PCL11-A,B

PCL-11 STAND-ALONE V-02

CZPLBA0

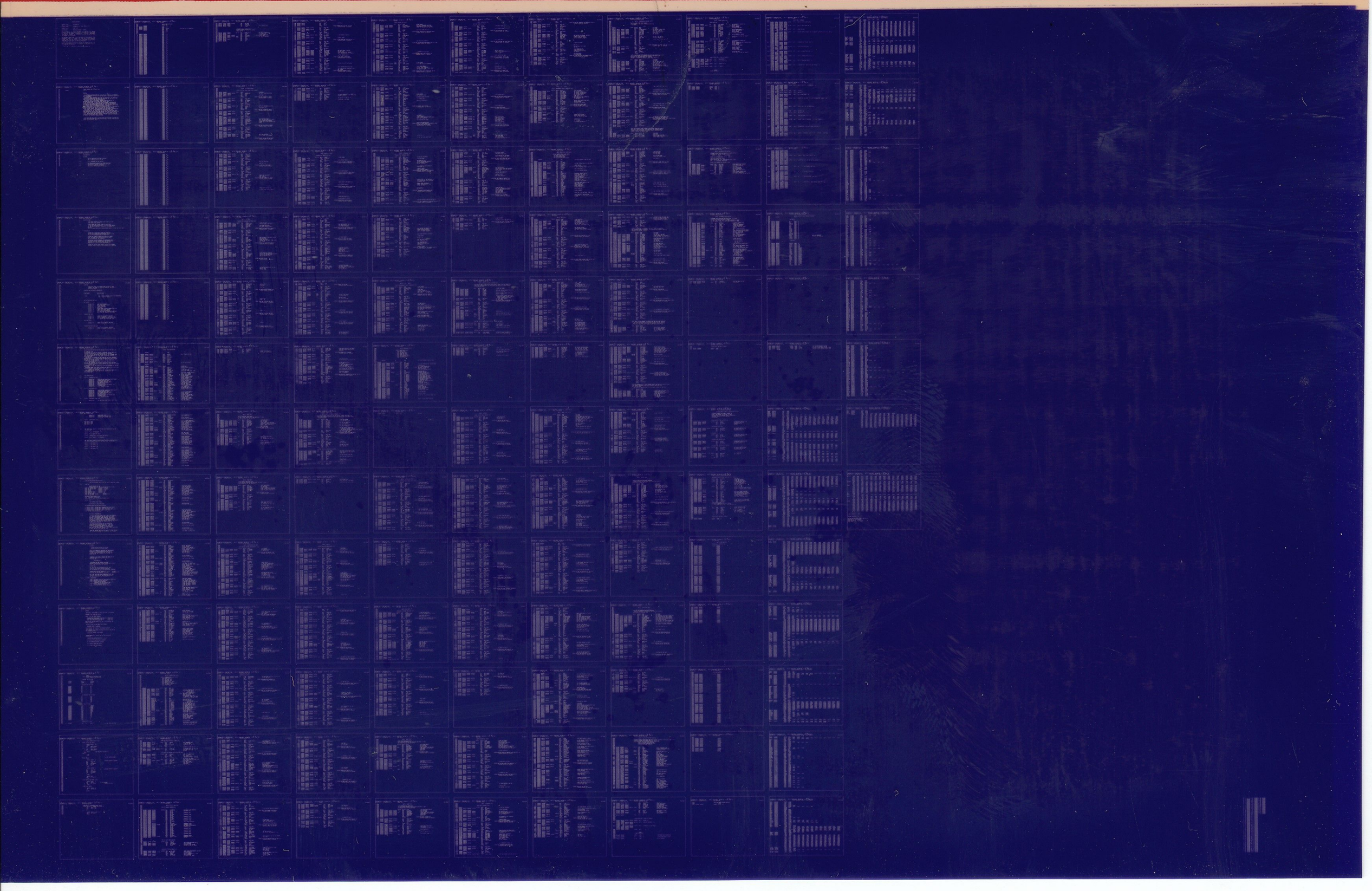
AH-E263A-MC

FICHE 1 OF 1

JUN 1978

digital

MADE IN USA



IDENTIFICATION

PRODUCT CODE: AC-E262A-MC

PRODUCT NAME: CZPLBA0 PCL11 STAND ALONE TEST

PRODUCT DATE: JUNE 1978

MAINTAINER: SPECIAL SYSTEMS , KANATA

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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)
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                        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.
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                        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>
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                        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 11 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
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                                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
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                                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
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                                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
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                        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
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                                .ENDR
                        .TITLE  CZPLBA0 PCL11 STND ALN V-02
                                .SBTTL SYMBOLIC DEFINITIONS

                        ;INTERNAL DEFINITIONS:

177776                  PS      =       177776
177570                  HWSWR   =       177570
031620                  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,ERR
                        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
```

```
                                                        B  2
                                .SBTTL  TRAP CATCHERS
                                .ENABLE ABS
000000                          .       =       0
000000  000002                  .WORD   .+2
000002  000000                  .WORD   0
000004  004262                  .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
```

```
                                                  .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  002472                        JMP     RESTRT
     000224 012706  002000                        MOV     #ISP,SP
     000230                                       MTPS    #P7
(1)  000230 012737  000340  177776                MOV     #P7,@#PS
     000236 000167  002670                        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  033152                        CLR     SWRFLG             ;CLEAR SWR FLAG
     002020 012737  003774  000004                MOV     #SRTST,@#4         ;SET UP TO TRAP IF NO HSWR
     002026 012737  000340  000006                MOV     #P7,@#6
     002034 012767  177570  027560                MOV     #HWSWR,SR          ;SET SR TO HDWARE SW REG
     002042 005777  027554                        TST     @SR                ;SEE IF IT'S THERE
     002046                                       PNTM    TSTHDR             ;PRINT TEST HEADER
(1)  002046 012700  034565                        MOV     #TSTHDR,R0         ;PRINT MESSAGE
(1)  002052 004767  030004                        JSR     PC,TYPOUT          ;POINTED TO BY TSTHDR
     002056                               PROMT:  PNTM    TMTR               ;PRINT "TRANSMITTER"
(1)  002056 012700  034201                        MOV     #TMTR,R0           ;PRINT MESSAGE
(1)  002062 004767  027774                        JSR     PC,TYPOUT          ;POINTED TO BY TMTR
     002066                                       PNTM    FRAD               ;PRINT "1ST BUS ADDR"
(1)  002066 012700  034217                        MOV     #FRAD,R0           ;PRINT MESSAGE
(1)  002072 004767  027764                        JSR     PC,TYPOUT          ;POINTED TO BY FRAD
     002076 016767  033222  030272                MOV     TXMADR,KBBUF       ;LOAD DEFAULT ADDR
     002104 004767  030014                        JSR     PC,INPKB           ;GET KBD INPUT
     002110 016767  030262  033206                MOV     KBBUF,TXMADR       ;REPLACE XMTR ADDR
     002116 026727  033202  164000                CMP     TXMADR,#164000     ;IS IT WITHIN LIMITS?
     002124 103006                                BHIS    PRMT1              ;YES, CARRY ON
     002126                                       PNTM    TOOLOW             ;NO ERROR, ASK AGAIN
(1)  002126 012700  034242                        MOV     #TOOLOW,R0         ;PRINT MESSAGE
(1)  002132 004767  027724                        JSR     PC,TYPOUT          ;POINTED TO BY TOOLOW
     002136 000167  177714                        JMP     PROMT
     002142 012737  004242  000004        PRMT1:  MOV     #DVATST,@#4
     002150 005777  033150                        TST     @TXMADR            ;IS IT A GOOD ADDRESS?
     002154                               PRMT2:  PNTM    RECVR              ;PRINT "RECEIVER"
(1)  002154 012700  034210                        MOV     #RECVR,R0          ;PRINT MESSAGE
(1)  002160 004767  027676                        JSR     PC,TYPOUT          ;POINTED TO BY RECVR
     002164                                       PNTM    FRAD               ;PRINT 1ST UNIBUS ADDR"
(1)  002164 012700  034217                        MOV     #FRAD,R0           ;PRINT MESSAGE
(1)  002170 004767  027666                        JSR     PC,TYPOUT          ;POINTED TO BY FRAD
     002174 016767  033126  030174                MOV     RCVADR,KBBUF       ;LOAD DEFAULT ADDRESS
     002202 004767  027716                        JSR     PC,INPKB           ;GET KBD INPUT
     002206 016767  030164  033112                MOV     KBBUF,RCVADR       ;LOAD NEW ADDRESS
```

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  590  002214  026727  033106  164000          CMP     RCVADR,#164000          ;IS IT WITHIN LIMITS?
  591  002222  103006                          BHIS    PRMT3                   ;YES, CARRY ON
  592  002224                                  PNTM    TOOLOW
  (1)  002224  012700  034242                  MOV     #TOOLOW,R0              ;PRINT MESSAGE
  (1)  002230  004767  027626                  JSR     PC,TYPOUT               ;POINTED TO BY TOOLOW
  593  002234  000167  177714                  JMP     PRMT2
  594  002240  005777  033062          PRMT3:  TST     @RCVADR                 ;IS IT A GOOD ADDRESS?
  595  002244  012737  004262  000004          MOV     #ERRTRP,@#4             ;SET UP FOR FURTHER TRAPS
  596  002252                          PRMT4:  PNTM    TMTR                    ;PRINT "TRANSMITTER"
  (1)  002252  012700  034201                  MOV     #TMTR,R0                ;PRINT MESSAGE
  (1)  002256  004767  027600                  JSR     PC,TYPOUT               ;POINTED TO BY TMTR
  597  002262                                  PNTM    VCTR                    ;PRINT "VECTOR IS"
  (1)  002262  012700  034362                  MOV     #VCTR,R0                ;PRINT MESSAGE
  (1)  002266  004767  027570                  JSR     PC,TYPOUT               ;POINTED TO BY VCTR
  598  002272  016767  033022  030076          MOV     TXMVEC,KBBUF            ;LOAD DEFAULT VECTOR
  599  002300  004767  027620                  JSR     PC,INPKB                ;GET KBD INPUT
  600  002304  016767  030066  033006          MOV     KBBUF,TXMVEC            ;REPLACE XMTR VECTOR
  601  002312  026727  030060  000776          CMP     KBBUF,#776              ;IS IT WITHIN LIMITS?
  602  002320  101406                          BLOS    PRMT5
  603  002322                                  PNTM    AGAIN                   ;NO, TELL HIM
  (1)  002322  012700  034326                  MOV     #AGAIN,R0               ;PRINT MESSAGE
  (1)  002326  004767  027530                  JSR     PC,TYPOUT               ;POINTED TO BY AGAIN
  604  002332  000167  177714                  JMP     PRMT4
  605  002336                          PRMT5:  PNTM    RECVR                   ;PRINT "RECEIVER"
  (1)  002336  012700  034210                  MOV     #RECVR,R0               ;PRINT MESSAGE
  (1)  002342  004767  027514                  JSR     PC,TYPOUT               ;POINTED TO BY RECVR
  606  002346                                  PNTM    VCTR                    ;PRINT "VECTOR IS"
  (1)  002346  012700  034362                  MOV     #VCTR,R0                ;PRINT MESSAGE
  (1)  002352  004767  027504                  JSR     PC,TYPOUT               ;POINTED TO BY VCTR
  607  002356  016767  032740  030012          MOV     RCVVEC,KBBUF            ;LOAD DEFAULT VECTOR
  608  002364  004767  027534                  JSR     PC,INPKB                ;GET KEYBOARD INPUT
  609  002370  016767  030002  032724          MOV     KBBUF,RCVVEC            ;LOAD NEW VECTOR
  610  002376  026727  027774  000776          CMP     KBBUF,#776              ;IS IT WITHIN LIMITS?
  611  002404  101406                          BLOS    PRMT6
  612  002406                                  PNTM    AGAIN
  (1)  002406  012700  034326                  MOV     #AGAIN,R0               ;PRINT MESSAGE
  (1)  002412  004767  027444                  JSR     PC,TYPOUT               ;POINTED TO BY AGAIN
  613  002416  000167  177714                  JMP     PRMT5
  614  002422                          PRMT6:  PNTM    TMTR                    ;PRINT "TRANSMITTER"
  (1)  002422  012700  034201                  MOV     #TMTR,R0                ;PRINT MESSAGE
  (1)  002426  004767  027430                  JSR     PC,TYPOUT               ;POINTED TO BY TMTR
  615  002432                                  PNTM    PRIOTY                  ;PRINT "PRIORITY LEVEL IS"
  (1)  002432  012700  034374                  MOV     #PRIOTY,R0              ;PRINT MESSAGE
  (1)  002436  004767  027420                  JSR     PC,TYPOUT               ;POINTED TO BY PRIOTY
  616  002442  016767  032570  027726          MOV     FKPRIO,KBBUF            ;LOAD DEFAULT PRIORITY
  617  002450  004767  027450                  JSR     PC,INPKB                ;GET KBD INPUT
  618  002454  026727  027716  000007          CMP     KBBUF,#7                ;IS IT WITHIN LIMITS?
  619  002462  003406                          BLE     PRMT7                   ;LOW ENOUGH, O.K.
  620  002464                                  PNTM    AGAIN
  (1)  002464  012700  034326                  MOV     #AGAIN,R0               ;PRINT MESSAGE
  (1)  002470  004767  027366                  JSR     PC,TYPOUT               ;POINTED TO BY AGAIN
  621  002474  000167  177722                  JMP     PRMT6
  622  002500  026727  027672  000004  PRMT7:  CMP     KBBUF,#4                ;HIGH ENOUGH?
  623  002506  002006                          BGE     PRMT8
  624  002510                                  PNTM    AGAIN
  (1)  002510  012700  034326                  MOV     #AGAIN,R0               ;PRINT MESSAGE
```

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(1) 002514 004767 027342                JSR     PC,TYPOUT               ;POINTED TO BY AGAIN
625 002520 000167 177676                JMP     PRMT6
626 002524 006367 027646        PRMT8:  ASL     KBBUF
627 002530 006367 027642                ASL     KBBUF
628 002534 006367 027636                ASL     KBBUF
629 002540 006367 027632                ASL     KBBUF
630 002544 006367 027626                ASL     KBBUF                   ;SHIFT INTO PLACE
631 002550 016767 027622 032466         MOV     KBBUF,XPRIO             ;LOAD NEW PRIORITY.
632 002556                      PRMT9:  PNTM    RECVR                   ;PRINT "RECEIVER
(1) 002556 012700 034210                MOV     #RECVR,R0               ;PRINT MESSAGE
(1) 002562 004767 027274                JSR     PC,TYPOUT               ;POINTED TO BY RECVR
633 002566                              PNTM    PRIOTY                  ;PRINT "PRIORITY LEVEL IS "
(1) 002566 012700 034374                MOV     #PRIOTY,R0              ;PRINT MESSAGE
(1) 002572 004767 027264                JSR     PC,TYPOUT               ;POINTED TO BY PRIOTY
634 002576 016767 032434 027572         MOV     FKPRIO,KBBUF            ;LOAD DEFAULT PRIORITY
635 002604 004767 027314                JSR     PC,INPKB                ;GET KBD INPUT
636 002610 026727 027562 000007         CMP     KBBUF,#7                ;LOW ENOUGH, O.K.
637 002616 003406                       BLE     3$
638 002620                              PNTM    AGAIN
(1) 002620 012700 034326                MOV     #AGAIN,R0               ;PRINT MESSAGE
(1) 002624 004767 027232                JSR     PC,TYPOUT               ;POINTED TO BY AGAIN
639 002630 000167 177722                JMP     PRMT9
640 002634 026727 027536 000004 3$:     CMP     KBBUF,#4                ;HIGH ENOUGH?
641 002642 002006                       BGE     4$
642 002644                              PNTM    AGAIN
(1) 002644 012700 034326                MOV     #AGAIN,R0               ;PRINT MESSAGE
(1) 002650 004767 027206                JSR     PC,TYPOUT               ;POINTED TO BY AGAIN
643 002654 000167 177676                JMP     PRMT9
644 002660 006367 027512        4$:     ASL     KBBUF
645 002664 006367 027506                ASL     KBBUF
646 002670 006367 027502                ASL     KBBUF
647 002674 006367 027476                ASL     KBBUF
648 002700 006367 027472                ASL     KBBUF                   ;SHIFT INTO PLACE
649 002704 016767 027466 032334         MOV     KBBUF,RPRIO             ;LOAD NEW PRIORITY
650 002712 004767 001132                JSR     PC,DEVGEN               ;GENERATE PCL-11 ADDRESSES
651 002716                      RESTRT: PNTM    TMTR                    ;PRINT "TRANSMITTER"
(1) 002716 012700 034201                MOV     #TMTR,R0                ;PRINT MESSAGE
(1) 002722 004767 027134                JSR     PC,TYPOUT               ;POINTED TO BY TMTR
652 002726                              PNTM    TDMAD                   ;PRINT "TDM BUS ADDRESS"
(1) 002726 012700 034416                MOV     #TDMAD,R0               ;PRINT MESSAGE
(1) 002732 004767 027124                JSR     PC,TYPOUT               ;POINTED TO BY TDMAD
653 002736 012767 000001 027432         MOV     #1,KBBUF                ;LOAD DEFAULT OF "1"
654 002744 004767 027154                JSR     PC,INPKB                ;GET KBD INPUT.
655 002750 005767 027422                TST     KBBUF                   ;DON'T ALLOW 0
656 002754 001006                       BNE     ADOK
657 002756                              PNTM    AGAIN
(1) 002756 012700 034326                MOV     #AGAIN,R0               ;PRINT MESSAGE
(1) 002762 004767 027074                JSR     PC,TYPOUT               ;POINTED TO BY AGAIN
658 002766 000167 177724                JMP     RESTRT
659 002772 026727 027400 000040 ADOK:   CMP     KBBUF,#40               ;CAN'T BE 40 OR HIGHER
660 003000 103406                       BLO     ADGD
661 003002                              PNTM    AGAIN
(1) 003002 012700 034326                MOV     #AGAIN,R0               ;PRINT MESSAGE
(1) 003006 004767 027050                JSR     PC,TYPOUT               ;POINTED TO BY AGAIN
662 003012 000167 177700                JMP     RESTRT
663 003016 116767 027354 032203 ADGD:   MOVB    KBBUF,TRAD+1            ;SAVE ADDR IN UPPER BYTE
```

