VCTR:   .ASCII  /VECTOR..@/
     035252 027122 040056
3557 035256 051120 047511 044522 PRIOTY: .ASCII  /PRIORITY   4-7)..@/
     035264 054524 020040 032050
     035272 033455 027051 040056
3558 035300 042124 020115 052502 TDMAD:  .ASCII  /TDM BUS ADDR (1-37)..@/
     035306 020123 042101 051104
     035314 024040 026461 033463
     035322 027051 040056
3559 035326 044446 053116 046101 INVLAD: .ASCII  /&INVALID DEVICE ADDRESS...(IT'S NOT THERE)@/
     035334 042111 042040 053105
     035342 041511 020105 042101
     035350 051104 051505 027123
     035356 027056 044450 023524
     035364 020123 047516 020124
     035372 044124 051105 024505
     035400    100
3560 035401    046 051124 050101 TRAP4:  .ASCII  /&TRAPPED TO LOCATION 4 FROM LOCATION @/
     035406 042520 020104 047524
     035414 046040 041517 052101
     035422 047511 020116 020064
     035430 051106 046517 046040
     035436 041517 052101 047511
     035444 020116    100
3561 035447    046 050046 046103 TSTHDR: .ASCII  /&&PCL11 STANDALONE TESTS V02C   CZPLBCO  06-JUN-79&@/
     035454 030461 051440 040524
     035462 042116 046101 047117
     035470 020105 042524 052123
```

```
        035476  020123  030126  041462
        035504  020040  041440  050132
        035512  041114  030103  020040
        035520  033060  045055  047125
        035526  033455  023071     100
3562    035533     046  042523  042514  TSTSEL: .ASCII  /&SELECT TEST (<CR> = HELP)..@/
        035540  052103  052040  051505
        035546  020124  036050  051103
        035554  020076  020075  042510
        035562  050114  027051  040056
3563    035570  023046  042522  050123  HLPMSG: .ASCII  /&&RESPOND WITH ONE OF THE FOLLOWING:/
        035576  047117  020104  044527
        035604  044124  047440  042516
        035612  047440  020106  044124
        035620  020105  047506  046114
        035626  053517  047111  035107
3564    035634  020046  020040  020040          .ASCII  /&      1 - RUN TRANSMITTER TEST/
        035642  020061  020075  052522
        035650  020116  051124  047101
        035656  046523  052111  042524
        035664  020122  042524  052123
3565    035672  020046  020040  020040          .ASCII  /&      2 - RUN RECEIVER TEST/
        035700  020062  020075  052522
        035706  020116  042522  042503
        035714  053111  051105  052040
        035722  051505     124
3566    035725     046  020040  020040          .ASCII  /&      3 - RUN XMTR-RCVR LOOP TEST/
        035732  031440  036440  051040
        035740  047125  054040  052115
        035746  026522  041522  051126
        035754  046040  047517  020120
        035762  042524  052123
3567    035766  020046  020040  020040          .ASCII  /&      4 - RUN TEST 1, THEN TEST 2, THEN TEST 3&@/
        035774  020064  020075  052522
        036002  020116  042524  052123
        036010  030440  020054  044124
        036016  047105  052040  051505
        036024  020124  026062  052040
        036032  042510  020116  042524
        036040  052123  031440  040046
```

```
                                        .SBTTL CONSTANTS AND VARIABLE STORAGE
                                        .EVEN


                                ;VARIABLES

036046  000000                  DILLY:  .WORD   0
036050  000000                  DLY:    .WORD   0
036052  000000                  SWRFLG: .WORD   0
036054  000000                  PNTFLG: .WORD   0
036056  000000                  ITER:   .WORD   0
036060  000000                  SWI:    .WORD   0
036062  000000                  PAT:    .WORD   0
036064  000000                  MASK:   .WORD   0
036066  000000                  PSNO1:  .WORD   0
036070  000000                  PSNO2:  .WORD   0
036072  000000                  PSNO3:  .WORD   0
036074  000000                  PSNO4:  .WORD   0
036076  000000                  TEMP:   .WORD   0
036100  000000                  TESTNO: .WORD   0
036102  000000                  $4FLAG: .WORD   0