```
                                                                J  2
  664  003024                          PRMT10: PNTM    RECVR                   ;PRINT "RECIEVER"
  (1)  003024  012700  034210                  MOV     #RECVR,R0               ;PRINT MESSAGE
  (1)  003030  004767  027026                  JSR     PC,TYPOUT               ;POINTED TO BY RECVR
  665  003034                                  PNTM    TDMAD                   ;PRINT "TDM BUS ADDRESS"
  (1)  003034  012700  034416                  MOV     #TDMAD,R0               ;PRINT MESSAGE
  (1)  003040  004767  027016                  JSR     PC,TYPOUT               ;POINTED TO BY TDMAD
  666  003044  012767  000001  027324          MOV     #1,KBBUF                ;LOAD DEFAULT OF 1
  667  003052  004767  027046                  JSR     PC,INPKB                ;GET KBD INPUT
  668  003056  005767  027314                  TST     KBBUF                   ;DON'T ALLOW 0
  669  003062  001006                          BNE     ADROK
  670  003064                                  PNTM    AGAIN
  (1)  003064  012700  034326                  MOV     #AGAIN,R0               ;PRINT MESSAGE
  (1)  003070  004767  026766                  JSR     PC,TYPOUT               ;POINTED TO BY AGAIN
  671  003074  000167  177724                  JMP     PRMT10
  672  003100  026727  027272  000040  ADROK: CMP     KBBUF,#40               ;CAN'T BE 40 OR HIGHER
  673  003106  103406                          BLO     ADRGD
  674  003110                                  PNTM    AGAIN
  (1)  003110  012700  034326                  MOV     #AGAIN,R0               ;PRINT MESSAGE
  (1)  003114  004767  026742                  JSR     PC,TYPOUT               ;POINTED TO BY AGAIN
  675  003120  000167  177700                  JMP     PRMT10
  676  003124  116767  027246  032073  ADRGD: MOVB    KBBUF,RCAD+1            ;SAVE ADDR IN UPPER BYTE
  677  003132                          BCONT:  PNTM    TSTSEL                  ;PRINT "SELECT TEST <CR> = HELP"
  (1)  003132  012700  034652                  MOV     #TSTSEL,R0              ;PRINT MESSAGE
  (1)  003136  004767  026720                  JSR     PC,TYPOUT               ;POINTED TO BY TSTSEL
  678  003142  012767  000077  027226          MOV     #77,KBBUF               ;DEFAULT TO HELP
  679  003150  004767  026750                  JSR     PC,INPKB                ;GET KEYBOARD INPUT
  680  003154  026727  027216  000005          CMP     KBBUF,#5                ;DID HE TYPE 5 OR HIGHER?
  681  003162  103005                          BHIS    BHLPMG                  ;YES, GIVE ASSISTANCE.
  682  003164  005767  027206                  TST     KBBUF                   ;HOPE IT WASN'T "0"
  683  003170  001402                          BEQ     BHLPMG                  ;'CAUSE THAT'S NO GOOD EITHER
  684  003172  000167  000014                  JMP     TESTGO                  ;EVERYTHING OK.  GO TO TESTS
  685  003176                          BHLPMG: PNTM    HLPMSG                  ;NO GOOD, PRINT HELP MESSAGE.
  (1)  003176  012700  034707                  MOV     #HLPMSG,R0              ;PRINT MESSAGE
  (1)  003202  004767  026654                  JSR     PC,TYPOUT               ;POINTED TO BY HLPMSG
  686  003206  000167  177720                  JMP     BCONT
  687
  688  003212  016767  027160  032000  TESTGO: MOV     KBBUF,TESTNO            ;SAVE TEST NUMBER
  689  003220  005767  031746                  TST     SWRFLG                  ;GOT ANY SWITCHES?
  690  003224  001402                          BEQ     1$                      ;YES, YOU'RE ON YOUR OWN
  691  003226  004767  026026                  JSR     PC,SWDMP                ;OTHERWISE, SHOW SW OPTIONS.
  692  003232  005067  031750          1$:     CLR     PSN01                   ;CLEAR END PASS COUNTER
  693  003236  005067  031746                  CLR     PSN02                   ;CLEAR END PASS A COUNTER
  694  003242  005067  031744                  CLR     PSN03                   ;CLEAR END PASS B COUNTER
  695  003246  005067  031742                  CLR     PSN04                   ;CLEAR END PASS C COUNTER
  696  003252  026727  031742  000001          CMP     TESTNO,#1               ;SELECT TEST 1?
  697  003260  001012                          BNE     2$                      ;NO.
  698  003262  005067  031734                  CLR     $4FLAG                  ;CLEAR END PASS INHIBIT FLAG
  699  003266                                  PNTM    TXHDR                   ;PRINT XMTR TEST HEADER
  (1)  003266  012700  034005                  MOV     #TXHDR,R0               ;PRINT MESSAGE
  (1)  003272  004767  026564                  JSR     PC,TYPOUT               ;POINTED TO BY TXHDR
  700  003276  004767  000220          11$:    JSR     PC,TEST1                ;YES, GO DO IT (LOOP)
  701  003302  000167  177770                  JMP     11$
  702  003306  026727  031706  000002  2$:     CMP     TESTNO,#2               ;SELECT TEST 2?
  703  003314  001012                          BNE     3$                      ;NO.
  704  003316  005067  031700                  CLR     $4FLAG                  ;CLEAR END PASS INHIBIT FLAG
  705  003322                                  PNTM    RCHDR           ;PRINT RCVR TEST HEADER
```

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  (1) 003322  012700  034041                MOV     #RCHDR,R0           ;PRINT MESSAGE
  (1) 003326  004767  026530                JSR     PC,TYPOUT           ;POINTED TO BY RCHDR
706 003332  004767  011276          21$:    JSR     PC,TEST2            ;YES, GO DO IT (LOOP)
707 003336  000167  177770                  JMP     21$
708 003342  026727  031652  000003  3$:     CMP     TESTNO,#3           ;SELECT TEST 3?
709 003350  001012                        BNE     4$                  ;NO.
710 003352  005067  031644                CLR     $4FLAG              ;CLEAR END PASS INHIBIT FLAG
711 003356                                PNTM    XRHDR               ;PRINT LOOP TEST HEADER
  (1) 003356  012700  034072                MOV     #XRHDR,R0           ;PRINT MESSAGE
  (1) 003362  004767  026474                JSR     PC,TYPOUT           ;POINTED TO BY XRHDR
712 003366  004767  017136          31$:    JSR     PC,TEST3            ;YES, GO DO IT.
713 003372  000167  177770                  JMP     31$
714 003376  026727  031616  000004  4$:     CMP     TESTNO,#4           ;SELECT TEST 4?
715 003404  001044                        BNE     5$                  ;NO?????
716 003406  012767  177777  031606        MOV     #-1,$4FLAG          ;SET FLAG TO INHIBIT END PASS
717 003414                                PNTM    ALTHDR              ;PRINT TRIPLE TEST HEADER
  (1) 003414  012700  034141                MOV     #ALTHDR,R0          ;PRINT MESSAGE
  (1) 003420  004767  026436                JSR     PC,TYPOUT           ;POINTED TO BY ALTHDR
718 003424  004767  000072          41$:    JSR     PC,TEST1
719 003430  004767  011200                  JSR     PC,TEST2
720 003434  004767  017070                  JSR     PC,TEST3            ;DO ALL TESTS (LOOP)
721 003440  005267  031550                INC     PSN04               ;UPDATE PASS COUNTER
722 003444                                PNTM    PEND                ;PRINT END PASS #
  (1) 003444  012700  033557                MOV     #PEND,R0            ;PRINT MESSAGE
  (1) 003450  004767  026406                JSR     PC,TYPOUT           ;POINTED TO BY PEND
723 003454  016700  031534                MOV     PSN04,R0            ;GET PASS # TO R0
724 003460  004767  026770                JSR     PC,DECPNT           ;PRINT IT IN DECIMAL
725 003464  012700  000040                MOV     #40,R0              ;ALSO, PRINT "C"
726 003470  004767  027150                JSR     PC,TTO
727 003474  012700  000103                MOV     #'C,R0              ;TO IDENTIFY END PASS OF
728 003500  004767  027140                JSR     PC,TTO              ;TEST 4
729 003504  005000                        CLR     R0
730 003506  004767  027132                JSR     PC,TTO              ;NULLS TO ALLOW PASS #
731 003512  004767  027126                JSR     PC,TTO
732 003516  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

003522                          TEST1:  MTPS    #P7
003522  012737  000340  177776  (1)     MOV     #P7,@#PS
003530  012767  000010  031440  749     MOV     #10,ITER                ;INITIAL ITERATION OF 10 PER PASS
003536  004767  025464          750     JSR     PC,MONIT                ;CHECK FOR KBD INPUT
003542  032777  002000  026052  751     BIT     #B10,@SR                        ;CHECK SW 10
003550  001424                  752     BEQ     LOOP                    ;IF 0, RUN SEQUENTIALLY
003552  017767  026044  031420  753     MOV     @SR,SWI         ;IF SET, GET TEST # FROM SWR
003560  042767  177760  031412  754     BIC     #-20,SWI                ;MASK LOW DIGIT
003566  026727  031406  000010  755     CMP     SWI,#10                 ;DON'T ALLOW SW = >10
003574  003012                  756     BGT     LOOP                    ;IF GREATER, START 1'ST TEST
003576  000241                  757     CLC                             ;CLEAR "C" BIT BEFORE ROTATE
003600  006167  031374          758     ROL     SWI
003604  006167  031370          759     ROL     SWI                     ;MULTIPLY BY 4
003610  062767  003622  031362  760     ADD     #LOOP,SWI               ;GENERATE OFFSET
003616  000177  031356          761     JMP     @SWI                    ;GO TO SELECTED TEST
003622  004767  000550          762 LOOP:   JSR     PC,XINIT                        ;DO INITIAL CLR TEST
003626  004767  001176          763     JSR     PC,TCRTST               ;DO TCR REG TEST
003632  004767  001760          764     JSR     PC,BCTST                ;DO BYTE COUNT REG TST
003636  004767  002130          765     JSR     PC,BATST                ;DO BYTE ADDR REG TEST
003642  004767  002300          766     JSR     PC,MSRTST               ;DO MASTER SECTION TEST
003646  004767  004312          767     JSR     PC,SILTST               ;DO DATA SILO TEST
003652  004767  005752          768     JSR     PC,TSRTST               ;DO TSR REG & ERRORS TEST
003656  004767  010010          769     JSR     PC,INTST                ;DO INTERRUPT TEST
003662  004767  010470          770     JSR     PC,CRCTST               ;DO CRC GENERATION TEST
003666  032777  004000  025726  771     BIT     #B11,@SR                ;CHECK SWITCH 11
003674  001003                  772     BNE     XEND                    ;PRINT END IF SET
003676  005367  031274          773     DEC     ITER                    ;OTHERWISE, REITERATE
003702  001347                  774     BNE     LOOP
003704  005767  031312          775 XEND:   TST     $4FLAG                  ;SHOULD WE PRINT END PASS?
003710  001020                  776     BNE     REPEAT                  ;NO, LEAVE
003712  005267  031270          777     INC     PSN01                   ;UPDATE PASS NUMBER
003716                          778     PNTM    PEND                    ;PRINT "END PASS # "
003716  012700  033557          (1)     MOV     #PEND,R0                ;PRINT MESSAGE
003722  004767  026134          (1)     JSR     PC,TYPOUT               ;POINTED TO BY PEND
003726  016700  031254          779     MOV     PSN01,R0
003732  004767  026516          780     JSR     PC,DECPNT               ;PRINT PASSNO.
003736  005000                  781     CLR     R0
003740  004767  026700          782     JSR     PC,TTO                  ;PRINT NULLS TO ALLOW TIME
003744  005000                  783     CLR     R0                      ;FOR PASS # TO BE PRINTED
003746  004767  026672          784     JSR     PC,TTO
003752  000207                  785 REPEAT: RTS     PC                      ;RETURN TO SUPERVISOR
                                786
```

```
                                        ;NON-SWR PROCESSOR HALT SUBROUTINE

003754  005767  031212          SWHLT:  TST     SWRFLG                  ;ANY HARDWARE SWR?
003760  001403                  BEQ     1$                      ;IF YES GO HALT
003762  004767  025272          JSR     PC,SWDMP                ;IF NOT GO GET SW LOC
003766  000207                  RTS     PC
003770  000000          1$:     HALT
003772  000207                  RTS     PC                      ;RETURN IF CONT KEY HIT

003774  012767  031620  025620  SRTST:  MOV     #SSWR,SR                ;NO HDWARE SWR, USE MEM LOC
004002  012767  177777  031162          MOV     #-1,SWRFLG              ;SET SOFT SWR FLAG
004010  000002                  RTI                             ;RETURN

                                        ;THIS ROUTINE ENTERED FOR SCOPE ROUTINES

004012  004767  025210          SCPRTN: JSR     PC,MONIT                ;SEE IF  S WAS TYPED
004016  005777  025600                  TST     @SR                     ;BIT 15 SET?
004022  100402                  BMI     SBAK                    ;YES, DON'T HALT
004024                          HLT                             ;COMMON ERROR HALT.  EXAMINE
(1) 004024  004767  177724              JSR     PC,SWHLT
                                                                ;R5 FOR PC OF ERROR
004030  012500          SBAK:   MOV     (R5)+,R0                ;GET DIRECTION FOR SCOPE LOOP
004032  032777  020000  025562          BIT     #B13,@SR                ;SW 13 SET?
004040  001402                  BEQ     SCONT                   ;NO, DON'T LOOP
004042  012605                  MOV     (SP)+,R5                ;YES, RESTORE R5
004044  000110                  JMP     (R0)                    ;AND LOOP
004046  000205          SCONT:  RTS     R5                      ;JUST RETURN
```

```
                                        .SBTTL UTILITY ROUTINES
                                ;DEVICE ADDRESS GENERATION
                        DEVGEN: MOV     TXMADR,R0               ;GET BASIC XMTR ADDRESS
004050  016700  031250          MOV     R0,TCR                  ;GENERATE TCR
004054  010067  031170          ADD     #2,R0
004060  062700  000002          MOV     R0,TSR                  ;GENERATE TSR
004064  010067  031162          ADD     #2,R0
004070  062700  000002          MOV     R0,TSDB                 ;GENERATE TSDB
004074  010067  031154          ADD     #2,R0
004100  062700  000002          MOV     R0,TSBC                 ;GENERATE TSBC
004104  010067  031146          ADD     #2,R0
004110  062700  000002          MOV     R0,TSBA                 ;GENERATE TSBA
004114  010067  031140          ADD     #2,R0
004120  062700  000002          MOV     R0,TMMR                 ;GENERATE TMMR
004124  010067  031132          INC     R0
004130  005200                  MOV     R0,TMMRH                ;GEN.  TMMR HIGH BYTE
004132  010067  031126          INC     R0
004136  005200                  MOV     R0,TSCRC                ;GENERATE TSCRC
004140  010067  031122          MOV     TXMVEC,TXVEC            ;GENERATE TXVEC
004144  016767  031150  031066  MOV     RCVADR,R0               ;GET BASIC RCVR ADDRESS
004152  016700  031150          MOV     R0,RCR                  ;GENERATE RCR
004156  010067  031106          ADD     #2,R0
004162  062700  000002          MOV     R0,RSR                  ;GENERATE RSR
004166  010067  031100          ADD     #2,R0
004172  062700  000002          MOV     R0,RDDB                 ;GENERATE RDDB
004176  010067  031072          ADD     #2,R0
004202  062700  000002          MOV     R0,RDBC                 ;GENERATE RDBC
004206  010067  031064          ADD     #2,R0
004212  062700  000002          MOV     R0,RDBA                 ;GENERATE RDBA
004216  010067  031056          ADD     #4,R0
004222  062700  000004          MOV     R0,RDCRC                ;GENERATE RDCRC
004226  010067  031050          MOV     RCVVEC,RCVEC            ;GENERATE RCVEC
004232  016767  031064  031002  RTS     PC                      ;RETURN.
004240  000207

                                ;DEVICE TEST TRAP HANDLER

                        DVATST: MOV     #ISP,SP
004242  012706  002000          PNTM    INVLAD                  ;PRINT NON-EXST ADDR MSG
004246                  (1)     MOV     #INVLAD,R0              ;PRINT MESSAGE
004246  012700  034444  (1)     JSR     PC,TYPOUT               ;POINTED TO BY INVLAD
004252  004767  025604          JMP     PROMT                   ;RETURN TO ASK ALL AGAIN
004256  000167  175574

                                ;ROUTINE TO CATCH TRAPS TO 4

                        ERRTRP: MOV     (SP),TEMP               ;SAVE STACK FOR ADDRESS OF TRAP
004262  011667  030730          MOV     #P7,@#PS                ;RAISE PRIORITY
004266  012737  000340  177776  MOV     #ISP,SP                 ;FIX THE STACK
004274  012706  002000          PNTM    TRAP4                   ;PRINT "TRAPPED TO 4 " MSG
004300                  (1)     MOV     #TRAP4,R0               ;PRINT MESSAGE
004300  012700  034517  (1)     JSR     PC,TYPOUT               ;POINTED TO BY TRAP4
004304  004767  025552
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  866  004310  162767  000002  030700          SUB     #2,TEMP
  867  004316  016700  030674                  MOV     TEMP,R0
  868  004322  004767  026052                  JSR     PC,OCTPNT               ;PRINT WHERE FROM.
  869  004326  000167  176600                  JMP     BCONT
  870
  871
  872                                  ;STANDARD DELAY SUBROUTINE
  873                                  ;MODIFY LOCATION "DLCON" TO CHANGE
  874                                  ;DELAY PERIOD.
  875
  876  004332  012567  030630          DELAY:  MOV     (R5)+,DILLY             ;GET DELAY PARAMETER
  877  004336  005767  025262                  TST     DLCON                   ;IS DLCON = 0?
  878  004342  001003                          BNE     DLWT                    ;IF NOT, CARRY ON
  879  004344  012767  000001  025252          MOV     #1,DLCON                ;IF SO, MAKE IT = 1
  880  004352  016767  025246  030610  DLWT:   MOV     DLCON,DLY               ;GET DELAY CONSTANT
  881  004360  005367  030604          DLWT1:  DEC     DLY
  882  004364  001375                          BNE     DLWT1
  883  004366  005367  030574                  DEC     DILLY
  884  004372  001367                          BNE     DLWT
  885  004374  000205                          RTS     R5
  886
```

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                                        .SBTTL  INITIALIZE TEST

                                ;CHECK INITIAL CONDITIONS AFTER A RESET

004376  000005                  XINIT:  RESET                   ;CLEAR ALL
004400  017767  030652  025450          MOV     @TSBC,BAD       ;GET BYTE COUNT REGISTER
004406  005067  025446                  CLR     GOOD
004412  005767  025440                  TST     BAD             ;WAS TSBC = 0?
004416  001414                          BEQ     XA1
004420                                  DATERR   N      ;ERROR: TSBC NOT CLEARED BY RESET
(1)                                                             ;******* ERROR 1 *******
(1)     004420  032777  040000  025174        BIT     #B14,@SR
(1)     004426  001005                        BNE     .+14
(1)     004430  012767  000001  025416        MOV     #1,ERRNUM
(1)     004436  004767  025250                JSR     PC,DERR
(1)             000002                  N     =       N+1
004442                                  SCOPE   XINIT
(1)     004442  004567  177344                JSR     R5,SCPRTN
(1)     004446  004376                        XINIT
004450  017767  030604  025400  XA1:    MOV     @TSBA,BAD       ;GET BYTE ADDRESS REGISTER
004456  005067  025376                  CLR     GOOD
004462  005767  025370                  TST     BAD             ;WAS TSBA = 0?
004466  001414                          BEQ     XA2
004470                                  DATERR   N      ;ERROR: TSBA NOT CLEARED BY RESET
(1)                                                             ;******* ERROR 2 *******
(1)     004470  032777  040000  025124        BIT     #B14,@SR
(1)     004476  001005                        BNE     .+14
(1)     004500  012767  000002  025346        MOV     #2,ERRNUM
(1)     004506  004767  025200                JSR     PC,DERR
(1)             000003                  N     =       N+1
004512                                  SCOPE   XINIT
(1)     004512  004567  177274                JSR     R5,SCPRTN
(1)     004516  004376                        XINIT
004520  017767  030536  025330  XA2:    MOV     @TMMR,BAD       ;GET TMMR REGISTER
004526  042767  000377  025322          BIC     #377,BAD        ;MASK OFF ANY ADDR SILO DATA
004534  012767  050000  025316          MOV     #50000,GOOD     ;SET UP GOOD FOR COMPARE
004542  026767  025312  025306          CMP     GOOD,BAD        ;IGNORE BIT 8 WHEN DETERMINING
004550  001420                          BEQ     XA3             ;ERROR
004552  022767  050400  025276          CMP     #50400,BAD
004560  001414                          BEQ     XA3
004562                                  DATERR   N      ;ERROR: TMMR NOT INITIATED BY RESET
(1)                                                             ;******* ERROR 3 *******
(1)     004562  032777  040000  025032        BIT     #B14,@SR
(1)     004570  001005                        BNE     .+14
(1)     004572  012767  000003  025254        MOV     #3,ERRNUM
(1)     004600  004767  025106                JSR     PC,DERR
(1)             000004                  N     =       N+1
004604                                  SCOPE   XINIT
(1)     004604  004567  177202                JSR     R5,SCPRTN
(1)     004610  004376                        XINIT
004612  017767  030434  025236  XA3:    MOV     @TSR,BAD        ;GET TSR REGISTER
004620  012767  000400  025232          MOV     #400,GOOD       ;SET UP GOOD FOR COMPARE
004626  026767  025226  025222  XA4:    CMP     GOOD,BAD
004634  001414                          BEQ     XA5
004636                                  DATERR   N      ;ERROR: TSR NOT INITIALIZED BY RESET
(1)                                                             ;******* ERROR 4 *******
```

```
   (1)  004636  032777  040000  024756          BIT     #B14,@SR
   (1)  004644  001005                          BNE     .+14
   (1)  004646  012767  000004  025200          MOV     #4,ERRNUM
   (1)  004654  004767  025032                  JSR     PC,DERR
   (1)          000005                  N       =       N+1
   919  004660                                  SCOPE   XINIT
   (1)  004660  004567  177126                  JSR     R5,SCPRTN
   (1)  004664  004376                          XINIT
   920  004666  017767  030356  025162  XA5:    MOV     @TCR,BAD                ;GET TCR REGISTER
   921  004674  005067  025160                  CLR     GOOD
   922  004700  005767  025152                  TST     BAD                     ;WAS TCR = 0?
   923  004704  001414                          BEQ     XA6
   924  004706                                  DATERR   N              ;ERROR: TCR NOT CLR'D BY RESET
   (1)                                                                         ;******* ERROR 5 *******
   (1)  004706  032777  040000  024706          BIT     #B14,@SR
   (1)  004714  001005                          BNE     .+14
   (1)  004716  012767  000005  025130          MOV     #5,ERRNUM
   (1)  004724  004767  024762                  JSR     PC,DERR
   (1)          000006                  N       =       N+1
   925  004730                                  SCOPE   XINIT
   (1)  004730  004567  177056                  JSR     R5,SCPRTN
   (1)  004734  004376                          XINIT
   926  004736  017767  030324  025112  XA6:    MOV     @TSCRC,BAD
   927  004744  005067  025110                  CLR     GOOD                    ;CHECK CRC REGISTER
   928  004750  005767  025102                  TST     BAD                     ;WAS IT 0?
   929  004754  001414                          BEQ     XA7                     ;YES, CONTINUE
   930  004756                                  DATERR   N              ;ERROR: TSCRC NOT CLEARED BY RESET
   (1)                                                                         ;******* ERROR 6 *******
   (1)  004756  032777  040000  024636          BIT     #B14,@SR
   (1)  004764  001005                          BNE     .+14
   (1)  004766  012767  000006  025060          MOV     #6,ERRNUM
   (1)  004774  004767  024712                  JSR     PC,DERR
   (1)          000007                  N       =       N+1
   931  005000                                  SCOPE   XINIT
   (1)  005000  004567  177006                  JSR     R5,SCPRTN
   (1)  005004  004376                          XINIT
   932  005006  004767  024214          XA7:    JSR     PC,MONIT
   933  005012  032777  010000  024602          BIT     #B12,@SR                ;CHECK EXIT SW (SW 12)
   934  005020  001402                          BEQ     XART
   935  005022  000167  177350                  JMP     XINIT                   ;IF SET, STAY IN THIS TEST
   936  005026  000207                  XART:   RTS     PC
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                                        .SBTTL  TCR TEST

                                        ;TRANSMITTER COMMAND REGISTER TEST

005030  005077  030214        TCRTST: CLR     @TCR                    ;CLEAR TCR REG
005034  012767  017400  025016 XD1:    MOV     #17400,GOOD             ;SET ALL DEST. CODE BITS
005042  016777  025012  030200        MOV     GOOD,@TCR
005050  017767  030174  025000        MOV     @TCR,BAD                ;AND READ THEM BACK
005056  026767  024776  024772        CMP     GOOD,BAD                ;ALL DEST CODE BITS SET?
005064  001414                        BEQ     XD2
005066                                DATERR  N               ;ERROR: CANNOT SET SOME DEST. CODE BITS
(1)                                                                     ;******* ERROR 7 *******
(1)     005066  032777  040000  024526        BIT     #B14,@SR
(1)     005074  001005                        BNE     .+14
(1)     005076  012767  000007  024750        MOV     #7,ERRNUM
(1)     005104  004767  024602                JSR     PC,DERR
(1)             000010                N       =       N+1
005110                                SCOPE   XD1
(1)     005110  004567  176676              JSR     R5,SCPRTN
(1)     005114  005034                       XD1
005116  005067  024736        XD2:    CLR     GOOD                    ;NOW CLR DEST. CODE BITS AFTER
005122  005077  030122                CLR     @TCR                    ;SETTING THEM
005126  017767  030116  024722        MOV     @TCR,BAD                ;READ THEM BACK
005134  042767  160377  024714        BIC     #160377,BAD             ;IGNORE ALL BUT DEST. CODE BITS
005142  026767  024712  024706        CMP     GOOD,BAD                ;ALL CLEAR?
005150  001414                        BEQ     XD3
005152                                DATERR  N               ;ERROR: CANNOT CLR SOME DEST.CODE BITS
(1)                                                                     ;******* ERROR 10 *******
(1)     005152  032777  040000  024442        BIT     #B14,@SR
(1)     005160  001005                        BNE     .+14
(1)     005162  012767  000010  024664        MOV     #10,ERRNUM
(1)     005170  004767  024516                JSR     PC,DERR
(1)             000011                N       =       N+1
005174                                SCOPE   XD2
(1)     005174  004567  176612              JSR     R5,SCPRTN
(1)     005200  005116                       XD2
005202  005077  030042        XD3:    CLR     @TCR
005206  005077  030040                CLR     @TSR                    ;CLEAR POSSIBLE TIMEOUT
005212  012767  120365  024640        MOV     #120365,GOOD            ;SET ST TXM,INH ADR INC,EA 16&17,
005220  016777  024634  030022        MOV     GOOD,@TCR               ;IE,RD SILO,SND WD,&RIB
005226  017767  030016  024622        MOV     @TCR,BAD                ;SEE IF THEY ALL SET
005234  026767  024620  024614        CMP     GOOD,BAD
005242  001414                        BEQ     XD4
005244                                DATERR  N               ;ERROR: BAD BITS IN TCR
(1)                                                                     ;******* ERROR 11 *******
(1)     005244  032777  040000  024350        BIT     #B14,@SR
(1)     005252  001005                        BNE     .+14
(1)     005254  012767  000011  024572        MOV     #11,ERRNUM
(1)     005262  004767  024424                JSR     PC,DERR
(1)             000012                N       =       N+1
005266                                SCOPE   XD3
(1)     005266  004567  176520              JSR     R5,SCPRTN
(1)     005272  005202                       XD3
005274  012777  137765  027746 XD4:    MOV     #137765,@TCR            ;SET ALL SETTABLE BITS IN TCR
005302  012777  177777  027746        MOV     #-1,@TSBC               ;AND IN TSBC
005310  012777  177777  027742        MOV     #-1,@TSBA               ;AND IN TSBA
```

```
  970  005316  012777  037240  027726        MOV     #37240,@TSR             ;AND IN TSR
  971  005324  052777  000002  027716        BIS     #2,@TCR                 ;B O A R D  I N I T
  972  005332  017767  027712  024516        MOV     @TCR,BAD                ;CHK TCR
  973  005340  005067  024514                CLR     GOOD
  974  005344  026767  024510  024504        CMP     GOOD,BAD                ;TCR = 0?
  975  005352  001414                        BEQ     XD5
  976  005354                                DATERR   N              ;ERROR: TCR NOT CLR'D BY BOARD INIT
  (1)                                                                   ;******* ERROR 12 *******
  (1)  005354  032777  040000  024240        BIT     #B14,@SR
  (1)  005362  001005                        BNE     .+14
  (1)  005364  012767  000012  024462        MOV     #12,ERRNUM
  (1)  005372  004767  024314                JSR     PC,DERR
  (1)          000013                  N     =       N+1
  977  005376                                SCOPE   XD4
  (1)  005376  004567  176410                JSR     R5,SCPRTN
  (1)  005402  005274                        XD4
  978  005404  017767  027646  024444  XD5.  MOV     @TSBC,BAD               ;CHECK TSBC
  979  005412  026767  024442  024436        CMP     GOOD,BAD                ;TSBC = 0?
  980  005420  001414                        BEQ     XD6
  981  005422                                DATERR   N              ;ERROR: TSBC NOT CLR'D BY BD INIT
  (1)                                                                   ;******* ERROR 13 *******
  (1)  005422  032777  040000  024172        BIT     #B14,@SR
  (1)  005430  001005                        BNE     .+14
  (1)  005432  012767  000013  024414        MOV     #13,ERRNUM
  (1)  005440  004767  024246                JSR     PC,DERR
  (1)          000014                  N     =       N+1
  982  005444                                SCOPE   XD4
  (1)  005444  004567  176342                JSR     R5,SCPRTN
  (1)  005450  005274                        XD4
  983  005452  017767  027602  024376  XD6:  MOV     @TSBA,BAD               ;TSBA = 0?
  984  005460  026767  024374  024370        CMP     GOOD,BAD
  985  005466  001414                        BEQ     XD7
  986  005470                                DATERR   N              ;ERROR: TSBA NOT CLR'D BY BD INIT
  (1)                                                                   ;******* ERROR 14 *******
  (1)  005470  032777  040000  024124        BIT     #B14,@SR
  (1)  005476  001005                        BNE     .+14
  (1)  005500  012767  000014  024346        MOV     #14,ERRNUM
  (1)  005506  004767  024200                JSR     PC,DERR
  (1)          000015                  N     =       N+1
  987  005512                                SCOPE   XD4
  (1)  005512  004567  176274                JSR     R5,SCPRTN
  (1)  005516  005274                        XD4
  988  005520  017767  027526  024330  XD7:  MOV     @TSR,BAD                ;TSR OK?
  989  005526  012767  000400  024324        MOV     #400,GOOD
  990  005534  026767  024320  024314  XD8:  CMP     GOOD,BAD
  991  005542  001414                        BEQ     XD9
  992  005544                                DATERR   N              ;ERROR: TSR BAD AFTER BD INIT
  (1)                                                                   ;******* ERROR 15 *******
  (1)  005544  032777  040000  024050        BIT     #B14,@SR
  (1)  005552  001005                        BNE     .+14
  (1)  005554  012767  000015  024272        MOV     #15,ERRNUM
  (1)  005562  004767  024124                JSR     PC,DERR
  (1)          000016                  N     =       N+1
  993  005566                                SCOPE XD4
  (1)  005566  004567  176220                JSR     R5,SCPRTN
  (1)  005572  005274                        XD4
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```
   994  005574  004767  023426          XD9:    JSR     PC,MONIT
   995  005600  032777  010000  024014          BIT     #B12,@SR
   996  005606  001402                          BEQ     XDRT                    ;LEAVE IF SW 12 = 0
   997  005610  000167  177214                  JMP     TCRTST                  ;OTHERWISE, MUST STAY
   998  005614  000207                  XDRT:   RTS     PC
```

```
                                        .SBTTL  TSBC TEST

                                ;BYTE COUNT REG. DATA TEST
                                ;SLIDE A ZERO THROUGH THE TSBC AND READ IT BACK
                                ;AS A DATA TEST OF THE REGISTER.

005616                          BCTST:  BDINIT  XMTR                    ;INIT XMTR MODULE
005624  012767  177777  027352          MOV     #-1,PAT                 ;SET PATTERN
005632  012767  000001  027342          MOV     #B00,MASK               ;SET BIT MASK
005640  016767  027340  024212  XB1:    MOV     PAT,GOOD                ;LOAD "GOOD" WITH PATTERN
005646  016777  024206  027402          MOV     GOOD,@TSBC              ;LOAD BYTE COUNT WITH PATTERN
005654  017767  027376  024174          MOV     @TSBC,BAD               ;READ IT BACK IMMEDIATELY
005662  026767  024172  024166          CMP     GOOD,BAD                ;IS IT O.K.?
005670  001414                          BEQ     XB2                     ;YES, CONTINUE
005672                                  DATERR   N              ;ERROR: BAD DATA IN TSBC
 (1)                                                            ;******* ERROR 16 *******
 (1)    005672  032777  040000  023722          BIT     #B14,@SR
 (1)    005700  001005                  BNE     .+14
 (1)    005702  012767  000016  024144          MOV     #16,ERRNUM
 (1)    005710  004767  023776          JSR     PC,DERR
 (1)            000017          N       =       N+1
005714                                  SCOPE   XB1
 (1)    005714  004567  176072          JSR     R5,SCPRTN
 (1)    005720  005640                  XB1
005722  032767  100000  027254  XB2:    BIT     #B15,PAT                ;DONE WHOLE REGISTER?
005730  001407                          BEQ     XB3                     ;YES, EXIT
005732  046767  027244  027244          BIC     MASK,PAT                ;NO, PREPARE FOR NEXT BIT
005740  006367  027236                  ASL     MASK
005744  000167  177670                  JMP     XB1                     ;GO DO NEXT BIT
005750  004767  023252          XB3:    JSR     PC,MONIT
005754  032777  010000  023640          BIT     #B12,@SR                ;IF SO, CONSIDER LEAVING
005762  001402                          BEQ     XBRT                    ;EXIT IF SW 12 = 0
005764  000167  177626                  JMP     BCTST                   ;STAY HERE IF SW 12 = 1
005770  000207          XBRT:   RTS     PC
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                                                .SBTTL  TSBA TEST

                                        ;BYTE ADDRESS REGISTER TEST
                                        ;SLIDE A ZERO THROUGH THE REGISTER AND READ IT BACK
                                        ;AS A DATA TEST OF THE REGISTER.

005772                          BATST:  BDINIT  XMTR                    ;INIT XMTR MODULE
006000  012767  177777  027176          MOV     #-1,PAT                 ;SET PATTERN
006006  012767  000001  027166          MOV     #B00,MASK               ;SET BIT MASK
006014  016767  027164  024036  XC1:    MOV     PAT,GOOD                ;LOAD  "GOOD" WITH PATTERN
006022  016777  024032  027230          MOV     GOOD,@TSBA              ;LOAD BUS ADDR WITH PATTERN
006030  017767  027224  024020          MOV     @TSBA,BAD               ;READ IT BACK IMMEDIATELY
006036  026767  024016  024012          CMP     GOOD,BAD
006044  001414                          BEQ     XC2
006046                                  DATERR   N              ;ERROR: BAD DATA IN TSBA
 (1)                                                                    ;******* ERROR 17 *******
 (1)    006046  032777  040000  023546          BIT     #B14,@SR
 (1)    006054  001005                          BNE     .+14
 (1)    006056  012767  000017  023770          MOV     #17,ERRNUM
 (1)    006064  004767  023622                  JSR     PC,DERR
 (1)    000020                  N       =       N+1
006070                                  SCOPE   XC1
 (1)    006070  004567  175716                  JSR     R5,SCPRTN
 (1)    006074  006014                          XC1
006076  032767  100000  027100  XC2:    BIT     #B15,PAT                ;DONE WHOLE REGISTER?
006104  001407                          BEQ     XC3                     ;YES, EXIT
006106  046767  027070  027070          BIC     MASK,PAT                ;NO, PREPARE FOR NEXT BIT
006114  006367  027062                  ASL     MASK
006120  000167  177670                  JMP     XC1                     ;GO DO NEXT BIT
006124  004767  023076          XC3:    JSR     PC,MONIT
006130  032777  010000  023464          BIT     #B12,@SR                ;IF SO, CONSIDER LEAVING
006136  001402                          BEQ     XCRT                    ;EXIT IF SW 12 = 0
006140  000167  177626                  JMP     BATST                   ;STAY HERE IF SW 12 = 1
006144  000207                  XCRT:   RTS     PC
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                                                        .SBTTL  MASTER SECTION TEST