036104  000000                  RCAD:   .WORD   0                       ;RECEIVER ADDRESS
036106  000000                  TRAD:   .WORD   0                       ;TRANSMITTER ADDRESS
036110  000000                  COUNT:  .WORD   0
036112  000000                  DATWD:  .WORD   0
036114  000000                  TMPRIO: .WORD   0

                                ;CONSTANTS:


036116  000005                  FKPRI0: .WORD   5
036120  000005                  FKPRI1: .WORD   5
036122  000170                  TXVEC:  .WORD   170
036124  000174                  RCVEC:  .WORD   174
036126  000240                  XPRIO:  .WORD   240
036130  000240                  RPRIO:  .WORD   240
036132  164200                  TCR:    .WORD   164200
036134  164202                  TSR:    .WORD   164202
036136  164204                  TSDB:   .WORD   164204
036140  164206                  TSBC:   .WORD   164206
036142  164210                  TSBA:   .WORD   164210
036144  164212                  TMMR:   .WORD   164212
036146  164213                  TMMRH:  .WORD   164213
036150  164214                  TSCRC:  .WORD   164214
036152  164220                  RCR:    .WORD   164220
036154  164222                  RSR:    .WORD   164222
036156  164224                  RDDB:   .WORD   164224
036160  164226                  RDBC:   .WORD   164226
036162  164230                  RDBA:   .WORD   164230
036164  164234                  RDCRC:  .WORD   164234
036166  177560                  KBS:    .WORD   177560
036170  177562                  KBD:    .WORD   177562
036172  177564                  TTS:    .WORD   177564
036174  177566                  TTB:    .WORD   177566
036176  036176                  MEM:    .WORD   MEM
036200  177777                  TSTWRD: .WORD   177777
```

3625
3626

```
3628 036202 000170        TXMVEC: .WORD  170       ;170 IS XMTR DEFAULT VECTOR
3629 036204 000174        RCVVEC: .WORD  174       ;174 IS RCVR DEFAULT VECTOR
3630 036206 164200        TXMADR: .WORD  164200    ;164200 IS XMTR DEFAULT BASIC ADDR
3631 036210 164220        RCVADR: .WORD  164220    ;164220 IS RCVR DEFAULT BASIC ADDR
3632        000001                .END
```

ADGD	003212	697	700#											
ADOK	003166	693	696#											
ADRGD	003340	713	716#											
ADROK	003314	709	712#											
AGAIN	035211	626	638	649	653	671	675	694	698	710	714	3103	3555#	
ALTHDR	035025	757	3550#											
BAD	032644	949*	951	955*	957	961*	962*	964	966	970*	972	976*	978	982*
		984	1001*	1002	1008*	1009*	1010	1018*	1019	1028*	1030	1034*	1035	1039*
		1040	1044*	1046	1065*	1066	1091*	1092	1198*	1200*	1202	1226*	1258*	1259*
		1261	1304*	1306	1325*	1327	1361*	1363	1378*	1379	1434*	1692*	1695	1775*
		1777	1781*	1783	1787*	1789	1793*	1795	1799*	1801	1818*	1819	1825*	1826*
		1827	1836*	1838	1842*	1844	1848*	1850	1854*	1856	1875*	1876	1901*	1902
		1943*	1945	1963*	1965	2001*	2002	2114*	2115	2288*	2289	2385*	2430*	2432
		2485*	2486	2491*	2492*	2493	2538*	2539	2592*	2593	2637*	2638	2736*	2737*
		2738	2743*	2744*	2745	2790*	2791*	2792	2834*	2835*	2836	2840*	2841*	2842
		2882*	2883*	2884	2922*	2923*	2924	3153	3173#					
BATST	006246	805	1086#	1105										
BCONT	003346	575	717#	726	909	3077								
BCTST	006064	804	1060#	1079										
BEGIN	002000	471	568	579#										
BHLPMG	003412	721	723	725#										
BINPNT	033244	3298#												
B00 =	000001	467#	1062	1088	1392	1872	1898	2724	2825	2826	2873	2874	2953	2967
		3002	3003											
B01 =	000002	466#	1060	1086	1112	1285	1302	1309	1330	1332	1371	1382	1391	1408
		1444	1455	1500	1549	1567	1578	1593	1605	1617	1648	1657	1664	1678
		1711	1835	1870	1896	1922	1941	1948	1968	1971	2019	2034	2075	2095
		2131	2179	2202	2214	2249	2258	2265	2271	2280	2306	2358	2359	2388
		2389	2443	2444	2497	2498	2544	2545	2602	2603	2691	2692	2718	2719
		2759	2760	2805	2806	2860	2861	2898	2899	2945	2946	2979	2980	2995
		2996												
B02 =	000004	465#	2104											