                                                        ;TEST MASTER CONTROL AND ADDRESS SILO

006146                                          MSRTST: BDINIT  XMTR                    ;INIT BOADR
006154  112777  000001  027102                        MOVB    #1,@TMMRH               ;SET MASTER FLOP
006162  132777  000001  027074                        BITB    #1,@TMMRH               ;IS MASTER SET?
006170  001014                                        BNE     XE1
006172                                                ERROR    N              ;ERROR: COULD NOT SET MASTER FLOP
(1)                                                                                     ;******* ERROR 20 *******
(1)     006172  032777  040000  023422                BIT     #B14,@SR
(1)     006200  001005                                BNE     .+14
(1)     006202  012767  000020  023644                MOV     #20,ERRNUM
(1)     006210  004767  023412                        JSR     PC,ERR
(1)             000021                          N     =       N+1
006214                                                SCOPE   MSRTST
(1)     006214  004567  175572                        JSR     R5,SCPRTN
(1)     006220  006146                                MSRTST
006222  004767  023000                          XE1:  JSR     PC,MONIT
006226  032777  001000  023366                        BIT     #B09,@SR                ;CHECK SW 09
006234  001024                                        BNE     XE3                     ;IF ON, SKIP SCOPE LOOP
006236  012767  177777  026730                        MOV     #-1,PNTFLG              ;SET PRINT ALLOW FLAG
006244                                                PNTM    SCSEC                   ;OTHERWISE PRINT "SCOPE SECTION..ETC"
(1)     006244  012700  033573                        MOV     #SCSEC,R0               ;PRINT MESSAGE
(1)     006250  004767  023606                        JSR     PC,TYPOUT               ;POINTED TO BY SCSEC
006254  005067  026714                                CLR     PNTFLG                  ;CLEAR PRINT ALLOW FLAG
006260  005767  026706                                TST     SWRFLG                  ;REAL SW REG?
006264  001402                                        BEQ     XE2                     ;YES, SKIP
006266  004767  022766                                JSR     PC,SWDMP
006272  004767  022730                          XE2:  JSR     PC,MONIT
006276  032777  001000  023316                        BIT     #B09,@SR                ;KEEP AN EYE ON SW 09
006304  001772                                        BEQ     XE2                     ;STAY HERE 'TILL IT GETS SET
006306  142777  000001  026750                  XE3:  BICB    #1,@TMMRH               ;CLR MASTER FLOP
006314  132777  000001  026742                        BITB    #1,@TMMRH               ;IS MASTER CLEAR?
006322  001414                                        BEQ     XE3A
006324                                                ERROR    N              ;ERROR: COULD NOT CLR MASTER FLOP
(1)                                                                                     ;******* ERROR 21 *******
(1)     006324  032777  040000  023270                BIT     #B14,@SR
(1)     006332  001005                                BNE     .+14
(1)     006334  012767  000021  023512                MOV     #21,ERRNUM
(1)     006342  004767  023260                        JSR     PC,ERR
(1)             000022                          N     =       N+1
006346                                                SCOPE   XE3
(1)     006346  004567  175440                        JSR     R5,SCPRTN
(1)     006352  006306                                XE3
006354  152777  000004  026702                XE3A:   BISB    #4,@TMMRH               ;SET "NOW MASTER" FLOP
006362  132777  000004  026674                        BITB    #4,@TMMRH               ;IS IT SET?
006370  001014                                        BNE     XE3B                    ;YES, GO TO CLEAR IT
006372                                                ERROR    N              ;ERROR: COULD NOT SET "NOW MASTER FLOP
(1)                                                                                     ;******* ERROR 22 *******
(1)     006372  032777  040000  023222                BIT     #B14,@SR
(1)     006400  001005                                BNE     .+14
(1)     006402  012767  000022  023444                MOV     #22,ERRNUM
(1)     006410  004767  023212                        JSR     PC,ERR
(1)             000023                          N     =       N+1
006414                                                SCOPE   XE3A
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  (1)  006414  004567  175372                    JSR     R5,SCPRTN
  (1)  006420  006354                            XE3A
1086   006422  142777  000004  026634  XE3B:     BICB    #4,@TMMRH           ;OKAY, NOW CLEAR "NOW MASTER"
1087   006430  132777  000004  026626            BITB    #4,@TMMRH           ;IS IT CLEAR?
1088   006436  001414                            BEQ     XE5A                ;YES, OKAY.
1089   006440                                     ERROR    N          ;ERROR: COULD NOT CLEAR "NOW MASTER"
  (1)                                                                        ;******* ERROR 23 *******
  (1)  006440  032777  040000  023154            BIT     #B14,@SR
  (1)  006446  001005                            BNE     .+14
  (1)  006450  012767  000023  023376            MOV     #23,ERRNUM
  (1)  006456  004767  023144                    JSR     PC,ERR
  (1)          000024                  N         =       N+1
1090   006462                                     SCOPE   XE3B
  (1)  006462  004567  175324                    JSR     R5,SCPRTN
  (1)  006466  006422                            XE3B
1091   006470  112777  000002  026566  XE5A:     MOVB    #2,@TMMRH           ;SET SECONDARY FLOP
1092   006476  132777  000001  026560            BITB    #1,@TMMRH           ;IS MASTER SET?
1093   006504  001017                            BNE     XE6
1094   006506  142777  000002  026550            BICB    #2,@TMMRH           ;CLR SEC FOR RE-TRY
1095   006514                                     ERROR    N          ;ERROR: SETTING SEC DID NOT SET MASTER
  (1)                                                                        ;******* ERROR 24 *******
  (1)  006514  032777  040000  023100            BIT     #B14,@SR
  (1)  006522  001005                            BNE     .+14
  (1)  006524  012767  000024  023322            MOV     #24,ERRNUM
  (1)  006532  004767  023070                    JSR     PC,ERR
  (1)          000025                  N         =       N+1
1096   006536                                     SCOPE   XE5A
  (1)  006536  004567  175250                    JSR     R5,SCPRTN
  (1)  006542  006470                            XE5A
1097   006544  132777  000002  026512  XE6:      BITB    #2,@TMMRH           ;IS SEC CLR?
1098   006552  001417                            BEQ     XE6A
1099   006554  142777  000002  026502            BICB    #2,@TMMRH           ;CLR SEC FOR RETRY
1100   006562                                     ERROR    N          ;ERROR: SEC NOT CLR'D BY THE SETTING OF MASTER
  (1)                                                                        ;******* ERROR 25 *******
  (1)  006562  032777  040000  023032            BIT     #B14,@SR
  (1)  006570  001005                            BNE     .+14
  (1)  006572  012767  000025  023254            MOV     #25,ERRNUM
  (1)  006600  004767  023022                    JSR     PC,ERR
  (1)          000026                  N         =       N+1
1101   006604                                     SCOPE   XE5A
  (1)  006604  004567  175202                    JSR     R5,SCPRTN
  (1)  006610  006470                            XE5A
1102   006612  132777  000004  026444  XE6A:     BITB    #4,@TMMRH           ;IS "NOW MASTER " SET?
1103   006620  001017                            BNE     XE7                 ;YES, OKAY
1104   006622  142777  000002  026434            BICB    #2,@TMMRH           ;CLR SEC FOR RETRY.
1105   006630                                     ERROR    N          ;ERROR: "NOW MASTER" NOT SET VIA SECONDARY
  (1)                                                                        ;******* ERROR 26 *******
  (1)  006630  032777  040000  022764            BIT     #B14,@SR
  (1)  006636  001005                            BNE     .+14
  (1)  006640  012767  000026  023206            MOV     #26,ERRNUM
  (1)  006646  004767  022754                    JSR     PC,ERR
  (1)          000027                  N         =       N+1
1106   006652                                     SCOPE   XE5A
  (1)  006652  004567  175134                    JSR     R5,SCPRTN
  (1)  006656  006470                            XE5A
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```
 1108                                   ;ADDRESS SILO TEST
 1109
 1110  006660  152777  000060  026376  XE7:    BISB    #60,@TMMRH              ;SET AUT ADR TO LD SILO &CLR SILO
 1111  006666  132777  000020  026370          BITB    #20,@TMMRH              ;IS AUT ADR SET?
 1112  006674  001014                          BNE     XE7A
 1113  006676                                  ERROR    N              ;ERROR: COULD NOT SET TMMR BIT 12
  (1)                                                                   ;******* ERROR 27 *******
  (1)  006676  032777  040000  022716          BIT     #B14,@SR
  (1)  006704  001005                          BNE     .+14
  (1)  006706  012767  000027  023140          MOV     #27,ERRNUM
  (1)  006714  004767  022706                  JSR     PC,ERR
  (1)          000030                  N       =       N+1
 1114  006720                                  SCOPE   XE7
  (1)  006720  004567  175066                  JSR     R5,SCPRTN
  (1)  006724  006660                          XE7
 1115  006726  132777  000200  026330  XE7A:   BITB    #200,@TMMRH             ;CHECK FOR OUTPUT RDY
 1116  006734  001414                          BEQ     XE8
 1117  006736                                  ERROR    N              ;ERROR: TMMR BIT 13 DOES NOT CLR ADDR SILO
  (1)                                                                   ;******* ERROR 30 *******
  (1)  006736  032777  040000  022656          BIT     #B14,@SR
  (1)  006744  001005                          BNE     .+14
  (1)  006746  012767  000030  023100          MOV     #30,ERRNUM
  (1)  006754  004767  022646                  JSR     PC,ERR
  (1)          000031                  N       =       N+1
 1118  006760                                  SCOPE   XE7
  (1)  006760  004567  175026                  JSR     R5,SCPRTN
  (1)  006764  006660                          XE7
 1119  006766  012704  177700          XE8:    MOV     #-64.,R4                ;R4 IS COUNTER
 1120  006772  005003                          CLR     R3                      ;R3 IS DATA
 1121  006774  132777  000100  026262          BITB    #100,@TMMRH             ;ADR SILO INPUT RDY?
 1122  007002  001014                          BNE     XE9
 1123  007004                                  ERROR    N              ;ERROR: ADR SILO INPUT NOT RDY
  (1)                                                                   ;******* ERROR 31 *******
  (1)  007004  032777  040000  022610          BIT     #B14,@SR
  (1)  007012  001005                          BNE     .+14
  (1)  007014  012767  000031  023032          MOV     #31,ERRNUM
  (1)  007022  004767  022600                  JSR     PC,ERR
  (1)          000032                  N       =       N+1
 1124  007026                                  SCOPE   XE8
  (1)  007026  004567  174760                  JSR     R5,SCPRTN
  (1)  007032  006766                          XE8
 1125  007034  110377  026222          XE9:    MOVB    R3,@TMMR                ;LOAD ADDR SILO
 1126  007040  005203                          INC     R3
 1127  007042  005204                          INC     R4
 1128  007044  001420                          BEQ     XE11
 1129  007046  132777  000100  026210  XE10:   BITB    #100,@TMMRH             ;INPUT READY?
 1130  007054  001367                          BNE     XE9
 1131  007056                                  ERROR    N              ;ERROR: INPUT NOT RDY-PREMATURLY FULL?
  (1)                                                                   ;******* ERROR 32 *******
  (1)  007056  032777  040000  022536          BIT     #B14,@SR
  (1)  007064  001005                          BNE     .+14
  (1)  007066  012767  000032  022760          MOV     #32,ERRNUM
  (1)  007074  004767  022526                  JSR     PC,ERR
  (1)          000033                  N       =       N+1
 1132  007100                                  SCOPE   XE7
  (1)  007100  004567  174706                  JSR     R5,SCPRTN
```

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  (1)  007104  006660                          XE7
1133   007106  132777  000100  026150  XE11:   BITB    #100,@TMMRH          ;SILO SHOULD BE FULL NOW
1134   007114  001414                          BEQ     XE12                 ;INPUT READY?
1135   007116                                  ERROR    N          ;ERROR: SILO FULL-BUT STILL RDY FOR INPUT
  (1)                                                                       ;******* ERROR 33 *******
  (1)  007116  032777  040000  022476          BIT     #B14,@SR
  (1)  007124  001005                          BNE     .+14
  (1)  007126  012767  000033  022720          MOV     #33,ERRNUM
  (1)  007134  004767  022466                  JSR     PC,ERR
  (1)          000034                  N       =       N+1
1136   007140                                  SCOPE   XE7
  (1)  007140  004567  174646                  JSR     R5,SCPRTN
  (1)  007144  006660                          XE7
1137   007146  132777  000200  026110  XE12:   BITB    #200,@TMMRH          ;SILO OUTPUT RDY?
1138   007154  001014                          BNE     XE13
1139   007156                                  ERROR    N          ;ERROR: FULL SILO NOT RDY FOR OUTPUT
  (1)                                                                       ;******* ERROR 34 *******
  (1)  007156  032777  040000  022436          BIT     #B14,@SR
  (1)  007164  001005                          BNE     .+14
  (1)  007166  012767  000034  022660          MOV     #34,ERRNUM
  (1)  007174  004767  022426                  JSR     PC,ERR
  (1)          000035                  N       =       N+1
1140   007200                                  SCOPE   XE7
  (1)  007200  004567  174606                  JSR     R5,SCPRTN
  (1)  007204  006660                          XE7
1141   007206  005003                  XE13:   CLR     R3                   ;R3 IS FOR DATA COMPARE
1142   007210  012704  177700                  MOV     #-64.,R4             ;R4 IS COUNTER
1143   007214  052777  000200  026026  XE14:   BIS     #B07,@TCR            ;SET RD SILO
1144   007222  117767  026034  022626          MOVB    @TMMR,BAD            ;READ WORD FROM ADDRESS SILO
1145   007230  005077  026014                  CLR     @TCR                 ;CLEAR RD SILO BIT
1146   007234  042767  177400  022614          BIC     #177400,BAD          ;ONLY INTERRESTED IN LOW BYTE
1147   007242  010367  022612                  MOV     R3,GOOD
1148   007246  026767  022606  022602  XE15:   CMP     GOOD,BAD             ;SILO OUTPUT OK?
1149   007254  001414                          BEQ     XE16
1150   007256                                  DATERR   N          ;ERROR: BAD DATA READ FROM ADDR SILO
  (1)                                                                       ;******* ERROR 35 *******
  (1)  007256  032777  040000  022336          BIT     #B14,@SR
  (1)  007264  001005                          BNE     .+14
  (1)  007266  012767  000035  022560          MOV     #35,ERRNUM
  (1)  007274  004767  022412                  JSR     PC,DERR
  (1)          000036                  N       =       N+1
1151   007300                                  SCOPE   XE7
  (1)  007300  004567  174506                  JSR     R5,SCPRTN
  (1)  007304  006660                          XE7
1152   007306  005203                  XE16:   INC     R3
1153   007310  042703  177740                  BIC     #177740,R3           ;KEEP R3 DOWN TO 5 BITS
1154   007314  005204                          INC     R4
1155   007316  001420                          BEQ     XE18                 ;AFTER 64 WDS, EXIT
1156   007320  132777  000200  025736  XE17:   BITB    #200,@TMMRH          ;SILO OUTPUT READY?
1157   007326  001332                          BNE     XE14
1158   007330                                  ERROR    N          ;ERROR: SILO OUT NOT RDY-SILO NOT EMPTY
  (1)                                                                       ;******* ERROR 36 *******
  (1)  007330  032777  040000  022264          BIT     #B14,@SR
  (1)  007336  001005                          BNE     .+14
  (1)  007340  012767  000036  022506          MOV     #36,ERRNUM
  (1)  007346  004767  022254                  JSR     PC,ERR
```

```
  (1)           000037                        N       =       N+1
1159  007352                                          SCOPE   XE7
  (1)  007352   004567  174434                          JSR     R5,SCPRTN
  (1)  007356   006660                                  XE7
1160  007360   132777  000200  025676  XE18:   BITB    #200,@TMMRH             ;SILO OUT RDY AFTER 64 READS?
1161  007366   001414                          BEQ     XE19
1162  007370                                  ERROR    N              ;ERROR: EMPTY SILO READY FOR OUTPUT
  (1)                                                                         ;******* ERROR 37 *******
  (1)  007370   032777  040000  022224          BIT     #B14,@SR
  (1)  007376   001005                          BNE     .+14
  (1)  007400   012767  000037  022446          MOV     #37,ERRNUM
  (1)  007406   004767  022214                  JSR     PC,ERR
  (1)           000040                  N       =       N+1
1163  007412                                          SCOPE   XE7
  (1)  007412   004567  174374                          JSR     R5,SCPRTN
  (1)  007416   006660                                  XE7
1164  007420   005077  025626          XE19:   CLR     @TSR                    ;CLR RD SILO
1165  007424   112777  000000  025630          MOVB    #0,@TMMR                ;LOAD A WORD INTO SILO
1166  007432   004567  174674                  JSR     R5,DELAY                ;WAIT FOR MIGRATION
1167  007436   000010                          .WORD   10
1168  007440   132777  000200  025616          BITB    #200,@TMMRH             ;CHECK OUT RDY AFTER DELAY
1169  007446   001022                          BNE     XE20
1170  007450                                  ERROR    N              ;ERROR: SILO SETTLING TIME TOO LONG
  (1)                                                                         ;******* ERROR 40 *******
  (1)  007450   032777  040000  022144          BIT     #B14,@SR
  (1)  007456   001005                          BNE     .+14
  (1)  007460   012767  000040  022366          MOV     #40,ERRNUM
  (1)  007466   004767  022134                  JSR     PC,ERR
  (1)           000041                  N       =       N+1
1171  007472   052777  000200  025550          BIS     #B07,@TCR               ;SET RD SILO BIT
1172  007500   117767  025556  022350          MOVB    @TMMR,BAD               ;GET RID OF THE WORD IN SILO
1173  007506                                          SCOPE   XE19
  (1)  007506   004567  174300                          JSR     R5,SCPRTN
  (1)  007512   007420                                  XE19
1174  007514   152777  000041  025542  XE20:   BISB    #41,@TMMRH              ;SET 'CLR SILO' BIT & SET MASTER
1175  007522   132777  000200  025534          BITB    #200,@TMMRH             ;SILO RDY?
1176  007530   001414                          BEQ     XE21
1177  007532                                  ERROR    N              ;ERROR: BIT 13 OF TMMR DID NOT CLR ADR SILO
  (1)                                                                         ;******* ERROR 41 *******
  (1)  007532   032777  040000  022062          BIT     #B14,@SR
  (1)  007540   001005                          BNE     .+14
  (1)  007542   012767  000041  022304          MOV     #41,ERRNUM
  (1)  007550   004767  022052                  JSR     PC,ERR
  (1)           000042                  N       =       N+1
1178  007554                                          SCOPE   XE20
  (1)  007554   004567  174232                          JSR     R5,SCPRTN
  (1)  007560   007514                                  XE20
1179  007562   112777  000037  025472  XE21:   MOVB    #37,@TMMR               ;LOAD SILO WITH TEST WORD
1180  007570   132777  000200  025466  XE22:   BITB    #200,@TMMRH             ;SILO OUT RDY?
1181  007576   001774                          BEQ     XE22                    ;WAIT FOR IT
1182  007600   142777  000020  025456  XE22A:  BICB    #20,@TMMRH              ;CLR AUT ADR
1183  007606   016704  022012                  MOV     DLCON,R4
1184  007612   012703  177000          XE22B:  MOV     #177000,R3              ;SET UP FOR ABOUT 5MS DELAY
1185  007616   132777  000200  025440  XE23:   BITB    #200,@TMMRH             ;OUTPUT RDY?
1186  007624   001420                          BEQ     XE24                    ;IF NO - CARRY ON
1187  007626   005203                          INC     R3                      ;WAITED 5MS?
```

```
 1188  007630  001372                          BNE     XE23                    ;NOT YET
 1189  007632  005304                          DEC     R4
 1190  007634  001366                          BNE     XE22B
 1191  007636                                  ERROR    N              ;ERROR: ADDRESS SILO IS NOT CYCLING
  (1)                                                                           ;******* ERROR 42 *******
  (1)  007636  032777  040000  021756          BIT     #B14,@SR
  (1)  007644  001005                          BNE     .+14
  (1)  007646  012767  000042  022200          MOV     #42,ERRNUM
  (1)  007654  004767  021746                  JSR     PC,ERR
  (1)          000043                  N       =       N+1
 1192  007660                                  SCOPE   XE22A
  (1)  007660  004567  174126                  JSR     R5,SCPRTN
  (1)  007664  007600                          XE22A
 1193  007666  142777  000001  025370  XE24:   BICB    #1,@TMMRH               ;CLEAR MASTER FOR SYNC.
 1194  007674  004567  174432                  JSR     R5,DELAY
 1195  007700  000010                          .WORD   10
 1196  007702  132777  000200  025354          BITB    #200,@TMMRH             ;OUTPUT READY
 1197  007710  001014                          BNE     XE25
 1198  007712                                  ERROR    N              ;ERROR: CYCLED WORD WAS LOST-OUT NOT RDY
  (1)                                                                           ;******* ERROR 43 *******
  (1)  007712  032777  040000  021702          BIT     #B14,@SR
  (1)  007720  001005                          BNE     .+14
  (1)  007722  012767  000043  022124          MOV     #43,ERRNUM
  (1)  007730  004767  021672                  JSR     PC,ERR
  (1)          000044                  N       =       N+1
 1199  007734                                  SCOPE   XE20
  (1)  007734  004567  174052                  JSR     R5,SCPRTN
  (1)  007740  007514                          XE20
 1200  007742  004567  174364          XE25:   JSR     R5,DELAY
 1201  007746  000010                          .WORD   10
 1202  007750  152777  000021  025306          BISB    #21,@TMMRH              ;SET AUTO ADDR & MASTER
 1203  007756  052777  000200  025264          BIS     #B07,@TCR               ;SET RD SILO
 1204  007764  117767  025272  022064          MOVB    @TMMR,BAD               ;CHECK VALIDITY OF OUTPUT
 1205  007772  042767  177400  022056          BIC     #177400,BAD             ;ONLY INTERRESTED IN LOW BYTE
 1206  010000  012767  000037  022052          MOV     #37,GOOD
 1207  010006  026767  022046  022042          CMP     GOOD,BAD                ;OUTPUT SHOULD BE 37
 1208  010014  001417                          BEQ     XE26
 1209  010016                                  DATERR   N             ;ERROR: CYCLED WORD IS BAD DATA
  (1)                                                                           ;******* ERROR 44 *******
  (1)  010016  032777  040000  021576          BIT     #B14,@SR
  (1)  010024  001005                          BNE     .+14
  (1)  010026  012767  000044  022020          MOV     #44,ERRNUM
  (1)  010034  004767  021652                  JSR     PC,DERR
  (1)          000045                  N       =       N+1
 1210  010040  042777  000200  025202          BIC     #B07,@TCR               ;CLR RD SILO BIT FOR SCOPE
 1211  010046                                  SCOPE   XE20
  (1)  010046  004567  173740                  JSR     R5,SCPRTN
  (1)  010052  007514                          XE20
 1212  010054  004567  174252          XE26:   JSR     R5,DELAY                ;WAIT ANOTHER SETTLING TIME
 1213  010060  000010                          .WORD   10
 1214  010062  132777  000200  025174          BITB    #200,@TMMRH             ;IS SILO OUT RDY (SHOULDN'T BE)?
 1215  010070  001417                          BEQ     XE27                    ;NO, LEAVE
 1216  010072                                  ERROR    N             ;ERROR: EXTRA WORD FOUND IN SILO
  (1)                                                                           ;******* ERROR 45 *******
  (1)  010072  032777  040000  021522          BIT     #B14,@SR
  (1)  010100  001005                          BNE     .+14
```

```
  (1)  010102  012767  000045  021744          MOV     #45,ERRNUM
  (1)  010110  004767  021512                  JSR     PC,ERR
  (1)          000046                  N       =       N+1
 1217  010114  042777  000200  025126          BIC     #B07,@TCR               ;CLR RD SILO
 1218  010122                                  SCOPE   XE20
  (1)  010122  004567  173664                  JSR     R5,SCPRTN
  (1)  010126  007514                          XE20
 1219  010130  152777  000060  025126  XE27:   BISB    #60,@TMMRH              ;SET AUTO ADDRESS & CLR ADDR SILO
 1220  010136  005077  025106                  CLR     @TCR                    ;CLEAR RD SILO
 1221  010142  004767  021060                  JSR     PC,MONIT
 1222  010146  032777  010000  021446          BIT     #B12,@SR                ;OK TO EXIT IF SW 12 = 0
 1223  010154  001402                          BEQ     XERT
 1224  010156  000167  175764                  JMP     MSRTST                  ;OTHERWISE, STAY HERE
 1225  010162  000207                  XERT:   RTS     PC
```

```
1227                                            .SBTTL  DATA SILO TEST
1228
1229                                            ;TRANSMITTER DATA SILO TEST
1230
1231  010164                                    SILTST: BDINIT  XMTR                    ;CLEAR BOARD
1232  010172  004567  174134                           JSR     R5,DELAY
1233  010176  000010                                   .WORD   10
1234  010200  032777  000010  025042                   BIT     #B03,@TCR             ;SILO OUTPUT READY?
1235  010206  001414                                   BEQ     XF1
1236  010210                                          ERROR    N              ;ERROR: BD INIT DID NOT CLEAR DATA SILO
 (1)                                                                                ;******* ERROR 46 *******
 (1)  010210  032777  040000  021404                   BIT     #B14,@SR
 (1)  010216  001005                                   BNE     .+14
 (1)  010220  012767  000046  021626                   MOV     #46,ERRNUM
 (1)  010226  004767  021374                           JSR     PC,ERR
 (1)          000047                          N        =       N+1
1237  010232                                          SCOPE   SILTST
 (1)  010232  004567  173554                           JSR     R5,SCPRTN
 (1)  010236  010164                                   SILTST
1238  010240  032777  000400  025004          XF1:    BIT     #B08,@TSR             ;SILO INPUT READY?
1239  010246  001014                                   BNE     XF2
1240  010250                                          ERROR    N              ;ERROR: BD INIT DID NOT SET INPUT READY
 (1)                                                                                ;******* ERROR 47 *******
 (1)  010250  032777  040000  021344                   BIT     #B14,@SR
 (1)  010256  001005                                   BNE     .+14
 (1)  010260  012767  000047  021566                   MOV     #47,ERRNUM
 (1)  010266  004767  021334                           JSR     PC,ERR
 (1)          000050                          N        =       N+1
1241  010272                                          SCOPE   SILTST
 (1)  010272  004567  173514                           JSR     R5,SCPRTN
 (1)  010276  010164                                   SILTST
1242  010300  012777  177777  024746          XF2:    MOV     #-1,@TSDB             ;LOAD 177777 INTO DATA SILO
1243  010306  004567  174020                           JSR     R5,DELAY
1244  010312  000010                                   .WORD   10
1245  010314  032777  000010  024726                   BIT     #B03,@TCR             ;SILO OUTPUT READY?
1246  010322  001017                                   BNE     XF3
1247  010324                                          ERROR    N              ;ERROR: NO SILO OUTPUT 37 US.  AFTER LOAD
 (1)                                                                                ;******* ERROR 50 *******
 (1)  010324  032777  040000  021270                   BIT     #B14,@SR
 (1)  010332  001005                                   BNE     .+14
 (1)  010334  012767  000050  021512                   MOV     #50,ERRNUM
 (1)  010342  004767  021260                           JSR     PC,ERR
 (1)          000051                          N        =       N+1
1248  010346                                          BDINIT  XMTR                    ;CLEAR SILO
1249  010354                                          SCOPE   XF2
 (1)  010354  004567  173432                           JSR     R5,SCPRTN
 (1)  010360  010300                                   XF2
1250  010362  017767  024666  021466          XF3:    MOV     @TSDB,BAD             ;READ WORD FROM SILO
1251  010370  012767  177777  021462                   MOV     #-1,GOOD
1252  010376  026767  021456  021452                   CMP     GOOD,BAD              ;SILO OUTPUT = 177777
1253  010404  001417                                   BEQ     XF3A
1254  010406                                          DATERR   N              ;ERROR: DROPPED BITS IN DATA SILO
 (1)                                                                                ;******* ERROR 51 *******
 (1)  010406  032777  040000  021206                   BIT     #B14,@SR
 (1)  010414  001005                                   BNE     .+14
 (1)  010416  012767  000051  021430                   MOV     #51,ERRNUM
```

```
  (1) 010424 004767 021262          JSR     PC,DERR
  (1)        000052           N     =       N+1
1255 010430                         BDINIT  XMTR                    ;CLEAR SILO
1256 010436                         SCOPE   XF2
  (1) 010436 004567 173350          JSR     R5,SCPRTN
  (1) 010442 010300                 XF2
1257 010444 052777 000200 024576 XF3A: BIS    #B07,@TCR               ;SET RD SILO BIT IN TCR
1258 010452 017703 024576           MOV     @TSDB,R3                ;POP WORD FROM SILO
1259 010456 032777 000010 024564    BIT     #B03,@TCR               ;SILO OUTPUT READY?
1260 010464 001414                  BEQ     XF5
1261 010466                         ERROR    N              ;ERROR: WORD DID NOT GET POPPED FROM SILO
  (1)                                                               ;******* ERROR 52 *******
  (1) 010466 032777 040000 021126   BIT     #B14,@SR
  (1) 010474 001005                 BNE     .+14
  (1) 010476 012767 000052 021350   MOV     #52,ERRNUM
  (1) 010504 004767 021116          JSR     PC,ERR
  (1)        000053           N     =       N+1
1262 010510                         SCOPE   XF3
  (1) 010510 004567 173276          JSR     R5,SCPRTN
  (1) 010514 010362                 XF3
1263 010516 032777 000400 024526 XF5:  BIT     #B08,@TSR               ;IS INPUT READY?
1264 010524 001014                  BNE     XF6
1265 010526                         ERROR    N              ;ERROR: DATA SILO INPUT NOT READY
  (1)                                                               ;******* ERROR 53 *******
  (1) 010526 032777 040000 021066   BIT     #B14,@SR
  (1) 010534 001005                 BNE     .+14
  (1) 010536 012767 000053 021310   MOV     #53,ERRNUM
  (1) 010544 004767 021056          JSR     PC,ERR
  (1)        000054           N     =       N+1
1266 010550                         SCOPE   XF5
  (1) 010550 004567 173236          JSR     R5,SCPRTN
  (1) 010554 010516                 XF5
1267 010556 042777 000200 024464 XF6:  BIC     #B07,@TCR               ;CLEAR RD SILO BIT
1268 010564 005077 024464           CLR     @TSDB                   ;LOAD 0'S INTO SILO
1269 010570 032777 000010 024452 XF6A: BIT     #B03,@TCR               ;OUTPUT RDY?
1270 010576 001774                  BEQ     XF6A                    ;WAIT FOR IT
1271 010600 017767 024450 021250    MOV     @TSDB,BAD               ;READ OUTPUT OF SILO
1272 010606 005067 021246           CLR     GOOD
1273 010612 026767 021242 021236    CMP     GOOD,BAD                ;OUTPUT = 0?
1274 010620 001417                  BEQ     XF7
1275 010622                         DATERR   N             ;ERROR: BITS PICKED UP IN DATA SILO
  (1)                                                               ;******* ERROR 54 *******
  (1) 010622 032777 040000 020772   BIT     #B14,@SR
  (1) 010630 001005                 BNE     .+14
  (1) 010632 012767 000054 021214   MOV     #54,ERRNUM
  (1) 010640 004767 021046          JSR     PC,DERR
  (1)        000055           N     =       N+1
1276 010644                         BDINIT  XMTR                    ;CLR SILO
1277 010652                         SCOPE   XF6
  (1) 010652 004567 173134          JSR     R5,SCPRTN
  (1) 010656 010556                 XF6
1278 010660                      XF7:  BDINIT  XMTR                    ;CLR XMITTER BOARD
1279 010666 012777 177600 024362    MOV     #-128.,@TSBC            ;SET BYTE COUNT TO -128
1280 010674 012777 032700 024356    MOV     #SILDAT,@TSBA           ;POINT DEVICE AT CORE BUFFER
1281 010702 052777 040000 024340    BIS     #B14,@TCR               ;SET TX NPR
1282 010710 032777 040000 024332    BIT     #B14,@TCR               ;IS TX NPR SET?
```

```
 1283  010716  001014                          BNE     XF8
 1284  010720                                  ERROR    N              ;ERROR: CANNOT SET TX NPR
  (1)                                                                           ;******* ERROR 55 *******
  (1)  010720  032777  040000  020674          BIT     #B14,@SR
  (1)  010726  001005                          BNE     .+14
  (1)  010730  012767  000055  021116          MOV     #55,ERRNUM
  (1)  010736  004767  020664                  JSR     PC,ERR
  (1)          000056                  N       =       N+1
 1285  010742                                  SCOPE   XF7
  (1)  010742  004567  173044                  JSR     R5,SCPRTN
  (1)  010746  010660                          XF7
 1286  010750  016704  020650          XF8:    MOV     DLCON,R4
 1287  010754  012703  177500          XF8A:   MOV     #177500,R3             ;SET UP 2 MS DELAY
 1288  010760  005777  024272          XF9:    TST     @TSBC                  ;IS BYTE COUNT 0?
 1289  010764  001420                          BEQ     XF10
 1290  010766  005203                          INC     R3                     ;WAITED 2 MS?
 1291  010770  001373                          BNE     XF9                    ;NO, KEEP LOOKING
 1292  010772  005304                          DEC     R4
 1293  010774  001367                          BNE     XF8A
 1294  010776                                  ERROR    N              ;ERROR:  NPR NOT COMPLETE AFTER 2 MS
  (1)                                                                           ;******* ERROR 56 *******
  (1)  010776  032777  040000  020616          BIT     #B14,@SR
  (1)  011004  001005                          BNE     .+14
  (1)  011006  012767  000056  021040          MOV     #56,ERRNUM
  (1)  011014  004767  020606                  JSR     PC,ERR
  (1)          000057                  N       =       N+1
 1295  011020                                  SCOPE   XF7
  (1)  011020  004567  172766                  JSR     R5,SCPRTN
  (1)  011024  010660                          XF7
 1296  011026  032777  000400  024216  XF10:   BIT     #B08,@TSR              ;INPUT READY?
 1297  011034  001414                          BEQ     XF11
 1298  011036                                  ERROR    N              ;ERROR: SILO FULL BUT INPUT RDY SET
  (1)                                                                           ;******* ERROR 57 *******
  (1)  011036  032777  040000  020556          BIT     #B14,@SR
  (1)  011044  001005                          BNE     .+14
  (1)  011046  012767  000057  021000          MOV     #57,ERRNUM
  (1)  011054  004767  020546                  JSR     PC,ERR
  (1)          000060                  N       =       N+1
 1299  011060                                  SCOPE   XF10
  (1)  011060  004567  172726                  JSR     R5,SCPRTN
  (1)  011064  011026                          XF10
 1300  011066  032777  000010  024154  XF11:   BIT     #B03,@TCR              ;OUTPUT READY?
 1301  011074  001014                          BNE     XF12
 1302  011076                                  ERROR    N              ;ERROR: FULL SILO NOT RDY FOR OUTPUT
  (1)                                                                           ;******* ERROR 60 *******
  (1)  011076  032777  040000  020516          BIT     #B14,@SR
  (1)  011104  001005                          BNE     .+14
  (1)  011106  012767  000060  020740          MOV     #60,ERRNUM
  (1)  011114  004767  020506                  JSR     PC,ERR
  (1)          000061                  N       =       N+1
 1303  011120                                  SCOPE   XF11
  (1)  011120  004567  172666                  JSR     R5,SCPRTN
  (1)  011124  011066                          XF11
 1304  011126  052777  000200  024114  XF12:   BIS     #B07,@TCR              ;SET RD SILO BIT
 1305  011134  012704  032700                  MOV     #SILDAT,R4             ;R4 IS DATA POINTER
 1306  011140  012703  177700                  MOV     #-64.,R3               ;R3 IS COUNTER
```

```
 1307  011144  017767  024104  020704  XF13:   MOV     @TSDB,BAD               ;POP WORD FROM SILO TO "BAD"
 1308  011152  012467  020702                  MOV     (R4)+,GOOD              ;AND POP A WORD FROM BUFFER
 1309  011156  026767  020676  020672          CMP     GOOD,BAD                ;DATA OK?
 1310  011164  001422                          BEQ     XF14
 1311  011166                                  DATERR   N              ;ERROR: DATA FROM SILO IS WRONG
  (1)                                                                    ;******* ERROR 61 *******
  (1)  011166  032777  040000  020426          BIT     #B14,@SR
  (1)  011174  001005                          BNE     .+14
  (1)  011176  012767  000061  020650          MOV     #61,ERRNUM
  (1)  011204  004767  020502                  JSR     PC,DERR
  (1)          000062                  N       =       N+1
 1312  011210  042777  000200  024032          BIC     #B07,@TCR               ;CLR RD SILO BIT
 1313  011216                                  SCOPE   XF7                     ;GO TO RE-FILL SILO FOR RE-TRY
  (1)  011216  004567  172570                  JSR     R5,SCPRTN
  (1)  011222  010660                          XF7
 1314  011224  052777  000200  024016          BIS     #B07,@TCR               ;RE-SET RD SILO BIT
 1315  011232  005203                  XF14:   INC     R3                      ;ALL DONE?
 1316  011234  001343                          BNE     XF13                    ;IF NOT, POP ANOTHER WORD
 1317  011236                          XF17:   BDINIT  XMTR                    ;CLEAR THE BOARD
 1318  011244  012777  177774  024004          MOV     #-4,@TSBC               ;SET BYTE COUNT TO -4
 1319  011252  012777  032700  024000          MOV     #SILDAT,@TSBA           ;POINT NPR TO DATA BUFFER
 1320  011260  012767  032700  020572          MOV     #SILDAT,GOOD
 1321  011266  052777  040004  023754          BIS     #40004,@TCR             ;SET TX NPR AND INH ADR INC
 1322  011274  005777  023756          XF18:   TST     @TSBC                   ;WAIT FOR NPR TO FINISH
 1323  011300  001375                          BNE     XF18
 1324  011302  017767  023752  020546          MOV     @TSBA,BAD               ;READ BYTE ADDRESS
 1325  011310  026767  020544  020540          CMP GOOD,BAD                    ;HAS IT CHANGED?
 1326  011316  001417                          BEQ     XF19
 1327  011320                                  DATERR   N              ;ERROR: TSBA SHD NOT CHANGE WITH INH ADR INC SET
  (1)                                                                    ;******* ERROR 62 *******
  (1)  011320  032777  040000  020274          BIT     #B14,@SR
  (1)  011326  001005                          BNE     .+14
  (1)  011330  012767  000062  020516          MOV     #62,ERRNUM
  (1)  011336  004767  020350                  JSR     PC,DERR
  (1)          000063                  N       =       N+1
 1328  011342                                  BDINIT  XMTR
 1329  011350                                  SCOPE   XF17
  (1)  011350  004567  172436                  JSR     R5,SCPRTN
  (1)  011354  011236                          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.

011356                          XF19:   BDINIT  XMTR                    ;CLEAR THE BOARD
011364  004767  000136                  JSR     PC,XFSR                 ;FILL THE DATA SILO
011370  012702  000100                  MOV     #64.,R2
011374  004767  000176                  JSR     PC,XFEMT                ;POP ALL 64 WORDS OUT
011400  004767  000122                  JSR     PC,XFSR                 ;FILL SILO AGAIN
011404  012702  000020                  MOV     #20,R2
011410  004767  000162                  JSR     PC,XFEMT                ;POP 20 (OCTAL) WORDS OUT
011414  004767  000106                  JSR     PC,XFSR                 ;FILL SILO AGAIN
011420  012702  000060                  MOV     #60,R2
011424  004767  000146                  JSR     PC,XFEMT                ;POP 60 (OCTAL) WORDS OUT
                                                                        ;  LEAVING 20 (OCTAL) IN SILO
                                                                        ;  AND HAVING PULLED OUT 200 TOTAL (OCTAL)
011430  032777  000010  023612          BIT     #B03,@TCR               ;NOW CHECK OUTPUT READY
011436  001414                          BEQ     XF19A                   ;IF IT'S CLEAR, OKAY
011440                                  ERROR    N              ;ERROR: OUTPUT RDY AFTER 200 WORD BLOCK
 (1)                                                                    ;******* ERROR 63 *******
 (1)    011440  032777  040000  020154          BIT     #B14,@SR
 (1)    011446  001005                  BNE     .+14
 (1)    011450  012767  000063  020376          MOV     #63,ERRNUM
 (1)    011456  004767  020144          JSR     PC,ERR
 (1)            000064                  N       =       N+1
011462                                  SCOPE   XF19
 (1)    011462  004567  172324          JSR     R5,SCPRTN
 (1)    011466  011356                  XF19
011470                                  XF19A:  BDINIT  XMTR                    ;CLEAN UP.
011476  152777  000020  023560          XF20:   BISB    #20,@TMMRH              ;SET AUT ADR
011504  004767  017516                  JSR     PC,MONIT
011510  032777  010000  020104          BIT     #B12,@SR                ;CAN WE EXIT NOW?
011516  001402                          BEQ     XFRT                    ;OK IF SW 12 = 0
011520  000167  176440                  JMP     SILTST                  ;NO IF SW 12 = 1
011524  000207                          XFRT:   RTS     PC

                                ;ROUTINE TO FILL DATA SILO VIA NPR

011526  012777  177600  023522          XFSR:   MOV     #-128.,@TSBC            ;SET BYTE COUNT FOR FILL-UP
011534  012777  032700  023516          MOV     #SILDAT,@TSBA           ;POINT DEVICE AT CORE BUFFER
011542  052777  040000  023500          BIS     #B14,@TCR               ;START NPR
011550  016704  020050                  MOV     DLCON,R4
011554  012703  175000                  XFSR1:  MOV     #175000,R3              ;SET UP TO WAIT FOR CMPL
011560  005203                          XFSRW:  INC     R3
011562  001376                          BNE     XFSRW                   ;WAIT FOR NPR COMPLETION
011564  005304                          DEC     R4
011566  001372                          BNE     XFSR1
011570  005077  023454                  CLR     @TCR                    ;CLEAR TXNPR
011574  000207                          RTS     PC                      ;RETURN WITH SILO FULL

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

011576  052777  000200  023444          XFEMT:  BIS     #B07,@TCR               ;SET RD SILO
011604  010203                          MOV     R2,R3
```

```
1379  011606  017767  023442  020242  XFMTW:  MOV     @TSDB,BAD               ;POP A WORD OUT
1380  011614  005303                  DEC     R3                      ;KEEP TRACK OF # OF WORDS
1381  011616  001373                  BNE     XFMTW
1382  011620  042777  000200  023422          BIC     #B07,@TCR               ;LEAVE WITH RD SILO CLEAR
1383  011626  000207                  RTS     PC
```

```
                                                        .SBTTL  TSRTST

                                                        ;STATUS REGISTER AND ERRORS TEST

011630                                          TSRTST: BDINIT  XMTR                    ;CLR BOARD
011636  052777  000200  023406                         BIS     #B07,@TSR              ;SET SUCC XFER
011644  032777  000200  023400                         BIT     #B07,@TSR              ;IS IT SET?
011652  001014                                         BNE     XH1
011654                                               ERROR    N                 ;ERROR: CANNOT SET TSR BIT 07
(1)                                                                                     ;******* ERROR 64 *******
(1)     011654  032777  040000  017740               BIT     #B14,@SR
(1)     011662  001005                               BNE     .+14
(1)     011664  012767  000064  020162               MOV     #64,ERRNUM
(1)     011672  004767  017730                       JSR     PC,ERR
(1)             000065                       N       =       N+1
011676                                               SCOPE   TSRTST
(1)     011676  004567  172110                       JSR     R5,SCPRTN
(1)     011702  011630                               TSRTST
011704  042777  000200  023340               XH1:    BIC     #B07,@TSR              ;CLR SUCC XFER
011712  032777  000200  023332                       BIT     #B07,@TSR              ;IS IT CLR?
011720  001414                                       BEQ     XH2
011722                                               ERROR    N                 ;ERROR: CANNOT CLR SUCC XFR
(1)                                                                                     ;******* ERROR 65 *******
(1)     011722  032777  040000  017672               BIT     #B14,@SR
(1)     011730  001005                               BNE     .+14
(1)     011732  012767  000065  020114               MOV     #65,ERRNUM
(1)     011740  004767  017662                       JSR     PC,ERR
(1)             000066                       N       =       N+1
011744                                               SCOPE   XH1
(1)     011744  004567  172042                       JSR     R5,SCPRTN
(1)     011750  011704                               XH1
011752                                       XH2:    BDINIT  XMTR                    ;CLEAR BOARD
011760  012777  177777  023266                       MOV     #-1,@TSDB              ;LOAD WORD INTO SILO
011766  032777  000010  023254                       BIT     #B03,@TCR              ;OUTPUT READY?
011774  001774                                       BEQ     .-6                    ;WAIT FOR WORD TO HIT BOTTOM
011776  152777  000001  023260                       BISB    #1,@TMMRH              ;SET MASTER FOR TIME SLICES
012004  012777  120000  023236                       MOV     #120000,@TCR           ;SET RIB AND SND WD
012012  016704  017606                               MOV     DLCON,R4
012016  012703  177763                       XH2B:   MOV     #177763,R3             ;SET UP FOR 100 U.S. ALARM
012022  032777  000020  023222               XH2A:   BIT     #B04,@TSR              ;TDM BUS BSY SET?
012030  001020                                       BNE     XH3
012032  005203                                       INC     R3                     ;WAIT 100 US.
012034  001372                                       BNE     XH2A
012036  005304                                       DEC     R4
012040  001366                                       BNE     XH2B
012042                                               ERROR    N                 ;ERROR: TDM BUS BSY NOT SET
(1)                                                                                     ;******* ERROR 66 *******
(1)     012042  032777  040000  017552               BIT     #B14,@SR
(1)     012050  001005                               BNE     .+14
(1)     012052  012767  000066  017774               MOV     #66,ERRNUM
(1)     012060  004767  017542                       JSR     PC,ERR
(1)             000067                       N       =       N+1
012064                                               SCOPE   XH2
(1)     012064  004567  171722                       JSR     R5,SCPRTN
(1)     012070  011752                               XH2
012072  032777  000100  023152               XH3:    BIT     #B06,@TSR              ;IS BUSY SET?
```

```
1417  012100  001014                          BNE     XH4
1418  012102                                  ERROR    N              ;ERROR: BUSY NOT SET WITH SND WD & RIB
 (1)                                                                          ;******* ERROR 67 *******
 (1)  012102  032777  040000  017512          BIT     #B14,@SR
 (1)  012110  001005                          BNE     .+14
 (1)  012112  012767  000067  017734          MOV     #67,ERRNUM
 (1)  012120  004767  017502                  JSR     PC,ERR
 (1)          000070                  N       =       N+1
1419  012124                                  SCOPE   XH2
 (1)  012124  004567  171662                  JSR     R5,SCPRTN
 (1)  012130  011752                          XH2
1420  012132  042777  100000  023110  XH4:    BIC     #B15,@TCR                ;CLEAR RIB
1421  012140  000240                          NOP                              ;WAIT FOR TIME SLICE
1422  012142  032777  020000  023100          BIT     #B13,@TCR                ;IS SND WD CLR?
1423  012150  001414                          BEQ     XH5
1424  012152                                  ERROR    N              ;ERROR: INTR REQ DID NOT CLR SND WD
 (1)                                                                          ;******* ERROR 70 *******
 (1)  012152  032777  040000  017442          BIT     #B14,@SR
 (1)  012160  001005                          BNE     .+14
 (1)  012162  012767  000070  017664          MOV     #70,ERRNUM
 (1)  012170  004767  017432                  JSR     PC,ERR
 (1)          000071                  N       =       N+1
1425  012174                                  SCOPE   XH2
 (1)  012174  004567  171612                  JSR     R5,SCPRTN
 (1)  012200  011752                          XH2
1426  012202  032777  000100  023042  XH5:    BIT     #B06,@TSR                ;IS BUSY CLR?
1427  012210  001414                          BEQ     XH6
1428  012212                                  ERROR    N              ;ERROR: SND WD-0 DID NOT CLR BUSY
 (1)                                                                          ;******* ERROR 71 *******
 (1)  012212  032777  040000  017402          BIT     #B14,@SR
 (1)  012220  001005                          BNE     .+14
 (1)  012222  012767  000071  017624          MOV     #71,ERRNUM
 (1)  012230  004767  017372                  JSR     PC,ERR
 (1)          000072                  N       =       N+1
1429  012234                                  SCOPE   XH2
 (1)  012234  004567  171552                  JSR     R5,SCPRTN
 (1)  012240  011752                          XH2
1430  012242  005077  023004          XH6:    CLR     @TSR                     ;CLEAR TSR
1431  012246  052777  120000  022774          BIS     #120000,@TCR             ;SET RIB & SND WD
1432  012254  052777  001000  022770          BIS     #B09,@TSR                ;SET OVERRUN ERR BIT
1433  012262  032777  001000  022762          BIT     #B09,@TSR                ;IS IT SET?
1434  012270  001014                          BNE     XH7
1435  012272                                  ERROR    N              ;ERROR: CANNOT SET TSR BIT 09
 (1)                                                                          ;******* ERROR 72 *******
 (1)  012272  032777  040000  017322          BIT     #B14,@SR
 (1)  012300  001005                          BNE     .+14
 (1)  012302  012767  000072  017544          MOV     #72,ERRNUM
 (1)  012310  004767  017312                  JSR     PC,ERR
 (1)          000073                  N       =       N+1
1436  012314                                  SCOPE   XH6
 (1)  012314  004567  171472                  JSR     R5,SCPRTN
 (1)  012320  012242                          XH6
1437  012322  032777  100000  022722  XH7:    BIT     #B15,@TSR                ;IS ERROR BIT SET (BIT 15)
1438  012330  001014                          BNE     XH8
1439  012332                                  ERROR    N              ;ERROR: OVERRUN DID NOT SET ERROR BIT 15 IN TSR
 (1)                                                                          ;******* ERROR 73 *******
```

```
  (1)  012332  032777  040000  017262          BIT     #B14,@SR
  (1)  012340  001005                          BNE     .+14
  (1)  012342  012767  000073  017504          MOV     #73,ERRNUM
  (1)  012350  004767  017252                  JSR     PC,ERR
  (1)          000074                  N       =       N+1
1440   012354                                  SCOPE   XH6
  (1)  012354  004567  171432                  JSR     R5,SCPRTN
  (1)  012360  012242                          XH6
1441   012362  032777  020000  022660  XH8:    BIT     #B13,@TCR               ;IS SND WD CLR?
1442   012370  001414                          BEQ     XH8A
1443   012372                                  ERROR    N              ;ERROR: TSR BIT 15 DID NOT CAUSE INTR REQ
  (1)                                                                         ;******* ERROR 74 *******
  (1)  012372  032777  040000  017222          BIT     #B14,@SR
  (1)  012400  001005                          BNE     .+14
  (1)  012402  012767  000074  017444          MOV     #74,ERRNUM
  (1)  012410  004767  017212                  JSR     PC,ERR
  (1)          000075                  N       =       N+1
1444   012414                                  SCOPE   XH6
  (1)  012414  004567  171372                  JSR     R5,SCPRTN
  (1)  012420  012242                          XH6
1445   012422                          XH8A:   BDINIT  XMTR                    ;CLEAR ALL IN XMTR
1446   012430  012777  000000  022616          MOV     #0,@TSDB                ;LOAD A WORD INTO SILO
1447   012436  032777  001000  022606          BIT     #B09,@TSR               ;IS OVERRUN SET??
1448   012444  001414                          BEQ     XH9
1449   012446                                  ERROR    N              ;ERROR: LOADING EMPTY SILO GIVES OVERRUN ERROR!
  (1)                                                                         ;******* ERROR 75 *******
  (1)  012446  032777  040000  017146          BIT     #B14,@SR
  (1)  012454  001005                          BNE     .+14
  (1)  012456  012767  000075  017370          MOV     #75,ERRNUM
  (1)  012464  004767  017136                  JSR     PC,ERR
  (1)          000076                  N       =       N+1
1450   012470                                  SCOPE   XH8A
  (1)  012470  004567  171316                  JSR     R5,SCPRTN
  (1)  012474  012422                          XH8A
1451   012476  005077  022550          XH9:    CLR     @TSR
1452   012502  052777  002000  022542          BIS     #B10,@TSR               ;SET TIMEOUT BIT IN TSR
1453   012510  032777  002000  022534          BIT     #B10,@TSR               ;IS IT SET?
1454   012516  001014                          BNE     XH10
1455   012520                                  ERROR    N              ;ERROR: CANNOT SET TSR BIT 10
  (1)                                                                         ;******* ERROR 76 *******
  (1)  012520  032777  040000  017074          BIT     #B14,@SR
  (1)  012526  001005                          BNE     .+14
  (1)  012530  012767  000076  017316          MOV     #76,ERRNUM
  (1)  012536  004767  017064                  JSR     PC,ERR
  (1)          000077                  N       =       N+1
1456   012542                                  SCOPE   XH9
  (1)  012542  004567  171244                  JSR     R5,SCPRTN
  (1)  012546  012476                          XH9
1457   012550  032777  100000  022474  XH10:   BIT     #B15,@TSR               ;IS ERROR BIT SET?
1458   012556  001014                          BNE     XH11
1459   012560                                  ERROR    N              ;ERROR: TIMEOUT DID NOT SET TSR BIT 15
  (1)                                                                         ;******* ERROR 77 *******
  (1)  012560  032777  040000  017034          BIT     #B14,@SR
  (1)  012566  001005                          BNE     .+14
  (1)  012570  012767  000077  017256          MOV     #77,ERRNUM
  (1)  012576  004767  017024                  JSR     PC,ERR
```

```
  (1)           000100                     N       =       N+1
1460  012602                                       SCOPE   XH9
  (1) 012602  004567  171204                       JSR     R5,SCPRTN
  (1) 012606  012476                               XH9
1461  012610  005077  022436               XH11:   CLR     @TSR                    ;CLR TSR
1462  012614  052777  004000  022430               BIS     #B11,@TSR               ;SET MST DWN
1463  012622  032777  004000  022422               BIT     #B11,@TSR               ;IS IT SET?
1464  012630  001014                               BNE     XH12
1465  012632                                       ERROR    N              ;ERROR: CANNOT SET TSR BIT 11
  (1)                                                                             ;******* ERROR 100 *******
  (1) 012632  032777  040000  016762               BIT     #B14,@SR
  (1) 012640  001005                               BNE     .+14
  (1) 012642  012767  000100  017204               MOV     #100,ERRNUM
  (1) 012650  004767  016752                       JSR     PC,ERR
  (1)           000101                     N       =       N+1
1466  012654                                       SCOPE   XH11
  (1) 012654  004567  171132                       JSR     R5,SCPRTN
  (1) 012660  012610                               XH11
1467  012662  032777  100000  022362   XH12:       BIT     #B15,@TSR               ;IS ERROR BIT SET?
1468  012670  001014                               BNE     XH13
1469  012672                                       ERROR    N              ;ERROR: MST DWN DIDN'T SET TSR BIT 15
  (1)                                                                             ;******* ERROR 101 *******
  (1) 012672  032777  040000  016722               BIT     #B14,@SR
  (1) 012700  001005                               BNE     .+14
  (1) 012702  012767  000101  017144               MOV     #101,ERRNUM
  (1) 012710  004767  016712                       JSR     PC,ERR
  (1)           000102                     N       =       N+1
1470  012714                                       SCOPE   XH11
  (1) 012714  004567  171072                       JSR     R5,SCPRTN
  (1) 012720  012610                               XH11
1471  012722  005077  022324               XH13:   CLR     @TSR
1472  012726  052777  010000  022316               BIS     #B12,@TSR               ;SET TXM ERR
1473  012734  032777  010000  022310               BIT     #B12,@TSR               ;IS IT SET?
1474  012742  001014                               BNE     XH14
1475  012744                                       ERROR    N              ;ERROR: CANNOT SET TSR BIT 12
  (1)                                                                             ;******* ERROR 102 *******
  (1) 012744  032777  040000  016650               BIT     #B14,@SR
  (1) 012752  001005                               BNE     .+14
  (1) 012754  012767  000102  017072               MOV     #102,ERRNUM
  (1) 012762  004767  016640                       JSR     PC,ERR
  (1)           000103                     N       =       N+1
1476  012766                                       SCOPE   XH13
  (1) 012766  004567  171020                       JSR     R5,SCPRTN
  (1) 012772  012722                               XH13
1477  012774  032777  100000  022250   XH14:       BIT     #B15,@TSR               ;IS ERROR BIT SET?
1478  013002  001014                               BNE     XH15
1479  013004                                       ERROR    N              ;ERROR: TXM ERR DIDN'T SET TSR BIT 15
  (1)                                                                             ;******* ERROR 103 *******
  (1) 013004  032777  040000  016610               BIT     #B14,@SR
  (1) 013012  001005                               BNE     .+14
  (1) 013014  012767  000103  017032               MOV     #103,ERRNUM
  (1) 013022  004767  016600                       JSR     PC,ERR
  (1)           000104                     N       =       N+1
1480  013026                                       SCOPE   XH13
  (1) 013026  004567  170760                       JSR     R5,SCPRTN
  (1) 013032  012722                               XH13
```

```
 1481  013034  005077  022212          XH15:   CLR     @TSR
 1482  013040  052777  020000  022204          BIS     #B13,@TSR               ;SET MEM OFL
 1483  013046  032777  020000  022176          BIT     #B13,@TSR               ;IS IT SET?
 1484  013054  001014                          BNE     XH16
 1485  013056                                  ERROR    N              ;ERROR: CANNOT SET TSR BIT 13
  (1)                                                                         ;******* ERROR 104 *******
  (1)   013056  032777  040000  016536          BIT     #B14,@SR
  (1)   013064  001005                          BNE     .+14
  (1)   013066  012767  000104  016760          MOV     #104,ERRNUM
  (1)   013074  004767  016526                  JSR     PC,ERR
  (1)           000105                  N       =       N+1
 1486  013100                                  SCOPE   XH15
  (1)   013100  004567  170706                  JSR     R5,SCPRTN
  (1)   013104  013034                          XH15
 1487  013106  032777  100000  022136  XH16:   BIT     #B15,@TSR               ;IS ERROR BIT SET?
 1488  013114  001014                          BNE     XH17
 1489  013116                                  ERROR    N              ;ERROR: MEM OFL DIDN'T SET TSR BIT 15
  (1)                                                                         ;******* ERROR 105 *******
  (1)   013116  032777  040000  016476          BIT     #B14,@SR
  (1)   013124  001005                          BNE     .+14
  (1)   013126  012767  000105  016720          MOV     #105,ERRNUM
  (1)   013134  004767  016466                  JSR     PC,ERR
  (1)           000106                  N       =       N+1
 1490  013140                                  SCOPE   XH15
  (1)   013140  004567  170646                  JSR     R5,SCPRTN
  (1)   013144  013034                          XH15
```

```
1492                                        ;ERROR GENERATION TESTS
1493
1494  013146                                XH17:   BDINIT  XMTR                    ;CLEAR BOARD
1495  013154  012777  177774  022074               MOV     #-4,@TSBC               ;SET UP TO GENERATE NXM ERR
1496  013162  012777  164176  022070               MOV     #164176,@TSBA           ;LOAD NON-EXST ADDR INTO TSBA
1497  013170  052777  040060  022052               BIS     #40060,@TCR             ;START NPR AND SET EXT ADD BITS
1498  013176  000240                               NOP
1499  013200  000240                               NOP
1500  013202  005777  022050                       TST     @TSBC                   ;DID BYTE COUNT GO TO 0 ?
1501  013206  001014                               BNE     XH18
1502  013210                                       ERROR    N              ;ERROR: REPLACE #764176 WITH NON EXST ADDR
 (1)                                                                              ;******* ERROR 106 *******
 (1)  013210  032777  040000  016404               BIT     #B14,@SR
 (1)  013216  001005                               BNE     .+14
 (1)  013220  012767  000106  016626               MOV     #106,ERRNUM
 (1)  013226  004767  016374                       JSR     PC,ERR
 (1)          000107                      N       =       N+1
1503  013232                                       SCOPE   XH17
 (1)  013232  004567  170554                       JSR     R5,SCPRTN
 (1)  013236  013146                               XH17
1504  013240  032777  040000  022004  XH18:        BIT     #B14,@TSR               ;NOW CHECK NXL ERR BIT
1505  013246  001014                               BNE     XH19
1506  013250                                       ERROR    N              ;ERROR: NPR TO NON-EXST ADDR DIDN'T SET NXL ERR
 (1)                                                                              ;******* ERROR 107 *******
 (1)  013250  032777  040000  016344               BIT     #B14,@SR
 (1)  013256  001005                               BNE     .+14
 (1)  013260  012767  000107  016566               MOV     #107,ERRNUM
 (1)  013266  004767  016334                       JSR     PC,ERR
 (1)          000110                      N       =       N+1
1507  013272                                       SCOPE   XH17
 (1)  013272  004567  170514                       JSR     R5,SCPRTN
 (1)  013276  013146                               XH17
1508  013300  032777  100000  021744  XH19:        BIT     #B15,@TSR               ;IS ERROR BIT (15) SET?
1509  013306  001014                               BNE     XH20
1510  013310                                       ERROR    N              ;ERROR: NXL ERR DIDN'T SET TSR BIT 15
 (1)                                                                              ;******* ERROR 110 *******
 (1)  013310  032777  040000  016304               BIT     #B14,@SR
 (1)  013316  001005                               BNE     .+14
 (1)  013320  012767  000110  016526               MOV     #110,ERRNUM
 (1)  013326  004767  016274                       JSR     PC,ERR
 (1)          000111                      N       =       N+1
1511  013332                                       SCOPE   XH17
 (1)  013332  004567  170454                       JSR     R5,SCPRTN
 (1)  013336  013146                               XH17
1512  013340                              XH20:    BDINIT  XMTR                    ;CLEAR BOARD
1513  013346  016777  177774  021700  XH20L:       MOV     XH20L,@TSDB             ;FILL THE SILO WITH GARBAGE
1514  013354  000240                               NOP
1515  013356  000240                               NOP
1516  013360  032777  000400  021664               BIT     #B08,@TSR               ;SILO INPUT READY?
1517  013366  001367                               BNE     XH20L                   ;IF YES, KEEP LOADING
1518  013370  016777  177752  021656               MOV     XH20L,@TSDB             ;NO,SILO FULL;LOAD 1 MORE WORD
1519  013376  032777  001000  021646               BIT     #B09,@TSR               ;IS TSR BIT 9 SET?
1520  013404  001014                               BNE     XH21
1521  013406                                       ERROR    N              ;ERROR: LOADING FULL SILO DIDN'T SET TSR-09
 (1)                                                                              ;******* ERROR 111 *******
 (1)  013406  032777  040000  016206               BIT     #B14,@SR
```

```
  (1) 013414 001005                    BNE     .+14
  (1) 013416 012767 000111 016430      MOV     #111,ERRNUM
  (1) 013424 004767 016176             JSR     PC,ERR
  (1)        000112              N     =       N+1
1522 013430                            SCOPE   XH20L
  (1) 013430 004567 170356             JSR     R5,SCPRTN
  (1) 013434 013346                    XH20L
1523 013436                    XH21:   BDINIT  XMTR                    ;CLEAR BOARD
1524 013444 052777 120000 021576       BIS     #120000,@TCR            ;SET SND WD & RIB
1525 013452 016702 016146              MOV     DLCON,R2
1526 013456 005003             XH21A:  CLR     R3                      ;R3 AND R4 ARE COUNTERS
1527 013460 012704 177773              MOV     #-5,R4
1528 013464 032777 002000 021560 XH22: BIT     #B10,@TSR               ;IS TIMEOUT SET?
1529 013472 001022                     BNE     XH22A
1530 013474 005203                     INC     R3                      ;WATCH IT FOR A SEC
1531 013476 001372                     BNE     XH22
1532 013500 005204                     INC     R4
1533 013502 001370                     BNE     XH22
1534 013504 005302                     DEC     R2
1535 013506 001363                     BNE     XH21A
1536 013510                            ERROR    N              ;ERROR: NO TIMEOUT IN A SECOND
  (1)                                                                  ;******* ERROR 112 *******
  (1) 013510 032777 040000 016104      BIT     #B14,@SR
  (1) 013516 001005                    BNE     .+14
  (1) 013520 012767 000112 016326      MOV     #112,ERRNUM
  (1) 013526 004767 016074             JSR     PC,ERR
  (1)        000113              N     =       N+1
1537 013532                            SCOPE   XH21
  (1) 013532 004567 170254             JSR     R5,SCPRTN
  (1) 013536 013436                    XH21
1538 013540                    XH22A:  BDINIT  XMTR                    ;CLR XMTR
1539 013546 105077 021512              CLRB    @TMMRH                  ;CLEAR MASTER
1540 013552 012777 177777 021474       MOV     #-1,@TSDB               ;LOAD A WORD INTO XMTR DATA SILO
1541 013560 004567 170546              JSR     R5,DELAY                ;WAIT FOR MIGRATION
1542 013564 000010                     .WORD   10
1543 013566 052777 120000 021454       BIS     #120000,@TCR            ;SET RIB AND SND WORD
1544 013574 004567 170532              JSR     R5,DELAY
1545 013600 000010                     .WORD   10
1546 013602 032777 004000 021442       BIT     #B11,@TSR               ;CHECK FOR MASTER DOWN
1547 013610 001014                     BNE     XH23            ;ERROR: ATTEMPT TO SEND WORD WITH MASTER CLEAR
1548 013612                            ERROR    N                      ;DID NOT SET MASTER DOWN
  (1)                                                                  ;******* ERROR 113 *******
  (1) 013612 032777 040000 016002      BIT     #B14,@SR
  (1) 013620 001005                    BNE     .+14
  (1) 013622 012767 000113 016224      MOV     #113,ERRNUM
  (1) 013630 004767 015772             JSR     PC,ERR
  (1)        000114              N     =       N+1
1549 013634                            SCOPE   XH22A
  (1) 013634 004567 170152             JSR     R5,SCPRTN
  (1) 013640 013540                    XH22A
1550 013642                    XH23:   BDINIT  XMTR
1551 013650 004767 015352              JSR     PC,MONIT
1552 013654 032777 010000 015740       BIT     #B12,@SR                ;IS SW 12 = 1?
1553 013662 001402                     BEQ     XHRT
1554 013664 000167 175740              JMP     TSRTST                  ;IF SO, TRY THIS TEST OVER
1555 013670 000207             XHRT:   RTS     PC
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                                                .SBTTL  INTERRUPT TEST

                                                ;TRANSMITTER INTERRUPT TEST

013672                                  INTST:  MTPS    #P7                     ;DIS-ALLOW INTERRUPT
 (1)  013672  012737  000340  177776            MOV     #P7,@#PS
013700                                          BDINIT  XMTR                    ;CLR THE BOARD
013706  016700  021326                          MOV     TXVEC,R0
013712  012760  000340  000002                  MOV     #340,2(R0)              ;SET NEW PS = P7
013720  012777  013750  021312                  MOV     #ERRINT,@TXVEC          ;SET-UP FOR ERROR INTERRUPT
013726  052777  000100  021314                  BIS     #B06,@TCR               ;SET INTERRUPT ENABLE
013734                                          MTPS    #0                      ;ALLOW INTERRUPT
 (1)  013734  012737  000000  177776            MOV     #0,@#PS
013742  000240                                  NOP
013744  000167  000046                          JMP     XJ0                     ;SKIP ERROR IF NO INTERRUPT
013750                                  ERRINT: MTPS    #P7                     ;INTERRUPT OFF
 (1)  013750  012737  000340  177776            MOV     #P7,@#PS
013756  022626                                  CMP     (SP)+,(SP)+             ;CORRECT STACK
013760  042777  000100  021262                  BIC     #B06,@TCR               ;CLR INTERRUPT ENABLE
013766                                          ERROR    N              ;ERROR: ERRONEOUS INTERRUPT; NO FLAGS SET
 (1)                                                                            ;******* ERROR 114 *******
 (1)  013766  032777  040000  015626            BIT     #B14,@SR
 (1)  013774  001005                            BNE     .+14
 (1)  013776  012767  000114  016050            MOV     #114,ERRNUM
 (1)  014004  004767  015616                    JSR     PC,ERR
 (1)          000115                    N       =       N+1
014010                                          SCOPE   INTST
 (1)  014010  004567  167776                    JSR     R5,SCPRTN
 (1)  014014  013672                            INTST
014016  005067  021212                  XJ0:    CLR     TMPRIO                  ;START WITH C.P. AT PRIORITY 0
014022  012777  014276  021210                  MOV     #INTA,@TXVEC            ;SET VECTOR FOR GOOD INTERRUPT
014030                                  XJ1:    MTPS    #P7                     ;INTERRUPT OFF
 (1)  014030  012737  000340  177776            MOV     #P7,@#PS
014036  052777  000100  021204                  BIS     #B06,@TCR               ;ENABLE XMTR INTERRUPT
014044  052777  000200  021200                  BIS     #B07,@TSR               ;FORCE INTR WITH SUCC XFER
014052                                          MTPS    TMPRIO                  ;ALLOW INTERRUPT
 (1)  014052  016737  021156  177776            MOV     TMPRIO,@#PS
014060  000240                                  NOP
014062  000240                                  NOP                             ;WAIT FOR IT
014064  005767  021144                          TST     TMPRIO                  ;IS PSW = 0?
014070  001014                                  BNE     XJ2
014072                                          ERROR    N             ;ERROR: NO INTERRUPT FROM TRANSMITTER
 (1)                                                                            ;******* ERROR 115 *******
 (1)  014072  032777  040000  015522            BIT     #B14,@SR
 (1)  014100  001005                            BNE     .+14
 (1)  014102  012767  000115  015744            MOV     #115,ERRNUM
 (1)  014110  004767  015512                    JSR     PC,ERR
 (1)          000116                    N       =       N+1
014114                                          SCOPE   INTST
 (1)  014114  004567  167672                    JSR     R5,SCPRTN
 (1)  014120  013672                            INTST
014122  026767  021116  021104          XJ2:    CMP     XPRIO,TMPRIO            ;HAVE WE REACHED EXPECTED PRIORITY?
014130  001414                                  BEQ     XJ3
014132                                          ERROR    N             ;ERROR: DEVICE NOT JUMPERED TO EXPECTED PRIORITY
 (1)                                                                            ;******* ERROR 116 *******
 (1)  014132  032777  040000  015462            BIT     #B14,@SR
```