B03 =	000010	464#	1288	1299	1313	1323	1354	1404	1457	1929	1954	1978	2030	2769
		2906												
B04 =	000020	463#	1463	2777										
B05 =	000040	462#	2959	2975	2982	3017	3025							
B06 =	000100	461#	1471	1481	1621	1627	1633	1651	2077	2218	2224	2230	2252	
B07 =	000200	460#	1197	1225	1257	1264	1271	1311	1321	1358	1366	1368	1432	1437
		1445	1446	1450	1451	1634	1652	1688	1933	1935	1958	1960	1972	1982
		2049	2054	2081	2082	2090	2091	2180	2184	2231	2233	2253	2281	2417
		2429	2723	2728	2817	2819	2820	2822	2823	2824	2862	2869		
B08 =	000400	459#	1292	1317	1350	1571	1925	1938	1950	1961	2008	2109	2182	2234
		2456	2509	2612	2954									
B09 =	001000	458#	1119	1128	1487	1488	1502	1574	2119	3004				
B10 =	002000	457#	791	1507	1508	1583	1733	2133	2134	2322	2702	2914		
B11 =	004000	456#	811	1517	1518	1601	1750	2147	2148	2337				
B12 =	010000	455#	989	1051	1077	1103	1276	1411	1527	1528	1607	1659	1708	1806
		1861	1887	1913	2036	2157	2158	2204	2260	2303	2412	2679	2749	2782
		2796	2846	2850	2888	2928	2933	3070						
B13 =	020000	454#	848	1477	1496	1537	1538	2076	2086	2127	2132	2142	2167	2168
		2449	2451	2503	2504	2697	2698	2724	2765	2766	2813	2814	2873	2874
		2904	2905	2952	2953	2981	2983	3002	3003					
B14 =	040000	453#	953	959	968	974	980	986	1004	1012	1021	1032	1037	1042
		1048	1068	1094	1116	1133	1138	1143	1149	1154	1159	1167	1171	1177
		1185	1189	1193	1204	1212	1216	1224	1231	1245	1252	1263	1270	1290
		1294	1301	1308	1315	1319	1329	1335	1336	1338	1348	1352	1356	1365

```
                      1381  1406  1420  1448  1453  1469  1473  1479  1483  1490  1494  1498  1504
                      1510  1514  1520  1524  1530  1534  1540  1544  1557  1559  1561  1565  1576
                      1591  1603  1628  1640  1644  1670  1681  1684  1686  1697  1702  1779  1785
                      1791  1797  1803  1821  1829  1840  1846  1852  1858  1878  1904  1927  1931
                      1940  1947  1952  1956  1967  1980  1985  1994  1996  2004  2010  2032  2061
                      2079  2084  2088  2093  2106  2111  2117  2121  2125  2129  2136  2140  2144
                      2150  2154  2160  2164  2170  2174  2192  2194  2196  2200  2225  2241  2245
                      2272  2291  2296  2376  2380  2386  2405  2409  2462  2466  2467  2475  2478
                      2488  2495  2515  2519  2520  2528  2531  2541  2568  2571  2579  2582  2595
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                      2973  2977  2985  3002  3003  3015  3019  3023  3027
B15     = 100000      452#  1070  1096  1475  1492  1512  1522  1532  1542  1563  1880  1906  2123
                      2138  2152  2162  2172  2198  2956  2971  3006
CCRTN     031774      3060# 3087
CHXDAT    024014      2378  2407  2427#
CLRCBF    020210      1970  2040# 2543
CMPBUF    034164      1984  1998  2041  2060  2105  2113  2547  2590  3000  3536#
CONTW1    032004      3061# 3062  3068
COUNT     036110      1689* 1705* 3592#
CRCTST    014646       810  1678# 1687  1703  1710
DATLPS    024074      2334  2443# 2463  2472  2483  2489  2496  2681
DATWD     036112      2285* 2286  2294  3593#
DECJSP    033320      3316#
DECPNT    033272       764   820  1759  2346  3307#
DELAY     004546       916# 1220  1248  1254  1266  1286  1297  1596  1599  1923  1936  2420  2725
DELYMG    032312      3080  3113#
DERR      032500       953   959   968   974   980   986  1004  1012  1021  1032  1037  1042  1048
                      1068  1094  1204  1263  1308  1329  1365  1381  1702  1779  1785  1791  1797
  "                   1803  1821  1829  1840  1846  1852  1858  1878  1904  1947  1967  2004  2117
                      2296  2380  2386  2409  2488  2495  2541  2595  2640  2740  2747  2794  2838
                      2844  2886  2926  3146#
DEVGEN    004264       684   859#
DILLY     036046       916*  923* 3575#
DIVID     033374      3334# 3338
DIVSET    033372      3333# 3343
DLCON     032412       917   919*  920  1237  1340  1421  1461  1580  1986  2062  2365  2394  2452