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 (1)  014140  001005                        BNE     .+14
 (1)  014142  012767  000116  015704        MOV     #116,ERRNUM
 (1)  014150  004767  015452                JSR     PC,ERR
 (1)          000117                 N      =       N+1
1590  014154                              SCOPE   INTST
 (1)  014154  004567  167632                JSR     R5,SCPRTN
 (1)  014160  013672                        INTST
1591  014162  022767  000340  021044  XJ3:  CMP     #340,TMPRIO             ;IS PSW = 7?
1592  014170  001426                        BEQ     XJ4
1593  014172                              BDINIT  XMTR
1594  014200  062767  000040  021026        ADD     #40,TMPRIO
1595  014206  012777  014320  021024  XJ3S: MOV     #INTB,@TXVEC            ;SET VECTOR FOR ERROR INTR.
1596  014214  052777  000100  021026        BIS     #B06,@TCR               ;ENABLE XMTR INTERRUPT
1597  014222  052777  000200  021022        BIS     #B07,@TSR               ;FORCE INTERRUPT REQUEST
1598  014230                              MTPS    TMPRIO                  ;SET CP TO NEXT PRIORITY
 (1)  014230  016737  021000  177776        MOV     TMPRIO,@#PS
1599  014236  000240                        NOP
1600  014240  000240                        NOP                             ;WAIT FOR POSSIBLE INTERRUPT
1601  014242  000167  177714                JMP     XJ3
1602  014246                          XJ4:  BDINIT  XMTR                    ;CLEAR BOARD
1603  014254  004767  014746                JSR     PC,MONIT
1604  014260  032777  010000  015334        BIT     #B12,@SR                ;SW 12 = 1?
1605  014266  001402                        BEQ     XJRT
1606  014270  000167  177376                JMP     INTST                   ;YES, DO TEST OVER
1607  014274  000207                  XJRT: RTS     PC                      ;NO, LEAVE THIS TEST
1608
1609  014276                          INTA: BDINIT  XMTR                    ;CLR INTERRUPT ETC
1610  014304  062767  000040  020722        ADD     #40,TMPRIO              ;INCR TEMP PRIORITY
1611  014312  022626                        CMP     (SP)+,(SP)+             ;CORRECT STACK POINTER
1612  014314  000167  177510                JMP     XJ1                     ;TRY AGAIN
1613
1614  014320  022626                  INTB: CMP     (SP)+,(SP)+             ;CORRECT STACK
1615  014322                              ERROR   N               ;ERROR: GOT INTR WHEN C.P. AT HIGHER PRIORITY
 (1)                                                                        ;******* ERROR 117 *******
 (1)  014322  032777  040000  015272        BIT     #B14,@SR
 (1)  014330  001005                        BNE     .+14
 (1)  014332  012767  000117  015514        MOV     #117,ERRNUM
 (1)  014340  004767  015262                JSR     PC,ERR
 (1)          000120                 N      =       N+1
1616  014344                              SCOPE   XJ3S
 (1)  014344  004567  167442                JSR     R5,SCPRTN
 (1)  014350  014206                        XJ3S
1617  014352  000167  177604                JMP     XJ3
```

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                                        .SBTTL  C.R.C. CHECK

                                        ;CYCLIC REDUNDANCY CHECK CHARACTER TEST

014356                          CRCTST: BDINIT  XMTR                    ;CLEAR BOARD
014364  012777  177600  020664        MOV     #-128.,@TSBC              ;SET UP BYTE COUNT TO FILL SILO
014372  012777  032700  020660        MOV     #SILDAT,@TSBA
014400  052777  040000  020642        BIS     #B14,@TCR                 ;START NPR
014406  005777  020644          XK1:  TST     @TSBC                     ;IS BYTE COUNT 0?
014412  001375                        BNE     XK1                       ;WAIT FOR NPR TO FINISH
014414  032777  040000  020626        BIT     #B14,@TCR                 ;NOW CHECK      TX NPR BIT
014422  001414                        BEQ     XK2
014424                              ERROR    N              ;ERROR: TX NPR NOT CLR'D BY TSBC OFL
 (1)                                                                 ;******* ERROR 120 *******
 (1)    014424  032777  040000  015170        BIT     #B14,@SR
 (1)    014432  001005                        BNE     .+14
 (1)    014434  012767  000120  015412        MOV     #120,ERRNUM
 (1)    014442  004767  015160                JSR     PC,ERR
 (1)            000121                  N     =       N+1
014446                                  SCOPE   CRCTST
 (1)    014446  004567  167340                JSR     R5,SCPRTN
 (1)    014452  014356                        CRCTST
014454  052777  000200  020566  XK2:  BIS     #B07,@TCR                 ;SET RD SILO BIT
014462  012767  177700  020540        MOV     #-64.,COUNT               ;COUNT READS
014470  012704  033100                MOV     #SILCRC,R4                ;R4 POINTS TO GOOD CRC'S
014474  000240                  XK3:  NOP
014476  017767  020564  015352        MOV     @TSCRC,BAD                ;GET CRC CHAR FOR LAST SILO WORD
014504  017703  020544                MOV     @TSDB,R3                  ;R3 HOLDS SILO DATA WORD
014510  011467  015344                MOV     (R4),GOOD                 ;GET GOOD CRC FROM BUFFER
014514  026767  015340  015334        CMP     GOOD,BAD                  ;IS CRC OK?
014522  001423                        BEQ     XK4
014524                              PNTM    SLOWD                     ;PRINT "SILO OUTPUT WORD WAS "
 (1)    014524  012700  033500                MOV     #SLOWD,R0                 ;PRINT MESSAGE
 (1)    014530  004767  015326                JSR     PC,TYPOUT                 ;POINTED TO BY SLOWD
014534  010300                        MOV     R3,R0
014536  004767  015636                JSR     PC,OCTPNT                 ;PRINT SILO DATA WORD
014542                              DATERR   N              ;ERROR: BAD CRC FOR ABOVE WORD
 (1)                                                                 ;******* ERROR 121 *******
 (1)    014542  032777  040000  015052        BIT     #B14,@SR
 (1)    014550  001005                        BNE     .+14
 (1)    014552  012767  000121  015274        MOV     #121,ERRNUM
 (1)    014560  004767  015126                JSR     PC,DERR
 (1)            000122                  N     =       N+1
014564                                  SCOPE   CRCTST
 (1)    014564  004567  167222                JSR     R5,SCPRTN
 (1)    014570  014356                        CRCTST
014572  062704  000002          XK4:  ADD     #2,R4                     ;UPDATE CRC POINTER
014576  005267  020426                INC     COUNT                     ;HAVE WE CHECKED 64 WORDS?
014602  001334                        BNE     XK3                       ;NO, CONTINUE
014604  004767  014416                JSR     PC,MONIT
014610  032777  010000  015004        BIT     #B12,@SR                  ;CHECK SW 12
014616  001402                        BEQ     XKRT                      ;IF CLR, EXIT
014620  000167  177532                JMP     CRCTST                    ;IF SET STAY
014624                          XKRT: BDINIT  XMTR
014632  000207                        RTS     PC
```