                      2505  2553  2610  2650  2699  2729  2767  2783  2827  2875  2908  2915  2957
                      3007  3081  3082  3086* 3126#
DLWT      004566       918   920#  924
DLWT1     004574       921#  922
DLY       036050       920*  921* 3576#
DTLPS1    024166      2453# 2461
DVATST    004456       600   894#
EROINT    022204      2217  2222#
ERR       032414      1116  1133  1138  1143  1149  1154  1159  1167  1171  1177  1185  1189  1193
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                      1348  1352  1356  1406  1448  1453  1469  1473  1479  1483  1490  1494  1498
                      1504  1510  1514  1520  1524  1530  1534  1540  1544  1557  1561  1565  1576
                      1591  1603  1628  1640  1644  1670  1686  1927  1931  1940  1952  1956  1980
                      1994  2010  2032  2079  2084  2088  2093  2111  2121  2125  2129  2136  2140
                      2144  2150  2154  2160  2164  2170  2174  2192  2196  2200  2225  2241  2245
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                      2669  2710  2751  2775  2779  2798  2848  2852  2890  2930  2965  2969  2973
                      2977  2985  3015  3019  3023  3027  3132#
ERRAD     032640      3132* 3133* 3138  3146* 3147* 3171#
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ERRINT  014240      1620   1625#
ERRM    032564      3134   3162#
ERRNUM  032642       953*   959*   968*   974*   980*   986*  1004*  1012*  1021*  1032*  1037*  1042*  1048*
                    1068*  1094*  1116*  1133*  1138*  1143*  1149*  1154*  1159*  1167*  1171*  1177*  1185*
                    1189*  1193*  1204*  1212*  1216*  1224*  1231*  1245*  1252*  1263*  1270*  1290*  1294*
                    1301*  1308*  1315*  1319*  1329*  1338*  1348*  1352*  1356*  1365*  1381*  1406*  1448*
                    1453*  1469*  1473*  1479*  1483*  1490*  1494*  1498*  1504*  1510*  1514*  1520*  1524*
                    1530*  1534*  1540*  1544*  1557*  1561*  1565*  1576*  1591*  1603*  1628*  1640*  1644*
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                    1858*  1878*  1904*  1927*  1931*  1940*  1947*  1952*  1956*  1967*  1980*  1954*  2004*
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                    2144*  2150*  2154*  2160*  2164*  2170*  2174*  2192*  2196*  2200*  2225*  2241*  2245*
                    2272*  2296*  2376*  2380*  2386*  2405*  2409*  2462*  2466*  2475*  2488*  2495*  2515*
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ERRTRP  004476       556    615    902#
ERR1    032426      3134#  3148
EX1     032060      3052   3074#
EX2     032076      3075   3078#
EX2A    032104      3080#
EX2B    032146      3086#
EX3     032160      3079   3089#
EX4     032176      3090   3093#
EX4B    032204      3095#  3104
EX5     032300      3048   3094   3106#
FILCNT  033562      3370*  3373*  3384#
FILL    033560      3096   3099   3105*  3370   3383#
FILMSG  032362      3095   3115#
FILRCV  023752      2361   2390   2416#
FKPRI0  036116       642    645    655*  3599#
FKPRI1  036120       664    667    677*  3600#
FRAD    035103       589    603   3553#
GETCHR  032730      3215#  3237   3240   3247
GETDG   033412      3335   3339#
GOOD    032646       950*   956*   963*   964    971*   972    977*   983*   999*  1000   1002   1006*  1010
                    1016*  1017   1019   1029*  1030   1035   1040   1045*  1046   1063*  1064   1066   1089*
                    1090   1092   1201*  1202   1260*  1261   1305*  1306   1326*  1327   1362*  1363   1374*
                    1379   1694*  1695   1776*  1782*  1788*  1789   1794*  1800*  1816*  1817   1819   1823*
                    1827   1837*  1838   1843*  1844   1849*  1850   1855*  1856   1873*  1874   1876   1899*
                    1900   1902   1944*  1945   1964*  1965   2000*  2002   2113*  2115   2287*  2289   2384*
                    2431*  2432   2484*  2486   2490*  2493   2537*  2539   2591*  2593   2636*  2638   2735*
                    2738   2742*  2745   2789*  2792   2833*  2836   2842   2881*  2884   29[illegible]1*  2924   3150
                    3174#
HLPMSG  035570       725   3563#
HWSWR = 177570       426#   585
INPKB   032712       594    608    622    634    646    668    691    707    719   3058   3085   3100   3211#
INTA    014566      1631   1664#
INTB    014610      1650   1669#
INTRA   022556      2228   2265#
INTRB   022600      2251   2270#
INTST   014162       809   1616#  1629   1641   1645   1661
INVLAD  035326       895   3559#
ISP   = 002000       471#   569    573    580    894    904   3076   3091
ITER    036056       789*   813*  1731*  1752*  2320*  2339*  3579#
JUST    033444      3350#  3353
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KBBUF	033164	593*	595	607*	609	621*	623	624	633*	635	636	645*	647	651
		655	656*	657*	658*	659*	660*	661	667*	669	673	677	678*	679*
		680*	681*	682*	683	690*	692	696	700	706*	708	712	716	718*
		720	722	728	3057*	3059	3081*	3086	3099*	3101	3105	3213	3214*	3229*
		3231*	3233*	3234	3243*	3244*	3245*	3246*	3251*	3267#				
KBD	036170	3049	3063	3260	3620#									
KBRD	033142	3215	3258#	3259										
KBRET	033154	3261#												
KBS	036166	3046	3061	3258	3619#									
LDLP	023770	2419#	2423											
LOOP	004036	792	796	800	802#	814								
LOOPL	023154	2323	2327	2331	2333#	2340								
LOOPR	015224	1734	1740	1742#	1753									
MASK	036064	1062*	1073	1074*	1088*	1099	1100*	1872*	1883	1884*	1898*	1909	1910*	3582#
MEM	036176	3623#												
MONCH	031712	3050#												
MONIC	031705	3047	3049#											
MONIT	031672	790	842	988	1050	1076	1102	1118	1127	1275	1410	1606	1658	1707
		1732	1805	1860	1886	1912	2035	2203	2259	2302	2321	2411	2678	2932
		3029	3045#	3140										
MSRTST	006430	806	1112#	1117	1278									
N	000356	491#	953#	959#	968#	974#	980#	986#	1004#	1012#	1021#	1032#	1037#	1042#
		1048#	1068#	1094#	1116#	1133#	1138#	1143#	1149#	1154#	1159#	1167#	1171#	1177#
		1185#	1189#	1193#	1204#	1212#	1216#	1224#	1231#	1245#	1252#	1263#	1270#	1290#
		1294#	1301#	1308#	1315#	1319#	1329#	1338#	1348#	1352#	1356#	1365#	1381#	1406#
		1448#	1453#	1469#	1473#	1479#	1483#	1490#	1494#	1498#	1504#	1510#	1514#	1520#
		1524#	1530#	1534#	1540#	1544#	1557#	1561#	1565#	1576#	1591#	1603#	1628#	1640#
		1644#	1670#	1686#	1702#	1723#	1779#	1785#	1791#	1797#	1803#	1821#	1829#	1840#
		1846#	1852#	1858#	1878#	1904#	1927#	1931#	1940#	1947#	1952#	1956#	1967#	1980#
		1994#	2004#	2010#	2032#	2079#	2084#	2088#	2093#	2111#	2117#	2121#	2125#	2129#
		2136#	2140#	2144#	2150#	2154#	2160#	2164#	2170#	2174#	2192#	2196#	2200#	2225#
		2241#	2245#	2272#	2296#	2317#	2376#	2380#	2386#	2405#	2409#	2462#	2466#	2475#
		2488#	2495#	2515#	2519#	2528#	2541#	2568#	2579#	2595#	2618#	2640#	2658#	2669#
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		2890#	2926#	2930#	2965#	2969#	2973#	2977#	2985#	3015#	3019#	3023#	3027#	
NEK	033134	3250	3254#											
NOKEFL	033162	3211*	3236*	3241*	3249	3266#								
NPRTST	023300	2333	2358#	2377	2381	2387	2414							
NPTST1	023354	2366#	2375											
NRTRN	033116	3219	3249#											
NULLS	033350	3141	3155	3324#										
NULOUT	033362	3327#												
NUMPNT	033364	3283	3292	3301	3310	3319	3331#							
OCTJSP	033214	3289#												
OCTPNT	033166	591	605	619	631	643	665	688	704	908	1701	2295	2471	2482
		2524	2535	2575	2586	2625	2630	2634	2646	2665	2676	3055	3083	3097
		3136	3139	3151	3154	3280#								
PAT	036062	1061*	1063	1070	1072*	1073*	1087*	1089	1096	1098*	1099*	1871*	1873	1880
		1882*	1883*	1897*	1899	1906	1908*	1909*	3581#					
PEND	034443	762	818	1757	2344	3542#								
PNT	033464	3347	3349	3355#										
PNTEXT	033426	3341	3345#											
PNTFLG	036054	1121*	1123*	3578#										
PRIOTY	035256	641	663	3557#										
PRMT1	002162	597	600#											
PRMT10	003220	701#	711	715										