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                                        .SBTTL RECEIVER TESTS

                                        ;TEST 2:  RECEIVER TESTS
                                        ;   (00) RESET TEST
                                        ;   (01) RCR REG TEST
                                        ;   (02) RDBC REG TEST
                                        ;   (03) RDBA REG TEST
                                        ;   (04) DATA SILO TESTS
                                        ;   (05) RSR & ERRORS TESTS
                                        ;   (06) INTERRUPT TEST
                                        ;   (07) C.R.C.  TEST

 000200                                 N       =       200                     ;RECEIVER ERRORS START AT 200

 014634                                 TEST2:  MTPS    #P7
 (1) 014634 012737 000340 177776                MOV     #P7,@#PS
1674 014642 012767 000010 020326                MOV     #10,ITER                ;INITIAL ITERATION OF 10 PER PASS
1675 014650 004767 014352                       JSR     PC,MONIT
1676 014654 032777 002000 014740                BIT     #B10,@SR                ;CHECK SW 10
1677 014662 001420                              BEQ     LOOPR                   ;IF 0, RUN SEQUENTIALLY
1678 014664 017767 014732 020306                MOV     @SR,SWI         ;IF SET, GET TEST # FROM SWR
1679 014672 042767 177770 020300                BIC     #-10,SWI                ;MASK LOW DIGIT
1680 014700 000241                              CLC                             ;CLR C BIT BEFORE ROTATE
1681 014702 006167 020272                       ROL     SWI
1682 014706 006167 020266                       ROL     SWI                     ;MULTIPLY BY 4
1683 014712 062767 014724 020260                ADD     #LOOPR,SWI              ;GENERATE OFFSET
1684 014720 000177 020254                       JMP     @SWI                    ;GO TO SELECTED TEST
1685 014724 004767 000142               LOOPR:  JSR     PC,RINIT                ;DO INITIAL CLEAR TEST
1686 014730 004767 000476                       JSR     PC,RCRTST               ;DO RCR REG TEST
1687 014734 004767 001176                       JSR     PC,RBCTST               ;DO BYTE COUNT REG TEST
1688 014740 004767 001346                       JSR     PC,RBATST               ;DO BYTE ADDR REG TEST
1689 014744 004767 001516                       JSR     PC,SLOTST               ;DO RECVR DATA SILO TEST
1690 014750 004767 003042                       JSR     PC,RSRTST               ;DO RSR REG & ERRORS TEST
1691 014754 004767 004632                       JSR     PC,RINTST               ;DO INTERRUPT TEST
1692 014760 004767 005344                       JSR     PC,RCRCTS               ;DO RCVR CRC GENERATION TEST
1693 014764 032777 004000 014630                BIT     #B11,@SR                ;CHECK SW 11
1694 014772 001003                              BNE     REND                    ;PRINT END IF SET
1695 014774 005367 020176                       DEC     ITER                    ;OTHERWISE, REITERATE
1696 015000 001351                              BNE     LOOPR
1697 015002 005767 020214               REND:   TST     $4FLAG                  ;CAN WE PRINT END PASS?
1698 015006 001030                              BNE     REPEET                  ;NO, LEAVE
1699 015010 005267 020174                       INC     PSNO2                   ;UPDATE PASS NO.
1700 015014                                     PNTM    PEND                    ;PRINT "END PASS # "
 (1) 015014 012700 033557                       MOV     #PEND,R0                ;PRINT MESSAGE
 (1) 015020 004767 015036                       JSR     PC,TYPOUT               ;POINTED TO BY PEND
1701 015024 016700 020160                       MOV     PSNO2,R0
1702 015030 004767 015420                       JSR     PC,DECPNT               ;PRINT PASS NO.
1703 015034 012700 000040                       MOV     #40,R0
1704 015040 004767 015600                       JSR     PC,TTO                  ;PRINT A SPACE
1705 015044 012700 000101                       MOV     #101,R0
1706 015050 004767 015570                       JSR     PC,TTO                  ;PRINT "A" (TO INDICATE RCVR TST)
1707 015054 005000                              CLR     R0
1708 015056 004767 015562                       JSR     PC,TTO
1709 015062 005000                              CLR     R0
1710 015064 004767 015554                       JSR     PC,TTO                  ;NULLS IN CASE RESET FOLLOWS
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  1711  015070  000207                REPEET: RTS     PC                      ;RETURN
```

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                                                                    ! 5
 1713                                    .SBTTL  INITIALIZE TEST
 1714
 1715                                    ;CHECK INITIAL CONDITIONS AFTER RESET
 1716
 1717  015072  000005                    RINIT:  RESET                           ;CLEAR THE WORLD
 1718  015074  017767  020176  014754            MOV     @RDBC,BAD               ;GET BYTE COUNT REG
 1719  015102  005067  014752                    CLR     GOOD
 1720  015106  005767  014744                    TST     BAD                     ;WAS RDBC 0?
 1721  015112  001414                            BEQ     RA1
 1722  015114                                    DATERR   N              ;ERROR: RDBC NOT CLR'D BY RESET
  (1)                                                                           ;******* ERROR 200 *******
  (1)  015114  032777  040000  014500            BIT     #B14,@SR
  (1)  015122  001005                            BNE     .+14
  (1)  015124  012767  000200  014722            MOV     #200,ERRNUM
  (1)  015132  004767  014554                    JSR     PC,DERR
  (1)          000201                    N       =       N+1
 1723  015136                                    SCOPE   RINIT
  (1)  015136  004567  166650                    JSR     R5,SCPRTN
  (1)  015142  015072                            RINIT
 1724  015144  017767  020130  014704  RA1:     MOV     @RDBA,BAD               ;GET BYTE ADDRESS REG
 1725  015152  005067  014702                    CLR     GOOD
 1726  015156  005767  014674                    TST     BAD                     ;WAS RDBA 0?
 1727  015162  001414                            BEQ     RA2
 1728  015164                                    DATERR   N              ;ERROR: RDBA NOT CLR'D BY RESET
  (1)                                                                           ;******* ERROR 201 *******
  (1)  015164  032777  040000  014430            BIT     #B14,@SR
  (1)  015172  001005                            BNE     .+14
  (1)  015174  012767  000201  014652            MOV     #201,ERRNUM
  (1)  015202  004767  014504                    JSR     PC,DERR
  (1)          000202                    N       =       N+1
 1729  015206                                    SCOPE   RINIT
  (1)  015206  004567  166600                    JSR     R5,SCPRTN
  (1)  015212  015072                            RINIT
 1730  015214  017767  020050  014634  RA2:     MOV     @RCR,BAD                ;GET RCR REGISTER
 1731  015222  012767  000010  014630            MOV     #10,GOOD                ;SET UP GOOD FOR COMPARE
 1732  015230  026767  014624  014620            CMP     GOOD,BAD
 1733  015236  001414                            BEQ     RA3
 1734  015240                                    DATERR   N              ;ERROR: RCR NOT INITIALIZED BY RESET
  (1)                                                                           ;******* ERROR 202 *******
  (1)  015240  032777  040000  014354            BIT     #B14,@SR
  (1)  015246  001005                            BNE     .+14
  (1)  015250  012767  000202  014576            MOV     #202,ERRNUM
  (1)  015256  004767  014430                    JSR     PC,DERR
  (1)          000203                    N       =       N+1
 1735  015262                                    SCOPE   RINIT
  (1)  015262  004567  166524                    JSR     R5,SCPRTN
  (1)  015266  015072                            RINIT
 1736  015270  017767  020006  014560  RA3:     MOV     @RDCRC,BAD              ;GET CRC REG
 1737  015276  005067  014556                    CLR     GOOD
 1738  015302  005767  014550                    TST     BAD                     ;IS CRC REG 0?
 1739  015306  001414                            BEQ     RA4
 1740  015310                                    DATERR   N              ;ERROR: RCVR CRC NOT CLR'D BY RESET
  (1)                                                                           ;******* ERROR 203 *******
  (1)  015310  032777  040000  014304            BIT     #B14,@SR
  (1)  015316  001005                            BNE     .+14
  (1)  015320  012767  000203  014526            MOV     #203,ERRNUM
```

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  (1)  015326  004767  014360            JSR     PC,DERR
  (1)               000204          N     =       N+1
1741   015332                            SCOPE   RINIT
  (1)  015332  004567  166454            JSR     R5,SCPRTN
  (1)  015336  015072                    RINIT
1742   015340  017767  017726  014510  RA4:  MOV   @RSR,BAD              ;GET RSR REG
1743   015346  005067  014506            CLR     GOOD
1744   015352  005767  014500            TST     BAD                     ;IS RSR REG 0?
1745   015356  001414                    BEQ     RA5
1746   015360                            DATERR   N              ;ERROR: RSR REG NOT CLR'D BY RESET
  (1)                                                                   ;******* ERROR 204 *******
  (1)  015360  032777  040000  014234    BIT     #B14,@SR
  (1)  015366  001005                    BNE     .+14
  (1)  015370  012767  000204  014456    MOV     #204,ERRNUM
  (1)  015376  004767  014310            JSR     PC,DERR
  (1)               000205          N     =       N+1
1747   015402                            SCOPE   RINIT
  (1)  015402  004567  166404            JSR     R5,SCPRTN
  (1)  015406  015072                    RINIT
1748   015410  004767  013612  RA5:      JSR     PC,MONIT
1749   015414  032777  010000  014200    BIT     #B12,@SR                ;CHK SW 12 FOR EXIT VISA
1750   015422  001402                    BEQ     RART
1751   015424  000167  177442            JMP     RINIT                   ;IF SET,STAY IN THIS TEST
1752   015430  000207          RART:     RTS     PC                      ;OTHERWISE, EXIT
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                                        .SBTTL  RCR TEST

                                        ;RECEIVER COMMAND REGISTER TEST

1758  015432  005077  017632            RCRTST: CLR     @RCR                    ;CLEAR RCR REGISTER
1759  015436  012767  160375  014414    RD1:    MOV     #160375,GOOD            ;SET ALL SETTABLE BITS IN RCR
1760  015444  016777  014410  017616            MOV     GOOD,@RCR
1761  015452  017767  017612  014376            MOV     @RCR,BAD                ;AND READ THEM BACK
1762  015460  026767  014374  014370            CMP     GOOD,BAD                ;ALL BITS SET?
1763  015466  001414                            BEQ     RD2
1764  015470                                    DATERR   N              ;ERROR: CANNOT SET ALL SETTABLE RCR BITS
 (1)                                                                    ;******* ERROR 205 *******
 (1)  015470  032777  040000  014124            BIT     #B14,@SR
 (1)  015476  001005                            BNE     .+14
 (1)  015500  012767  000205  014346            MOV     #205,ERRNUM
 (1)  015506  004767  014200                    JSR     PC,DERR
 (1)          000206                  N         =       N+1
1765  015512                                    SCOPE   RD1
 (1)  015512  004567  166274                    JSR     R5,SCPRTN
 (1)  015516  015436                            RD1
1766  015520  005067  014334            RD2:    CLR     GOOD                    ;NOW CLR BITS AFTER SETTING THEM
1767  015524  005077  017540                    CLR     @RCR
1768  015530  017767  017534  014320            MOV     @RCR,BAD                ;READ THEM BACK
1769  015536  042767  017412  014312            BIC     #17412,BAD              ;IGNORE R/O BITS
1770  015544  026767  014310  014304            CMP     GOOD,BAD                ;ALL CLR?
1771  015552  001414                            BEQ     RD3
1772  015554                                    DATERR   N              ;ERROR: CANNOT CLR ALL RCR BITS
 (1)                                                                    ;******* ERROR 206 *******
 (1)  015554  032777  040000  014040            BIT     #B14,@SR
 (1)  015562  001005                            BNE     .+14
 (1)  015564  012767  000206  014262            MOV     #206,ERRNUM
 (1)  015572  004767  014114                    JSR     PC,DERR
 (1)          000207                  N         =       N+1
1773  015576                                    SCOPE   RD2
 (1)  015576  004567  166210                    JSR     R5,SCPRTN
 (1)  015602  015520                            RD2
1774  015604  012777  160375  017456  RD3:     MOV     #160375,@RCR            ;SET ALL SETTABLE BITS IN RCR
1775  015612  012777  177777  017456            MOV     #-1,@RDBC               ;AND IN RDBC
1776  015620  012777  177777  017452            MOV     #-1,@RDBA               ;AND IN RDBA
1777  015626  012777  037200  017436            MOV     #37200,@RSR             ;AND IN RSR
1778  015634  052777  000002  017426            BIS     #B01,@RCR               ;B O A R D  I N I T
1779  015642  017767  017422  014206            MOV     @RCR,BAD                ;CHECK RCR
1780  015650  012767  000010  014202            MOV     #10,GOOD                ;SEE IF RCR = 10
1781  015656  026767  014176  014172            CMP     GOOD,BAD
1782  015664  001414                            BEQ     RD4
1783  015666                                    DATERR   N              ;ERROR: RCR NOT INIT'D BY BD INIT
 (1)                                                                    ;******* ERROR 207 *******
 (1)  015666  032777  040000  013726            BIT     #B14,@SR
 (1)  015674  001005                            BNE     .+14
 (1)  015676  012767  000207  014150            MOV     #207,ERRNUM
 (1)  015704  004767  014002                    JSR     PC,DERR
 (1)          000210                  N         =       N+1
1784  015710                                    SCOPE   RD3
 (1)  015710  004567  166076                    JSR     R5,SCPRTN
 (1)  015714  015604                            RD3
1785  015716  017767  017350  014132  RD4:     MOV     @RSR,BAD                ;CHECK RSR
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 1786  015724  005067  014130                CLR     GOOD
 1787  015730  026767  014124  014120        CMP     GOOD,BAD                ;RSR = 0?
 1788  015736  001414                        BEQ     RD5
 1789  015740                                DATERR   N                      ;ERROR: RSR NOT CLR'D BY BD INIT
  (1)                                                                       ;******* ERROR 210 *******
  (1)  015740  032777  040000  013654        BIT     #B14,@SR
  (1)  015746  001005                        BNE     .+14
  (1)  015750  012767  000210  014076        MOV     #210,ERRNUM
  (1)  015756  004767  013730                JSR     PC,DERR
  (1)          000211                N       =       N+1
 1790  015762                                SCOPE   RD3
  (1)  015762  004567  166024                JSR     R5,SCPRTN
  (1)  015766  015604                        RD3
 1791  015770  017767  017302  014060  RD5:  MOV     @RDBC,BAD               ;CHECK RDBC
 1792  015776  005067  014056                CLR     GOOD
 1793  016002  026767  014052  014046        CMP     GOOD,BAD                ;RDBC = 0?
 1794  016010  001414                        BEQ     RD6
 1795  016012                                DATERR   N                      ;ERROR: RDBC NOT CLR'D BY BD INIT
  (1)                                                                       ;******* ERROR 211 *******
  (1)  016012  032777  040000  013602        BIT     #B14,@SR
  (1)  016020  001005                        BNE     .+14
  (1)  016022  012767  000211  014024        MOV     #211,ERRNUM
  (1)  016030  004767  013656                JSR     PC,DERR
  (1)          000212                N       =       N+1
 1796  016034                                SCOPE   RD3
  (1)  016034  004567  165752                JSR     R5,SCPRTN
  (1)  016040  015604                        RD3
 1797  016042  017767  017232  014006  RD6:  MOV     @RDBA,BAD               ;CHECK RDBA
 1798  016050  005067  014004                CLR     GOOD
 1799  016054  026767  014000  013774        CMP     GOOD,BAD                ;RDBA = 0?
 1800  016062  001414                        BEQ     RD7
 1801  016064                                DATERR   N                      ;ERROR: RDBA NOT CLR'D BY BD INIT
  (1)                                                                       ;******* ERROR 212 *******
  (1)  016064  032777  040000  013530        BIT     #B14,@SR
  (1)  016072  001005                        BNE     .+14
  (1)  016074  012767  000212  013752        MOV     #212,ERRNUM
  (1)  016102  004767  013604                JSR     PC,DERR
  (1)          000213                N       =       N+1
 1802  016106                                SCOPE   RD3
  (1)  016106  004567  165700                JSR     R5,SCPRTN
  (1)  016112  015604                        RD3
 1803  016114  004767  013106          RD7:  JSR     PC,MONIT
 1804  016120  032777  010000  013474        BIT     #B12,@SR                ;CHECK SW 12
 1805  016126  001402                        BEQ     RDRT
 1806  016130  000167  177276                JMP     RCRTST                  ;STAY IN THIS LOOP IF SW 12 = 1
 1807  016134  000207                RDRT:   RTS     PC
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                                        .SBTTL  RDBC TEST

                                ;BYTE COUNT REG DATA TEST
                                ;SLIDE A ZERO THROUGH THE REGISTER AND READ IT BACK
                                ;AS A DATA TEST OF THE REGISTER.