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PRMT2   002174   602#  613
PRMT3   002300   611   614#
PRMT4   002312   616#  627
PRMT5   002416   625   628#  639
PRMT6   002522   637   640#  650   654
PRMT7   002620   648   651#
PRMT8   002644   652   655#
PRMT9   002704   662#  672   676
PROMT   002056   588#  599   896
PS    = 177776   425#  570*  574*  581*  788*  903*  1616*  1622*  1625*  1632*  1635*  1653*  1730*
                2213*  2219*  2222*  2229*  2236*  2254*  2319*
PSNO1   036066   732*  817*  819   3583#
PSNO2   036070   733*  1756*  1758  3584#
PSNO3   036072   734*  2343*  2345  3585#
PSNO4   036074   735*  761*  763   3586#
P1    = 000040   448#
P2    = 000100   447#
P3    = 000140   446#
P4    = 000200   445#
P5    = 000240   444#
P6    = 000300   443#
P7    = 000340   442#  570   574   581   584   788   903   1616  1625  1632  1730  2213  2222
                2229  2319
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RART    015730   1807   1809#
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RA2     015514   1784   1787#
RA3     015570   1790   1793#
RA4     015640   1796   1799#
RA5     015710   1802   1805#
RBATST  016620   1745   1896#  1915
RBCTST  016436   1744   1870#  1889
RBRT    016616   1888   1890#
RB1     016460   1873#  1879   1885
RB2     016542   1877   1880#
RB3     016576   1881   1886#
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                3590#
RCHTCN  034637   2631   2643  3546#
RCHDR   034725   745    3548#
RCR     036152   877*  1787  1815*  1817*  1818  1824*  1825  1831*  1835*  1836  1870*  1896*  1922*
                1929  1933*  1935*  1941*  1948*  1954  1958*  1960*  1968*  1971*  1972*  1978  1982*
                1985*  1996*  2019*  2030  2034*  2049*  2054*  2061*  2066*  2075*  2076*  2086  2095*
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                2607*  2692*  2697*  2719*  2724*  2760*  2765*  2806*  2813*  2820*  2822*  2825*  2861*
                2862*  2869*  2873*  2899*  2904*  2946*  2952*  2956*  2971  2979*  2981*  2983  2996*
                3002*  3006*  3613#
RCRCTS  022644   1749   2280#  2297  2305
RCRT    017000   1914   1916#
RCRTST  015752   1743   1815#  1863
RCSTAT  034607   2469   2522  2584  2628  2674  3545#
RCVADR  036210   604    607   609*  610   614   876   3631#
RCVEC   036124   888*   2215  2217*  2228*  2251*  3602#
RCVVEC  036204   630    633   635*  888   3629#
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RC2     016724  1903   1906#
RC3     016760  1907   1912#
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                3000*  3617#
RDBC    036160   883*  1775   1832*  1848   1874*  1875   1983*  1988   2059*  2103*  2107   2185*  2190
                2362*  2382   2385   2447*  2501*  2549*  2810*  2950*  2998*  3616#
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RDDB    036156   881*  1934*  1943   1959*  1963   1975*  2051*  2098*  2181*  2232*  2286*  2392   2419*
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RDRT    016434  1862   1864#
RD1     015736  1816#  1822
RD2     016020  1820   1823#  1830
RD3     016104  1828   1831#  1841   1847   1853   1859
RD4     016216  1839   1842#
RD5     016270  1845   1848#
RD6     016342  1851   1854#
RD7     016414  1857   1860#
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RECVR   035074   602    628    662    701    3552#
REEMT   020262  2022   2025   2059#
REEMT1  020310  2063#  2068
REGRES  004626   936#  3284   3293   3302   3311   3320
REGSAV  004612   929#  3280   3289   3298   3307   3316
REMTW   020314  2064#  2065
REND    015302  1751   1754#
REPEAT  004166   816    825#
REPEET  015370  1755   1768#
REPETL  023276  2342   2354#
RERT    020206  2037   2039#
RESR    020230  2021   2024   2027   2049#
RESRW   020240  2051#  2053
RESTRT  003072   572    685#   695    699    3092
RE1     017056  1926   1929#
RE10    017606  1979   1982#
RE10A   017642  1987#  1993
RE11    017646  1988#  1991
RE12    017714  1989   1996#
RE13    017736  2000#  2007
RE14    020006  2003   2006#
RE15    020052  2009   2019#  2033
RE16    020160  2031   2034#
RE2     017116  1930   1933#  1942   1949
RE3     017214  1939   1943#  1953
RE4     017276  1946   1950#
RE5     017336  1951   1954#  1957
RE6     017376  1955   1958#  1969
RE7     017416  1961#  1962
RE7A    017500  1966   1970#
RE8     017512  1971#  1981   1995   2005   2011
RE9     017536  1975#  1977
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RF1     020406  2078   2081#  2085
RF10    021072  2124   2127#
RF11    021132  2128   2131#  2137   2141   2145
RF12    021214  2135   2138#
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RF14    021314  2143  2146#  2151  2155
RF15    021366  2149  2152#
RF16    021426  2153  2156#  2161  2165
RF17    021500  2159  2162#
RF18    021540  2163  2166#  2171  2175
RF19    021612  2169  2172#
RF2     020454  2083  2086#
RF20    021652  2173  2179#  2193  2197  2201
RF21    021674  2182#  2183
RF22    021776  2191  2194#
RF23    022036  2195  2198#
RF24    022076  2199  2202#
RF3     020514  2087  2090#  2094
RF4     020562  2092  2095#  2112  2118  2122  2126  2130
RF5     020602  2098#  2102
RF6     020620  2103#
RF7     020650  2107#  2108
RF8     020716  2110  2113#
RF9     020772  2116  2119#
RF9A    021032  2120  2123#
RHRT    022554  2261  2263#
RH0     022252  2221  2227#
RH1     022264  2229#  2268
RH1A    022322  2234#  2235
RH2     022402  2240  2243#
RH3     022442  2244  2247#  2257  2274
RH3S    022466  2251#  2273
RH4     022526  2248  2258#
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RJ1     022674  2285#  2301
RJ1S    023002  2292  2297#
RJ2     023010  2290  2298#
RPRIO   036130  683*  2243  3604#
RSR     036154  879*  1799  1834*  1842  1925  1938  1950  1961  2008  2077  2081*  2082  2090*
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XRC23	031100	2960	2967#					
XRC24	031140	2968	2971#					
XRC25	031200	2972	2975#					
XRC26	031240	2976	2979#	2986				
XRC27	031330	2984	2995#	3016	3020	3024	3028	
XRC29	031416	3004#	3005					
XRC29A	031440	3008#	3014					
XRC3	026770	2739	2742#					
XRC30	031444	3009#	3012					
XRC31	031512	3010	3017#					

```
XRC32   031552  3018  3021#
XRC33   031610  3022  3025#
XRC34   031650  3026  3029#
XRC4    027052  2746  2749#
XRC5    027112  2750  2759#  2776  2780  2795  2799
XRC5A   027176  2768#  2774
XRC6    027202  2769#  2772
XRC6A   027252  2770  2777#
XRC7    027312  2778  82#
XRC7A   027330  2785#  2786
XRC7D   027324  2784#  2788
XRC8    027422  2793  2796#
XRC9    027462  2797  2805#  2839  2845  2849  2853
XRERXT  024066  2433  2438#
XRHDR   034756  751  3549#
XRLV    024060  2436#  2439
$2$     025334  2559  2568#
$3$     025430  2561  2579#
$4FLAG  036102  738*  744*  750*  756*  815  1754  2341  3589#
.       036212  553#  554  561  566#  577#  953  959  968  974  980  986  1004  1012
                1021  1032  1037  1042  1048  1068  1094  1116  1133  1138  1143  1149  1154
                1159  1167  1171  1177  1185  1189  1193  1204  1212  1216  1224  1231  1245
                1252  1263  1270  1290  1294  1301  1308  1315  1319  1329  1338  1348  1352
                1356  1365  1381  1406  1448  1453  1458  1469  1473  1479  1483  1490  1494
                1498  1504  1510  1514  1520  1524  1530  1534  1540  1544  1557  1561  1565
                1576  1591  1603  1628  1640  1644  1670  1686  1702  1779  1785  1791  1797
                1803  1821  1829  1840  1846  1852  1858  1878  1904  1927  1931  1940  1947
                1952  1956  1967  1980  1994  2004  2010  2032  2079  2084  2088  2093  2111
                2117  2121  2125  2129  2136  2140  2144  2150  2154  2160  2164  2170  2174
                2192  2196  2200  2225  2241  2245  2272  2296  2376  2380  2386  2405  2409
                2462  2466  2475  2488  2495  2515  2519  2528  2541  2568  2579  2595  2618