016136                          RBCTST: BDINIT  RCVR                    ;INIT RCVR MODULE
016144  012767  177777  017032          MOV     #-1,PAT                 ;SET PATTERN
016152  012767  000001  017022          MOV     #B00,MASK               ;SET BIT MASK
016160  016767  017020  013672  RB1:    MOV     PAT,GOOD                ;LOAD "GOOD" WITH PATTERN
016166  016777  013666  017102          MOV     GOOD,@RDBC              ;LOAD RDBC WITH PATTERN
016174  017767  017076  013654          MOV     @RDBC,BAD               ;READ RDBC
016202  026767  013652  013646          CMP     GOOD,BAD                ;DATA OK?
016210  001414                          BEQ     RB2
016212                                  DATERR   N              ;ERROR: BAD DATA IN RDBC
(1)                                                             ;******* ERROR 213 *******
(1)     016212  032777  040000  013402          BIT     #B14,@SR
(1)     016220  001005                  BNE     .+14
(1)     016222  012767  000213  013624          MOV     #213,ERRNUM
(1)     016230  004767  013456                  JSR     PC,DERR
(1)             000214                  N       =       N+1
016234                                  SCOPE   RB1
(1)     016234  004567  165552                  JSR     R5,SCPRTN
(1)     016240  016160                          RB1
016242  032767  100000  016734  RB2:    BIT     #B15,PAT                ;DONE WHOLE REGISTER?
016250  001407                          BEQ     RB3                     ;YES,EXIT
016252  046767  016724  016724          BIC     MASK,PAT                ;NO, PREPARE FOR NEXT BIT
016260  006367  016716                  ASL     MASK
016264  000167  177670                  JMP     RB1                     ;GO DO NEXT BIT
016270  004767  012732          RB3:    JSR     PC,MONIT
016274  032777  010000  013320          BIT     #B12,@SR                ;IF SO,CONSIDER LEAVING
016302  001402                          BEQ     RBRT                    ;EXIT IF SW 12 = 0
016304  000167  177626                  JMP     RBCTST                  ;STAY HERE IF SW 12 = 1
016310  000207                  RBRT:   RTS     PC
```

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                                        .SBTTL  RDBA TEST

                                ;BYTE ADDRESS REG DATA TEST
                                ;SLIDE A ZERO THROUGH THE REGISTER AND READ IT BACK
                                ;AS A DATA TEST OF THE REGISTER.

016312                          RBATST: BDINIT  RCVR                    ;INIT RECEIVER MODULE
016320  012767  177777  016656          MOV     #-1,PAT                 ;SET PATTERN
016326  012767  000001  016646          MOV     #B00,MASK               ;SET BIT MASK
016334  016767  016644  013516  RC1:    MOV     PAT,GOOD                ;LOAD "GOOD" WITH PATTERN
016342  016777  013512  016730          MOV     GOOD,@RDBA              ;LOAD RDBA WITH PATTERN
016350  017767  016724  013500          MOV     @RDBA,BAD               ;READ RDBA
016356  026767  013476  013472          CMP     GOOD,BAD                ;DATA OK?
016364  001414                          BEQ     RC2
016366                                  DATERR   N              ;ERROR: BAD DATA IN RDBA REG
 (1)                                                                    ;******* ERROR 214 *******
 (1)    016366  032777  040000  013226          BIT     #B14,@SR
 (1)    016374  001005                  BNE     .+14
 (1)    016376  012767  000214  013450          MOV     #214,ERRNUM
 (1)    016404  004767  013302                  JSR     PC,DERR
 (1)            000215          N       =       N+1
016410                                  SCOPE   RC1
 (1)    016410  004567  165376                  JSR     R5,SCPRTN
 (1)    016414  016334                  RC1
016416  032767  100000  016560  RC2:    BIT     #B15,PAT                ;DONE WHOLE REGISTER?
016424  001407                          BEQ     RC3                     ;YES, EXIT
016426  046767  016550  016550          BIC     MASK,PAT                ;NO,PREPARE FOR NEXT BIT
016434  006367  016542                  ASL     MASK
016440  000167  177670                  JMP     RC1                     ;GO DO NEXT BIT
016444  004767  012556          RC3:    JSR     PC,MONIT
016450  032777  010000  013144          BIT     #B12,@SR                ;EXIT IF SW 12 = 0
016456  001402                          BEQ     RCRT
016460  000167  177626                  JMP     RBATST                  ;STAY HERE IF SW 12 = 1
016464  000207                  RCRT:   RTS     PC
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                                        .SBTTL  DATA SILO TEST

                                        ;RECEIVER DATA SILO TEST

016466                          SLOTST: BDINIT  RCVR                    ;CLEAR RCVR MODULE
016474  004567  165632                  JSR     R5,DELAY
016500  000010                          .WORD   10
016502  032777  000400  016562          BIT     #B08,@RSR               ;SILO OUTPUT READY?
016510  001414                          BEQ     RE1
016512                                  ERROR    N              ;ERROR: BD INIT DID NOT CLR SILO
(1)                                                                     ;******* ERROR 215 *******
(1)     016512  032777  040000  013102          BIT     #B14,@SR
(1)     016520  001005                  BNE     .+14
(1)     016522  012767  000215  013324          MOV     #215,ERRNUM
(1)     016530  004767  013072                  JSR     PC,ERR
(1)             000216                  N       =       N+1
016534                                  SCOPE   SLOTST
(1)     016534  004567  165252                  JSR     R5,SCPRTN
(1)     016540  016466                          SLOTST
016542  032777  000010  016520  RE1:    BIT     #B03,@RCR               ;SILO INPUT RDY?
016550  001014                          BNE     RE2
016552                                  ERROR    N              ;ERROR: BD INIT DID NOT SET SILO INPUT RDY
(1)                                                                     ;******* ERROR 216 *******
(1)     016552  032777  040000  013042          BIT     #B14,@SR
(1)     016560  001005                  BNE     .+14
(1)     016562  012767  000216  013264          MOV     #216,ERRNUM
(1)     016570  004767  013032                  JSR     PC,ERR
(1)             000217                  N       =       N+1
016574                                  SCOPE   SLOTST
(1)     016574  004567  165212                  JSR     R5,SCPRTN
(1)     016600  016466                          SLOTST
016602  052777  000200  016460  RE2:    BIS     #B07,@RCR               ;SET LD SILO BIT
016610  012777  177777  016456          MOV     #-1,@RDDB               ;LOAD 177777 INTO DATA SILO
016616  042777  000200  016444          BIC     #B07,@RCR               ;CLR LD SILO BIT
016624  004567  165502                  JSR     R5,DELAY
016630  000010                          .WORD   10
016632  032777  000400  016432          BIT     #B08,@RSR               ;SILO OUTPUT RDY NOW?
016640  001017                          BNE     RE3
016642                                  ERROR    N              ;ERROR: NO SILO OUTPUT  AFTER LOAD
(1)                                                                     ;******* ERROR 217 *******
(1)     016642  032777  040000  012752          BIT     #B14,@SR
(1)     016650  001005                  BNE     .+14
(1)     016652  012767  000217  013174          MOV     #217,ERRNUM
(1)     016660  004767  012742                  JSR     PC,ERR
(1)             000220                  N       =       N+1
016664                                  BDINIT  RCVR                    ;CLR SILO
016672                                  SCOPE   RE2
(1)     016672  004567  165114                  JSR     R5,SCPRTN
(1)     016676  016602                          RE2
016700  017767  016370  013150  RE3:    MOV     @RDDB,BAD               ;POP WORD FROM SILO
016706  012767  177777  013144          MOV     #-1,GOOD
016714  026767  013140  013134          CMP     GOOD,BAD                ;SILO OUTPUT = 177777
016722  001417                          BEQ     RE4
016724                                  DATERR   N              ;ERROR: DROPPED BITS IN DATA SILO
(1)                                                                     ;******* ERROR 220 *******
(1)     016724  032777  040000  012670          BIT     #B14,@SR
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  (1)  016732  001005                          BNE     .+14
  (1)  016734  012767  000220  013112          MOV     #220,ERRNUM
  (1)  016742  004767  012744                  JSR     PC,DERR
  (1)          000221                  N       =       N+1
1893   016746                                  BDINIT  RCVR
1894   016754                                  SCOPE   RE2
  (1)  016754  004567  165032                  JSR     R5,SCPRTN
  (1)  016760  016602                          RE2
1895   016762  032777  000400  016302  RE4:    BIT     #B08,@RSR               ;SILO OUTPUT RDY?
1896   016770  001414                          BEQ     RE5
1897   016772                                  ERROR    N              ;ERROR: WORD DID NOT GET POPPED FROM SILO
  (1)                                                                   ;******* ERROR 221 *******
  (1)  016772  032777  040000  012622          BIT     #B14,@SR
  (1)  017000  001005                          BNE     .+14
  (1)  017002  012767  000221  013044          MOV     #221,ERRNUM
  (1)  017010  004767  012612                  JSR     PC,ERR
  (1)          000222                  N       =       N+1
1898   017014                                  SCOPE   RE3
  (1)  017014  004567  164772                  JSR     R5,SCPRTN
  (1)  017020  016700                          RE3
1899   017022  032777  000010  016240  RE5:    BIT     #B03,@RCR               ;SILO INPUT RDY?
1900   017030  001014                          BNE     RE6
1901   017032                                  ERROR    N              ;ERROR: SILO INPUT NOT READY
  (1)                                                                   ;******* ERROR 222 *******
  (1)  017032  032777  040000  012562          BIT     #B14,@SR
  (1)  017040  001005                          BNE     .+14
  (1)  017042  012767  000222  013004          MOV     #222,ERRNUM
  (1)  017050  004767  012552                  JSR     PC,ERR
  (1)          000223                  N       =       N+1
1902   017054                                  SCOPE   RE5
  (1)  017054  004567  164732                  JSR     R5,SCPRTN
  (1)  017060  017022                          RE5
1903   017062  052777  000200  016200  RE6:    BIS     #B07,@RCR               ;SET LD SILO BIT
1904   017070  005077  016200                  CLR     @RDDB                   ;LOAD 0'S INTO SILO
1905   017074  042777  000200  016166          BIC     #B07,@RCR               ;CLR LD SILO BIT
1906   017102  032777  000400  016162  RE7:    BIT     #B08,@RSR               ;SILO OUTPUT RDY?
1907   017110  001774                          BEQ     RE7                     ;WAIT FOR IT
1908   017112  017767  016156  012736          MOV     @RDDB,BAD               ;READ SILO OUTPUT
1909   017120  005067  012734                  CLR     GOOD
1910   017124  026767  012730  012724          CMP     GOOD,BAD                ;SILO OUTPUT = 0?
1911   017132  001417                          BEQ     RE7A
1912   017134                                  DATERR   N             ;ERROR: PICKED UP BITS IN DATA SILO
  (1)                                                                   ;******* ERROR 223 *******
  (1)  017134  032777  040000  012460          BIT     #B14,@SR
  (1)  017142  001005                          BNE     .+14
  (1)  017144  012767  000223  012702          MOV     #223,ERRNUM
  (1)  017152  004767  012534                  JSR     PC,DERR
  (1)          000224                  N       =       N+1
1913   017156                                  BDINIT  RCVR                    ;CLR SILO
1914   017164                                  SCOPE   RE6
  (1)  017164  004567  164622                  JSR     R5,SCPRTN
  (1)  017170  017062                          RE6
1915   017172  004767  000476          RE7A:   JSR     PC,CLRCBF               ;MAKE SURE BUFF IS CLR
1916   017176                          RE8:    BDINIT  RCVR                    ;CLR RCVR BOARD
1917   017204  052777  000200  016056          BIS     #B07,@RCR               ;SET LD SILO BIT
1918   017212  012704  032700                  MOV     #SILDAT,R4              ;R4 POINTS TO DATA FOR SILO
```

```
 1919  017216  012703  177700              MOV     #-64.,R3                ;R3 COUNTS WORDS
 1920  017222  012477  016046      RE9:    MOV     (R4)+,@RDDB             ;LOAD DATA INTO SILO
 1921  017226  005203                      INC     R3
 1922  017230  001374                      BNE     RE9                     ;KEEP LOADING FOR 64 WORDS
 1923  017232  032777  000010  016030      BIT     #B03,@RCR               ;FULL... IS SILO INPUT RDY?
 1924  017240  001414                      BEQ     RE10
 1925  017242                              ERROR    N              ;ERROR: FULL SILO STILL RDY FOR INPUT
  (1)                                                                     ;******* ERROR 224 *******
  (1)  017242  032777  040000  012352      BIT     #B14,@SR
  (1)  017250  001005                      BNE     .+14
  (1)  017252  012767  000224  012574      MOV     #224,ERRNUM
  (1)  017260  004767  012342              JSR     PC,ERR
  (1)          000225              N       =       N+1
 1926  017264                              SCOPE   RE8
  (1)  017264  004567  164522              JSR     R5,SCPRTN
  (1)  017270  017176                      RE8
 1927  017272  042777  000200  015770  RE10:   BIC     #B07,@RCR               ;CLR LD SILO BIT
 1928  017300  012777  177600  015770          MOV     #-128.,@RDBC            ;SET UP BYTE COUNT FOR 64 WORDS
 1929  017306  012777  033300  015764          MOV     #CMPBUF,@RDBA           ;POINT INTERF AT 64 WD BUFFER
 1930  017314  052777  040000  015746          BIS     #B14,@RCR               ;SET RC NPR
 1931  017322  016704  012276                  MOV     DLCON,R4
 1932  017326  012703  177500      RE10A:  MOV     #177500,R3              ;SET UP FOR 2 MS DELAY
 1933  017332  005777  015740      RE11:   TST     @RDBC                   ;IS BYTE COUNT 0?
 1934  017336  001420                      BEQ     RE12
 1935  017340  005203                      INC     R3                      ;WAITED 2 MS ?
 1936  017342  001373                      BNE     RE11                    ;NO, KEEP LOOKING
 1937  017344  005304                      DEC     R4
 1938  017346  001367                      BNE     RE10A
 1939  017350                              ERROR    N              ;ERROR: NPR NOT COMPLETE AFTER 2 MS
  (1)                                                                     ;******* ERROR 225 *******
  (1)  017350  032777  040000  012244      BIT     #B14,@SR
  (1)  017356  001005                      BNE     .+14
  (1)  017360  012767  000225  012466      MOV     #225,ERRNUM
  (1)  017366  004767  012234              JSR     PC,ERR
  (1)          000226              N       =       N+1
 1940  017372                              SCOPE   RE8
  (1)  017372  004567  164414              JSR     R5,SCPRTN
  (1)  017376  017176                      RE8
 1941  017400  042777  040000  015662  RE12:   BIC     #B14,@RCR               ;CLEAR RC NPR
 1942  017406  012702  032700                  MOV     #SILDAT,R2              ;SET UP TO CHECK SILO OUTPUT
 1943  017412  012703  033300                  MOV     #CMPBUF,R3              ;R2 & R3 ARE DATA POINTERS
 1944  017416  012704  177700                  MOV     #-64.,R4                ;R4 IS COUNTER
 1945  017422  012267  012432      RE13:   MOV     (R2)+,GOOD              ;GET GOOD DATA
 1946  017426  012367  012424                  MOV     (R3)+,BAD               ;GET SILO DATA
 1947  017432  026767  012422  012416          CMP     GOOD,BAD                ;COMPARE MEM BUFFERS
 1948  017440  001414                      BEQ     RE14
 1949  017442                              DATERR   N              ;ERROR: DATA FROM SILO IS WRONG
  (1)                                                                     ;******* ERROR 226 *******
  (1)  017442  032777  040000  012152      BIT     #B14,@SR
  (1)  017450  001005                      BNE     .+14
  (1)  017452  012767  000226  012374      MOV     #226,ERRNUM
  (1)  017460  004767  012226              JSR     PC,DERR
  (1)          000227              N       =       N+1
 1950  017464                              SCOPE   RE8
  (1)  017464  004567  164322              JSR     R5,SCPRTN
  (1)  017470  017176                      RE8
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 1951  017472  005204                    RE14:   INC     R4                      ;DONE COMPARE?
 1952  017474  001352                            BNE     RE13
 1953  017476  032777  000400  015566            BIT     #B08,@RSR               ;YES,SEE IF SILO WAS EMPTIED
 1954  017504  001414                            BEQ     RE15
 1955  017506                                    ERROR    N              ;ERROR: SILO OUT RDY, BUT SILO SHD BE EMPTY
  (1)                                                                           ;******* ERROR 227 *******
  (1)   017506  032777  040000  012106            BIT     #B14,@SR
  (1)   017514  001005                            BNE     .+14
  (1)   017516  012767  000227  012330            MOV     #227,ERRNUM
  (1)   017524  004767  012076                    JSR     PC,ERR
  (1)           000230                    N       =       N+1
 1956  017530                                    SCOPE   RE8
  (1)   017530  004567  164256                    JSR     R5,SCPRTN
  (1)   017534  017176                            RE8
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                                        .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.

017536                  RE15:   BDINIT  RCVR                    ;CLEAR THE BOARD
017544  012702  000100          MOV     #64.,R2
017550  004767  000140          JSR     PC,RESR                 ;PUT 100 (OCTAL) WORDS INTO SILO
017554  004767  000166          JSR     PC,REEMT                ;EMPTY IT VIA NPR
017560  012702  000020          MOV     #20,R2
017564  004767  000124          JSR     PC,RESR                 ;PUT 20 (OCTAL) WORDS INTO SILO
017570  004767  000152          JSR     PC,REEMT                ;EMPTY IT AGAIN
017574  012702  000060          MOV     #60,R2
017600  004767  000110          JSR     PC,RESR                 ;PUT 60 (OCTAL) WORDS INTO SILO
                                                                ;  MAKING A TOTAL OF 200 IN WHILE
                                                                ;  THERE IS ROOM FOR 20 MORE.
017604  032777  000010  015456  BIT     #B03,@RCR               ;IS SILO INPUT READY?
017612  001414                  BEQ     RE16                    ;IF NOT, OKAY
017614                          ERROR    N              ;ERROR: INPUT READY AFTER A 200 WORD BLOCK
                                                                ;******* ERROR 230 *******
 (1)
 (1)    017614  032777  040000  012000  BIT     #B14,@SR
 (1)    017622  001005          BNE     .+14
 (1)    017624  012767  000230  012222  MOV     #230,ERRNUM
 (1)    017632  004767  011770          JSR     PC,ERR
 (1)            000231          N       =       N+1
017636                          SCOPE   RE15
 (1)    017636  004567  164150          JSR     R5,SCPRTN
 (1)    017642  017536                  RE15
017644                  RE16:   BDINIT  RCVR
017652  004767  011350          JSR     PC,MONIT
017656  032777  010000  011736  BIT     #B12,@SR                ;CHECK SW 12
017664  001402                  BEQ     RERT
017666  000167  176574          JMP     SLOTST                  ;STAY IN THIS TEST IF SW 12 = 1
017672  000207          RERT:   RTS     PC
017674  012703  177700  CLRCBF: MOV     #-64.,R3                ;ROUTINE TO CLR BUFFER AREA
017700  012704  033300          MOV     #CMPBUF,R4
017704  005024          RECB:   CLR     (R4)+
017706  005203                  INC     R3
017710  001375                  BNE     RECB
017712  000207                  RTS     PC

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

017714  052777  000200  015346  RESR:   BIS     #B07,@RCR               ;SET LOAD SILO
017722  010203                  MOV     R2,R3
017724  012777  012345  015342  RESRW:  MOV     #12345,@RDDB            ;LOAD A WORD
017732  005303                  DEC     R3                      ;KEEP TRACK OF # OF WORDS
017734  001373                  BNE     RESRW
017736  042777  000200  015324  BIC     #B07,@RCR               ;LEAVE WITH LD SILO CLR
017744  000207                  RTS     PC

                                ;ROUTINE TO EMPTY DATA SILO VIA RC NPR

017746  012777  177600  015322  REEMT:  MOV     #-128.,@RDBC            ;SET BYTE COUNT TO EMPTY SILO
017754  012777  033300  015316          MOV     #CMPBUF,@RDBA           ;POINT SILO AT DAT BUFFER
```

```
 2006  017762  052777  040000  015300          BIS     #B14,@RCR               ;START NPR
 2007  017770  016704  011630                  MOV     DLCON,R4
 2008  017774  012703  175000          REEMT1: MOV     #175000,R3              ;SET UP TO WAIT FOR COMPL
 2009  020000  005203                  REMTW:  INC     R3
 2010  020002  001376                          BNE     REMTW                   ;WAIT FOR NPR COMPLETION
 2011  020004  005077  015260                  CLR     @RCR                    ;CLEAR RC NPR
 2012  020010  005304                          DEC     R4
 2013  020012  001370                          BNE     REEMT1
 2014  020014  000207                          RTS     PC                      ;RETURN WITH SILO EMPTY
```

```
                                                .SBTTL  RSR TEST

                                                ;RCVR STATUS REG & ERRORS TEST

                                RSRTST: BDINIT  RCVR                    ;CLEAR THE BOARD
020016  020024  052777  020000  015236          BIS     #B13,@RCR       ;SET RCV WD
020024  020032  032777  000100  015232          BIT     #B06,@RSR       ;IS BUSY SET?
020032  020040  001014                          BNE     RF1
020040  020042                                  ERROR    N              ;ERROR: RCV WD DID NOT SET BUSY
(1)                                                                     ;******* ERROR 231 *******
(1)     020042  032777  040000  011552          BIT     #B14,@SR
(1)     020050  001005                          BNE     .+14
(1)     020052  012767  000231  011774          MOV     #231,ERRNUM
(1)     020060  004767  011542                  JSR     PC,ERR
(1)             000232                  N       =       N+1
020042  020064                                  SCOPE   RSRTST
(1)     020064  004567  163722                  JSR     R5,SCPRTN
(1)     020070  020016                          RSRTST
020044  020072  052777  000200  015172  RF1:    BIS     #B07,@RSR       ;SET SUC XFR
020052  020100  032777  000200  015164          BIT     #B07,@RSR       ;IS SUC XFR SET?
020060  020106  001014                          BNE     RF2
020062  020110                                  ERROR    N              ;ERROR: CANNOT SET RSR BIT 07
(1)                                                                     ;******* ERROR 232 *******
(1)     020110  032777  040000  011504          BIT     #B14,@SR
(1)     020116  001005                          BNE     .+14
(1)     020120  012767  000232  011726          MOV     #232,ERRNUM
(1)     020126  004767  011474                  JSR     PC,ERR
(1)             000233                  N       =       N+1
020070  020132                                  SCOPE   RF1
(1)     020132  004567  163654                  JSR     R5,SCPRTN
(1)     020136  020072                          RF1
020074  020140  032777  020000  015122  RF2:    BIT     #B13,@RCR       ;IS RCV WD CLR?
020102  020146  001414                          BEQ     RF3
020104  020150                                  ERROR    N              ;ERROR: SUC XFR DID NOT CLR RCV WD
(1)                                                                     ;******* ERROR 233 *******
(1)     020150  032777  040000  011444          BIT     #B14,@SR
(1)     020156  001005                          BNE     .+14
(1)     020160  012767  000233  011666          MOV     #233,ERRNUM
(1)     020166  004767  011434                  JSR     PC,ERR
(1)             000234                  N       =       N+1
020112  020172                                  SCOPE   RSRTST
(1)     020172  004567  163614                  JSR     R5,SCPRTN
(1)     020176  020016                          RSRTST
020114  020200  042777  000200  015064  RF3:    BIC     #B07,@RSR       ;CLR SUC XFR
020122  020206  032777  000200  015056          BIT     #B07,@RSR       ;SEE IF IT CLR'D
020130  020214  001414                          BEQ     RF4
020132  020216                                  ERROR    N              ;ERROR: CANNOT CLR SUC XFR
(1)                                                                     ;******* ERROR 234 *******
(1)     020216  032777  040000  011376          BIT     #B14,@SR
(1)     020224  001005                          BNE     .+14
(1)     020226  012767  000234  011620          MOV     #234,ERRNUM
(1)     020234  004767  011366                  JSR     PC,ERR
(1)             000235                  N       =       N+1
020140  020240                                  SCOPE   RF3
(1)     020240  004567  163546                  JSR     R5,SCPRTN
(1)     020244  020200                          RF3
```

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2040  020246                                RF4:    BDINIT  RCVR                    ;CLEAR THE BOARD
2041  020254  052777  020200  015006                BIS     #20200,@RCR             ;SET LD SILO & RCV WD
2042  020262  012703  177774                        MOV     #-4,R3
2043  020266  012777  177777  015000  RF5:          MOV     #-1,@RDDB               ;MOVE 4 -1'S INTO SILO
2044  020274  000240                                NOP
2045  020276  000240                                NOP
2046  020300  005203                                INC     R3
2047  020302  001371                                BNE     RF5
2048  020304  012777  177776  014764  RF6:          MOV     #-2,@RDBC               ;SET BYTE COUNT FOR 1 WORD
2049  020312  052777  000004  014750                BIS     #B02,@RCR               ;SET INH ADDR INC
2050  020320  012777  033300  014752                MOV     #CMPBUF,@RDBA           ;POINT NPR TO MEM BUFF.
2051  020326  052777  040000  014734                BIS     #B14,@RCR               ;START NPR
2052  020334  005777  014736          RF7:          TST     @RDBC                   ;BYTE COUNT = 0?
2053  020340  001375                                BNE     RF7
2054  020342  032777  000400  014722                BIT     #B08,@RSR               ;SILO OUTPUT RDY?
2055  020350  001014                                BNE     RF8
2056  020352                                        ERROR    N              ;ERROR: SILO SHOULD NOT BE EMPTY
 (1)                                                                            ;******* ERROR 235 *******
 (1)  020352  032777  040000  011242                BIT     #B14,@SR
 (1)  020360  001005                                BNE     .+14
 (1)  020362  012767  000235  011464                MOV     #235,ERRNUM
 (1)  020370  004767  011232                        JSR     PC,ERR
 (1)          000236                  N             =       N+1
2057  020374                                        SCOPE   RF4
 (1)  020374  004567  163412                        JSR     R5,SCPRTN
 (1)  020400  020246                                RF4
2058  020402  012767  033300  011450  RF8:          MOV     #CMPBUF,GOOD            ;BYTE ADDRESS SHD NOT INCREMENT
2059  020410  017767  014664  011440                MOV     @RDBA,BAD               ;READ BYTE ADDRESS
2060  020416  026767  011436  011432                CMP     GOOD,BAD                ;SAME AS BEFORE?
2061  020424  001414                                BEQ     RF9
2062  020426                                        DATERR   N             ;ERROR: RCR BIT 2 DID NOT INH ADR INCREMENT
 (1)                                                                            ;******* ERROR 236 *******
 (1)  020426  032777  040000  011166                BIT     #B14,@SR
 (1)  020434  001005                                BNE     .+14
 (1)  020436  012767  000236  011410                MOV     #236,ERRNUM
 (1)  020444  004767  011242                        JSR     PC,DERR
 (1)          000237                  N             =       N+1
2063  020450                                        SCOPE   RF4
 (1)  020450  004567  163336                        JSR     R5,SCPRTN
 (1)  020454  020246                                RF4
2064  020456  032777  001000  014606  RF9:          BIT     #B09,@RSR               ;IS BYTE COUNT OFL SET?
2065  020464  001014                                BNE     RF9A
2066  020466                                        ERROR    N             ;ERROR: RDBC =0, SILO NOT EMPTY, BUT BC OFL = 0
 (1)                                                                            ;******* ERROR 237 *******
 (1)  020466  032777  040000  011126                BIT     #B14,@SR
 (1)  020474  001005                                BNE     .+14
 (1)  020476  012767  000237  011350                MOV     #237,ERRNUM
 (1)  020504  004767  011116                        JSR     PC,ERR
 (1)          000240                  N             =       N+1
2067  020510                                        SCOPE   RF4
 (1)  020510  004567  163276                        JSR     R5,SCPRTN
 (1)  020514  020246                                RF4
2068  020516  032777  100000  014546  RF9A:         BIT     #B15,@RSR               ;IS RSR BIT 15 SET?
2069  020524  001014                                BNE     RF10                    ;IF YES, CHECK FOR INTR REQ
2070  020526                                        ERROR    N             ;ERROR: BYTE COUNT OFL DID NOT SET RSR BIT 15
 (1)                                                                            ;******* ERROR 240 *******
```