                2640  2658  2669  2710  2740  2747  2751  2775  2779  2794  2798  2838  2844
                2848  2852  2886  2890  2926  2930  2965  2969  2973  2977  2985  3015  3019
                3023  3027  3119#  3536#
```

```
BDINIT   477#  1060  1086  1112  1285  1302  1309  1330  1332  1371  1382  1391  1408  1444  1455
        1500  1549  1567  1578  1593  1605  1617  1548  1657  1664  1678  1711  1870  1896  1922
        1941  1948  1968  1971  2019  2034  2075  2095  2131  2179  2202  2214  2249  2258  2265
        2271  2280  2306  2358  2359  2388  2389  2443  2444  2497  2498  2544  2545  2602  2603
        2691  2692  2718  2719  2759  2760  2805  2806  2860  2861  2898  2899  2945  2946  2979
        2980  2995  2996
DATERR   503#  953   959   968   974   980   986  1004  1012  1021  1032  1037  1042  1048  1068
        1094  1204  1263  1308  1329  1365  1381  1702  1779  1785  1791  1797  1803  1821  1829
        1840  1846  1852  1858  1878  1904  1947  1967  2004  2117  2296  2380  2386  2409  2488
        2495  2541  2595  2640  2740  2747  2794  2838  2844  2886  2926
ERROR    494#  1116  1133  1138  1143  1149  1154  1159  1167  1171  1177  1185  1189  1193  1212
        1216  1224  1231  1245  1252  1270  1290  1294  1301  1315  1319  1338  1348  1352  1356
        1406  1448  1453  1469  1473  1479  1483  1490  1494  1498  1504  1510  1514  1520  1524
        1530  1534  1540  1544  1557  1561  1565  1576  1591  1603  1628  1640  1644  1670  1686
        1927  1931  1940  1952  1956  1980  1994  2010  2032  2079  2084  2088  2093  2111  2121
        2125  2129  2136  2140  2144  2150  2154  2160  2164  2170  2174  2192  2196  2200  2225
        2241  2245  2272  2376  2405  2462  2466  2475  2515  2519  2528  2568  2579  2618  2658
        2669  2710  2751  2775  2779  2798  2848  2852  2890  2930  2965  2969  2973  2977  2985
        3015  3019  3023  3027
HLT      512#  845
MTPS     536#  570   574   581   788  1616  1622  1625  1632  1635  1653  1730  2213  2219  2222
        2229  2236  2254  2319
PNTM     518#  587   588   589   592   598   602   603   606   612   616   617   620   626   628
         629   632   638   640   641   644   649   653   662   663   666   671   675   685   686
         689   694   698   701   702   705   710   714   717   725   739   745   751   757   762
         818   895   905  1122  1699  1757  2293  2344  2469  2480  2522  2533  2573  2584  2623
        2628  2631  2643  2663  2674  3053  3056  3060  3080  3084  3095  3098  3103  3134  3137
        3149  3152
REGRES   547#  3284  3293  3302  3311  3320
REGSAV   543#  3280  3289  3298  3307  3316
SCOPE    525#  954   960   969   975   981   987  1005  1013  1022  1033  1038  1043  1049  1069
        1095  1117  1134  1139  1144  1150  1155  1160  1168  1172  1178  1186  1190  1194  1205
        1213  1217  1227  1232  1246  1253  1265  1272  1291  1295  1303  1310  1316  1320  1331
        1339  1349  1353  1357  1367  1383  1407  1449  1454  1470  1474  1480  1484  1491  1495
        1499  1505  1511  1515  1521  1525  1531  1535  1541  1545  1558  1562  1566  1577  1592
        1604  1629  1641  1645  1671  1687  1703  1780  1786  1792  1798  1804  1822  1830  1841
        1847  1853  1859  1879  1905  1928  1932  1942  1949  1953  1957  1969  1981  1995  2005
        2011  2033  2080  2085  2089  2094  2112  2118  2122  2126  2130  2137  2141  2145  2151
        2155  2161  2165  2171  2175  2193  2197  2201  2226  2242  2246  2273  2297  2377  2381
        2387  2406  2410  2463  2472  2483  2489  2496  2516  2525  2536  2542  2576  2587  2598
        2635  2647  2666  2677  2711  2741  2748  2752  2776  2780  2795  2799  2839  2845  2849
        2853  2887  2891  2927  2931  2966  2970  2974  2978  2986  3016  3020  3024  3028

. ABS.  036212    000

 ERRORS DETECTED:  0

 CZPLBC,CZPLBC/CR=CZPLBC
 RUN-TIME: 17 36 5 SECONDS
 RUN-TIME RATIO: 127/60=2.1
 CORE USED:  12K  (23 PAGES)
```