```
  (1)  020526  032777  040000  011066          BIT     #B14,@SR
  (1)  020534  001005                          BNE     .+14
  (1)  020536  012767  000240  011310          MOV     #240,ERRNUM
  (1)  020544  004767  011056                  JSR     PC,ERR
  (1)          000241                  N       =       N+1
 2071  020550                                  SCOPE   RF4
  (1)  020550  004567  163236                  JSR     R5,SCPRTN
  (1)  020554  020246                          RF4
 2072  020556  032777  020000  014504  RF10:   BIT     #B13,@RCR               ;IS RCV WD = 0?
 2073  020564  001414                          BEQ     RF11
 2074  020566                                  ERROR    N              ;ERROR: BC OFL DID NOT REQUEST INTERRUPT
  (1)                                                                         ;******* ERROR 241 *******
  (1)  020566  032777  040000  011026          BIT     #B14,@SR
  (1)  020574  001005                          BNE     .+14
  (1)  020576  012767  000241  011250          MOV     #241,ERRNUM
  (1)  020604  004767  011016                  JSR     PC,ERR
  (1)          000242                  N       =       N+1
 2075  020610                                  SCOPE   RF4
  (1)  020610  004567  163176                  JSR     R5,SCPRTN
  (1)  020614  020246                          RF4
 2076  020616                          RF11:   BDINIT  RCVR
 2077  020624  052777  020000  014436          BIS     #B13,@RCR               ;SET RCV WD
 2078  020632  052777  002000  014432          BIS     #B10,@RSR               ;SET TIMEOUT
 2079  020640  032777  002000  014424          BIT     #B10,@RSR               ;IS TIMEOUT SET?
 2080  020646  001014                          BNE     RF12
 2081  020650                                  ERROR    N              ;ERROR: CANNOT SET RSR BIT 10
  (1)                                                                         ;******* ERROR 242 *******
  (1)  020650  032777  040000  010744          BIT     #B14,@SR
  (1)  020656  001005                          BNE     .+14
  (1)  020660  012767  000242  011166          MOV     #242,ERRNUM
  (1)  020666  004767  010734                  JSR     PC,ERR
  (1)          000243                  N       =       N+1
 2082  020672                                  SCOPE   RF11
  (1)  020672  004567  163114                  JSR     R5,SCPRTN
  (1)  020676  020616                          RF11
 2083  020700  032777  100000  014364  RF12:   BIT     #B15,@RSR               ;IS ERROR BIT SET?
 2084  020706  001014                          BNE     RF13
 2085  020710                                  ERROR    N              ;ERROR: TIMEOUT DIDN'T SET RSR BIT 15
  (1)                                                                         ;******* ERROR 243 *******
  (1)  020710  032777  040000  010704          BIT     #B14,@SR
  (1)  020716  001005                          BNE     .+14
  (1)  020720  012767  000243  011126          MOV     #243,ERRNUM
  (1)  020726  004767  010674                  JSR     PC,ERR
  (1)          000244                  N       =       N+1
 2086  020732                                  SCOPE   RF11
  (1)  020732  004567  163054                  JSR     R5,SCPRTN
  (1)  020736  020616                          RF11
 2087  020740  032777  020000  014322  RF13:   BIT     #B13,@RCR               ;IS RCV WD CLR?
 2088  020746  001414                          BEQ     RF14
 2089  020750                                  ERROR    N              ;ERROR: RSR BIT 15 DIDN'T REQUEST INTERRUPT
  (1)                                                                         ;******* ERROR 244 *******
  (1)  020750  032777  040000  010644          BIT     #B14,@SR
  (1)  020756  001005                          BNE     .+14
  (1)  020760  012767  000244  011066          MOV     #244,ERRNUM
  (1)  020766  004767  010634                  JSR     PC,ERR
  (1)          000245                  N       =       N+1
```

```
2090  020772                                    SCOPE   RF11
 (1)  020772  004567  163014                    JSR     R5,SCPRTN
 (1)  020776  020616                            RF11
2091  021000  005077  014266          RF14:     CLR     @RSR                    ;CLEAR RSR
2092  021004  052777  004000  014260            BIS     #B11,@RSR               ;SET PAR (PARITY ERROR) BIT
2093  021012  032777  004000  014252            BIT     #B11,@RSR               ;IS IT SET?
2094  021020  001014                            BNE     RF15
2095  021022                                    ERROR    N              ;ERROR: CANNOT SET RSR BIT 11
 (1)                                                                    ;******* ERROR 245 *******
 (1)  021022  032777  040000  010572            BIT     #B14,@SR
 (1)  021030  001005                            BNE     .+14
 (1)  021032  012767  000245  011014            MOV     #245,ERRNUM
 (1)  021040  004767  010562                    JSR     PC,ERR
 (1)          000246                  N         =       N+1
2096  021044                                    SCOPE   RF14
 (1)  021044  004567  162742                    JSR     R5,SCPRTN
 (1)  021050  021000                            RF14
2097  021052  032777  100000  014212  RF15:     BIT     #B15,@RSR               ;IS ERROR BIT SET?
2098  021060  001014                            BNE     RF16
2099  021062                                    ERROR    N              ;ERROR: PAR ERR DIDN'T SET RSR BIT 15
 (1)                                                                    ;******* ERROR 246 *******
 (1)  021062  032777  040000  010532            BIT     #B14,@SR
 (1)  021070  001005                            BNE     .+14
 (1)  021072  012767  000246  010754            MOV     #246,ERRNUM
 (1)  021100  004767  010522                    JSR     PC,ERR
 (1)          000247                  N         =       N+1
2100  021104                                    SCOPE   RF14
 (1)  021104  004567  162702                    JSR     R5,SCPRTN
 (1)  021110  021000                            RF14
2101  021112  005077  014154          RF16:     CLR     @RSR                    ;CLEAR RSR
2102  021116  052777  010000  014146            BIS     #B12,@RSR               ;SET TXM ERR
2103  021124  032777  010000  014140            BIT     #B12,@RSR               ;IS IT SET?
2104  021132  001014                            BNE     RF17
2105  021134                                    ERROR    N              ;ERROR: CANNOT SET RSR BIT 12
 (1)                                                                    ;******* ERROR 247 *******
 (1)  021134  032777  040000  010460            BIT     #B14,@SR
 (1)  021142  001005                            BNE     .+14
 (1)  021144  012767  000247  010702            MOV     #247,ERRNUM
 (1)  021152  004767  010450                    JSR     PC,ERR
 (1)          000250                  N         =       N+1
2106  021156                                    SCOPE   RF16
 (1)  021156  004567  162630                    JSR     R5,SCPRTN
 (1)  021162  021112                            RF16
2107  021164  032777  100000  014100  RF17:     BIT     #B15,@RSR               ;IS ERROR BIT SET?
2108  021172  001014                            BNE     RF18
2109  021174                                    ERROR    N              ;ERROR: TXM ERR DIDN'T SET RSR BIT 15
 (1)                                                                    ;******* ERROR 250 *******
 (1)  021174  032777  040000  010420            BIT     #B14,@SR
 (1)  021202  001005                            BNE     .+14
 (1)  021204  012767  000250  010642            MOV     #250,ERRNUM
 (1)  021212  004767  010410                    JSR     PC,ERR
 (1)          000251                  N         =       N+1
2110  021216                                    SCOPE   RF16
 (1)  021216  004567  162570                    JSR     R5,SCPRTN
 (1)  021222  021112                            RF16
2111  021224  005077  014042          RF18:     CLR     @RSR                    ;CLEAR RSR
```

```
 2112  021230  052777  020000  014034          BIS     #B13,@RSR               ;SET MEM OFL
 2113  021236  032777  020000  014026          BIT     #B13,@RSR               ;IS IT SET?
 2114  021244  001014                          BNE     RF19
 2115  021246                                  ERROR    N              ;ERROR: CANNOT SET RSR BIT 13
  (1)                                                                         ;******* ERROR 251 *******
  (1)  021246  032777  040000  010346          BIT     #B14,@SR
  (1)  021254  001005                          BNE     .+14
  (1)  021256  012767  000251  010570          MOV     #251,ERRNUM
  (1)  021264  004767  010336                  JSR     PC,ERR
  (1)          000252                  N       =       N+1
 2116  021270                                  SCOPE   RF18
  (1)  021270  004567  162516                  JSR     R5,SCPRTN
  (1)  021274  021224                          RF18
 2117  021276  032777  100000  013766  RF19:   BIT     #B15,@RSR               ;IS ERROR BIT SET?
 2118  021304  001014                          BNE     RF20
 2119  021306                                  ERROR    N              ;ERROR: MEM OFL DIDN'T SET RSR BIT 15
  (1)                                                                         ;******* ERROR 252 *******
  (1)  021306  032777  040000  010306          BIT     #B14,@SR
  (1)  021314  001005                          BNE     .+14
  (1)  021316  012767  000252  010530          MOV     #252,ERRNUM
  (1)  021324  004767  010276                  JSR     PC,ERR
  (1)          000253                  N       =       N+1
 2120  021330                                  SCOPE   RF18
  (1)  021330  004567  162456                  JSR     R5,SCPRTN
  (1)  021334  021224                          RF18
```

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                                        ;ERROR GENERATION TESTS

021336                          RF20:   BDINIT  RCVR                    ;CLEAR THE BOARD
021344  052777  000200  013716          BIS     #B07,@RCR               ;SET LD SILO BIT
021352  012777  177777  013714          MOV     #-1,@RDDB               ;LOAD A WORD INTO SILO
021360  032777  000400  013704  RF21:    BIT     #B08,@RSR               ;SILO OUTPUT RDY?
021366  001774                          BEQ     RF21                    ;WAIT FOR IT
021370  042777  000200  013672          BIC     #B07,@RCR               ;CLEAR LD SILO BIT
021376  012777  177774  013672          MOV     #-4,@RDBC               ;SET BYTE COUNT FOR 1 WD XFER
021404  012777  164176  013666          MOV     #164176,@RDBA           ;PUT NON-EXST LOC IN RDBA
021412  052777  040060  013650          BIS     #40060,@RCR             ;START NPR AND SET EXT ADD BITS
021420  000240                          NOP
021422  000240                          NOP
021424  005777  013646                  TST     @RDBC                   ;IS BYTE COUNT 0?
021430  001014                          BNE     RF22
021432                                  ERROR    N              ;ERROR: REPLACE #764176 (ABOVE) WITH NON-EXST LOC
                                                                        ;******* ERROR 253 *******
 (1)
 (1)    021432  032777  040000  010162          BIT     #B14,@SR
 (1)    021440  001005                          BNE     .+14
 (1)    021442  012767  000253  010404          MOV     #253,ERRNUM
 (1)    021450  004767  010152                  JSR     PC,ERR
 (1)            000254                  N       =       N+1
021454                                  SCOPE   RF20
 (1)    021454  004567  162332                  JSR     R5,SCPRTN
 (1)    021460  021336                          RF20
021462  032777  040000  013602  RF22:   BIT     #B14,@RSR               ;IS NON EXST LOC SET?
021470  001014                          BNE     RF23
021472                                  ERROR    N              ;ERROR: NPR TO NXM DIDN'T SET NON-EXST LOC
                                                                        ;******* ERROR 254 *******
 (1)
 (1)    021472  032777  040000  010122          BIT     #B14,@SR
 (1)    021500  001005                          BNE     .+14
 (1)    021502  012767  000254  010344          MOV     #254,ERRNUM
 (1)    021510  004767  010112                  JSR     PC,ERR
 (1)            000255                  N       =       N+1
021514                                  SCOPE   RF20
 (1)    021514  004567  162272                  JSR     R5,SCPRTN
 (1)    021520  021336                          RF20
021522  032777  100000  013542  RF23:   BIT     #B15,@RSR               ;IS ERROR BIT SET?
021530  001014                          BNE     RF24
021532                                  ERROR    N              ;ERROR: NON-EXST LOC DIDN'T SET RSR BIT 15
                                                                        ;******* ERROR 255 *******
 (1)
 (1)    021532  032777  040000  010062          BIT     #B14,@SR
 (1)    021540  001005                          BNE     .+14
 (1)    021542  012767  000255  010304          MOV     #255,ERRNUM
 (1)    021550  004767  010052                  JSR     PC,ERR
 (1)            000256                  N       =       N+1
021554                                  SCOPE   RF20
 (1)    021554  004567  162232                  JSR     R5,SCPRTN
 (1)    021560  021336                          RF20
021562                          RF24:   BDINIT  RCVR                    ;CLR BOARD BEFORE LEAVING
021570  004767  007432                  JSR     PC,MONIT
021574  032777  010000  010020          BIT     #B12,@SR                ;IS SW 12 SET?
021602  001402                          BEQ     RFRT
021604  000167  176206                  JMP     RSRTST                  ;YES,REPEAT THIS TEST
021610  000207                  RFRT:   RTS     PC
```

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                                        .SBTTL  INTERRUPT TEST

                                ;RECEIVER INTERRUPT TEST

021612                  RINTST: MTPS    #P7                     ;DIS-ALLOW INTERRUPT
(1) 021612 012737 000340 177776         MOV     #P7,@#PS
021620                          BDINIT  RCVR                    ;CLEAR THE BOARD
021626 016700 013410            MOV     RCVEC,R0
021632 012760 000340 000002             MOV     #340,2(R0)      ;SET NEW PS = P7
021640 012777 021670 013374             MOV     #EROINT,@RCVEC  ;SET-UP FOR ERROR INTERRUPT
021646 052777 000100 013414             BIS     #B06,@RCR       ;SET INTERRUPT ENABLE
021654                          MTPS    #0                      ;ALLOW INTERRUPT
(1) 021654 012737 000000 177776         MOV     #0,@#PS
021662 000240                   NOP
021664 000167 000046            JMP     RH0                     ;SKIP ERROR IF NO INTERRUPT
021670                  EROINT: MTPS    #P7                     ;INTERRUPT OFF
(1) 021670 012737 000340 177776         MOV     #P7,@#PS
021676 022626                   CMP     (SP)+,(SP)+             ;CORRECT STACK
021700 042777 000100 013362             BIC     #B06,@RCR       ;CLR INTERRUPT ENABLE
021706                          ERROR    N              ;ERROR: ERRONEOUS INTERRUPT;NO FLAGS SET
(1)                                                             ;******* ERROR 256 *******
(1) 021706 032777 040000 007706         BIT     #B14,@SR
(1) 021714 001005                       BNE     .+14
(1) 021716 012767 000256 010130         MOV     #256,ERRNUM
(1) 021724 004767 007676                JSR     PC,ERR
(1)        000257               N       =       N+1
021730                          SCOPE   RINTST
(1) 021730 004567 162056                JSR     R5,SCPRTN
(1) 021734 021612                       RINTST
021736 005067 013272            RH0:    CLR     TMPR10          ;START WITH CP AT PRIORITY 0
021742 012777 022242 013272             MOV     #INTRA,@RCVEC   ;SET VECTOR FOR GOOD INTERRUPT
021750                          RH1:    MTPS    #P7             ;INTERRUPT OFF
(1) 021750 012737 000340 177776         MOV     #P7,@#PS
021756 052777 000100 013304             BIS     #B06,@RCR       ;ENABLE RCVR INTERRUPT
021764 052777 000200 013276             BIS     #B07,@RCR       ;SET LD SILO BIT
021772 012777 177777 013274             MOV     #-1,@RDDB       ;PUT A WORD INTO RCVR SILO
022000 042777 000200 013262             BIC     #B07,@RCR       ;CLR LD SILO BIT
022006 032777 000400 013256     RH1A:   BIT     #B08,@RSR       ;SILO OUTPUT READY?
022014 001774                           BEQ     RH1A            ;WAIT FOR IT
022016                          MTPS    TMPR10                  ;ALLOW INTERRUPT
(1) 022016 016737 013212 177776         MOV     TMPR10,@#PS
022024 000240                   NOP
022026 000240                   NOP
022030 005767 013200            TST     TMPR10                  ;NO INTERRUPT; IS PSW = 0?
022034 001014                           BNE     RH2
022036                          ERROR    N              ;ERROR: NO INTERRUPT FROM RECEIVER
(1)                                                             ;******* ERROR 257 *******
(1) 022036 032777 040000 007556         BIT     #B14,@SR
(1) 022044 001005                       BNE     .+14
(1) 022046 012767 000257 010000         MOV     #257,ERRNUM
(1) 022054 004767 007546                JSR     PC,ERR
(1)        000260               N       =       N+1
022060                          SCOPE   RINTST
(1) 022060 004567 161726                JSR     R5,SCPRTN
(1) 022064 021612                       RINTST
022066 026767 013154 013140     RH2:    CMP     RPR10,TMPR10    ;HAVE WE REACHED EXPECTED PRIORITY?
```

```
                                                                    B  7
 2189  022074  001414                          BEQ     RH3
 2190  022076                                  ERROR    N                ;ERROR: DEVICE NOT JUMPERED TO EXPECTED PRIORITY
  (1)                                                                             ;******* ERROR 260 *******
  (1)  022076  032777  040000  007516          BIT     #B14,@SR
  (1)  022104  001005                          BNE     .+14
  (1)  022106  012767  000260  007740          MOV     #260,ERRNUM
  (1)  022114  004767  007506                  JSR     PC,ERR
  (1)          000261                  N       =       N+1
 2191  022120                                  SCOPE   RINTST
  (1)  022120  004567  161666                  JSR     R5,SCPRTN
  (1)  022124  021612                          RINTST
 2192  022126  022767  000340  013100  RH3:    CMP     #340,TMPRIO              ;IS PSW = 7?
 2193  022134  001426                          BEQ     RH4
 2194  022136                                  BDINIT  RCVR
 2195  022144  062767  000040  013062          ADD     #40,TMPRIO
 2196  022152  012777  022264  013062  RH3S:   MOV     #INTRB,@RCVEC            ;SET VECTOR FOR ERROR INTERRUPT
 2197  022160  052777  000100  013102          BIS     #B06,@RCR                ;ENABLE RCVR INTERRUPT
 2198  022166  052777  000200  013076          BIS     #B07,@RSR                ;FORCE INTERRUPT REQUEST
 2199  022174                                  MTPS    TMPRIO                   ;SET CP TO NEXT PRIORITY
  (1)  022174  016737  013034  177776          MOV     TMPRIO,@#PS
 2200  022202  000240                          NOP
 2201  022204  000240                          NOP
 2202  022206  000167  177714                  JMP     RH3
 2203  022212                          RH4:    BDINIT  RCVR                     ;CLEAR THE BOARD
 2204  022220  004767  007002                  JSR     PC,MONIT
 2205  022224  032777  010000  007370          BIT     #B12,@SR                 ;SW 12 = 1?
 2206  022232  001402                          BEQ     RHRT
 2207  022234  000167  177352                  JMP     RINTST                   ;YES,DO THIS TEST OVER
 2208  022240  000207                  RHRT:   RTS     PC                       ;NO,EXIT
 2209
 2210  022242                          INTRA:  BDINIT  RCVR                     ;CLR INTERRUPT ETC.
 2211  022250  062767  000040  012756          ADD     #40,TMPRIO               ;INCR TEMP PRIORITY
 2212  022256  022626                          CMP     (SP)+,(SP)+              ;CORRECT STACK POINTER
 2213  022260  000167  177464                  JMP     RH1                      ;TRY AGAIN
 2214
 2215  022264  022626                  INTRB:  CMP     (SP)+,(SP)+              ;POP THE STACK
 2216  022266                                  BDINIT  RCVR                     ;CLR EVRYTHING
 2217  022274                                  ERROR    N               ;ERROR: GOT INTR WHITH CP AT HIGHER PRIORITY
  (1)                                                                             ;******* ERROR 261 *******
  (1)  022274  032777  040000  007320          BIT     #B14,@SR
  (1)  022302  001005                          BNE     .+14
  (1)  022304  012767  000261  007542          MOV     #261,ERRNUM
  (1)  022312  004767  007310                  JSR     PC,ERR
  (1)          000262                  N       =       N+1
 2218  022316                                  SCOPE   RH3S
  (1)  022316  004567  161470                  JSR     R5,SCPRTN
  (1)  022322  022152                          RH3S
 2219  022324  000167  177576                  JMP     RH3
```

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2221                                        .SBTTL  C.R.C. CHECK
2222
2223                                        ;CYCLIC REDUNDANCY CHECK CHARACTER TEST
2224
2225  022330                                RCRCTS: BDINIT  RCVR                    ;CLR THE BOARD
2226  022336  052777  000200  012724              BIS     #B07,@RCR               ;SET LD SILO BIT
2227  022344  012702  033100                      MOV     #SILCRC,R2              ;R2 POINTS TO GOOD CRC'S
2228  022350  012703  032700                      MOV     #SILDAT,R3              ;R3 POINTS TO MEM DATA
2229  022354  012704  177700                      MOV     #-64.,R4                ;R4 IS WORD COUNTER
2230  022360  011367  012646              RJ1:    MOV     (R3),DATWD              ;SAVE INPUT WORD
2231  022364  016777  012642  012702              MOV     DATWD,@RDDB             ;LOAD SILO
2232  022372  011267  007462                      MOV     (R2),GOOD               ;GET GOOD CRC FOR COMPARISON
2233  022376  017767  012700  007452              MOV     @RDCRC,BAD              ;GET GENERATED CRC
2234  022404  026767  007450  007444              CMP     GOOD,BAD                ;IS CRC OK?
2235  022412  001424                              BEQ     RJ2
2236  022414                                      PNTM    SLIWD                   ;PRINT "SILO INPUT WORD WAS "
 (1)  022414  012700  033530                      MOV     #SLIWD,R0               ;PRINT MESSAGE
 (1)  022420  004767  007436                      JSR     PC,TYPOUT               ;POINTED TO BY SLIWD
2237  022424  016700  012602                      MOV     DATWD,R0
2238  022430  004767  007744                      JSR     PC,OCTPNT               ;PRINT SILO INPUT WORD
2239  022434                                      DATERR   N              ;ERROR: BAD CRC FOR ABOVE WORD
 (1)                                                                              ;******* ERROR 262 *******
 (1)  022434  032777  040000  007160              BIT     #B14,@SR
 (1)  022442  001005                              BNE     .+14
 (1)  022444  012767  000262  007402              MOV     #262,ERRNUM
 (1)  022452  004767  007234                      JSR     PC,DERR
 (1)          000263                      N       =       N+1
2240  022456                                      SCOPE   RCRCTS
 (1)  022456  004567  161330                      JSR     R5,SCPRTN
 (1)  022462  022330                              RCRCTS
2241  022464  062702  000002              RJ2:    ADD     #2,R2                   ;UPDATE CRC POINTER
2242  022470  062703  000002                      ADD     #2,R3                   ;UPDATE DATA POINTER
2243  022474  005204                              INC     R4                      ;HAVE WE CHECKED 64 WDS?
2244  022476  001330                              BNE     RJ1
2245  022500  004767  006522                      JSR     PC,MONIT
2246  022504  032777  010000  007110              BIT     #B12,@SR                ;CHECK SW 12
2247  022512  001402                              BEQ     RJRT                    ;IF 0, EXIT
2248  022514  000167  177610                      JMP     RCRCTS                  ;IF 1, STAY
2249  022520                              RJRT:   BDINIT  RCVR                    ;CLR BOARD BEFORE EXIT
2250  022526  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

 022530                         TEST3:  MTPS    #P7
(1) 022530 012737 000340 177776         MOV     #P7,@#PS
022536 012767 000010 012432             MOV     #10,ITER                ;INITIAL ITERATION OF 10 PER PASS
022544 004767 006456                    JSR     PC,MONIT
022550 032777 002000 007044             BIT     #B10,@SR                ;CHECK SW 10
022556 001424                           BEQ     LOOPL                   ;IF CLR, RUN ALL TESTS
022560 017767 007036 012412             MOV     @SR,SWI         ;IF SET, START AT TEST # IN SW'S <1:0>
022566 042767 177770 012404             BIC     #-10,SWI
022574 026727 012400 000003             CMP     SWI,#3                  ;DON'T ALLOW SWI > 3
022602 003012                           BGT     LOOPL
022604 000241                           CLC                             ;CLR C-BIT BEFORE ROTATE
022606 006167 012366                    ROL     SWI
022612 006167 012362                    ROL     SWI
022616 062767 022630 012354             ADD     #LOOPL,SWI              ;GENERATE CORRECT OFFSET
022624 000177 012350                    JMP     @SWI                    ;GO TO SELECTED TEST
022630 004767 000120            LOOPL:  JSR     PC,NPRTST               ;CHECK NPR ..SILO TO SILO
022634 004767 000710                    JSR     PC,DATLPS               ;DO DATA LOOPS TEST
022640 004767 003116                    JSR     PC,TXMERS               ;CHECK TXM ERRORS
022644 004767 005400                    JSR     PC,XRC20                ;DO REJECT AND TRUNCATE TEST
022650 032777 004000 006744             BIT     #B11,@SR                ;CHECK SW 11
022656 001003                           BNE     TREND                   ;PRINT END IF SET
022660 005367 012312                    DEC     ITER                    ;OTHERWISE, RE-ITERATE
022664 001361                           BNE     LOOPL
022666 005767 012330            TREND:  TST     $4FLAG                  ;TEST END PASS INHIBIT FLAG
022672 001027                           BNE     REPETL                  ;CAN'T PRINT, EXIT.
022674 005267 012312                    INC     PSN03                   ;UPDATE PASS NO.
022700                                  PNTM    PEND                    ;PRINT "END PASS # "
(1) 022700 012700 033557                MOV     #PEND,R0                ;PRINT MESSAGE
(1) 022704 004767 007152                JSR     PC,TYPOUT               ;POINTED TO BY PEND
022710 016700 012276                    MOV     PSN03,R0
022714 004767 007534                    JSR     PC,DECPNT               ;PRINT PASS NO.
022720 012700 000040                    MOV     #40,R0
022724 004767 007714                    JSR     PC,TTO                  ;PRINT A SPACE
022730 012700 000102                    MOV     #'B,R0
022734 004767 007704                    JSR     PC,TTO                  ;PRINT "B" (TO INDICATE "LOOP TEST)
022740 005000                           CLR     R0
022742 004767 007676                    JSR     PC,TTO                  ;PRINT NULLS TO ALLOW PRINT
022746 004767 007672                    JSR     PC,TTO                  ;OF PASS NO.  IN CASE RESET FOLLOWS
022752 000207                   REPETL: RTS     PC                      ;RETURN
```

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                                        .SBTTL  NPR TESTS
                                
023754                          NPRTST: BDINIT  RCVR                    ;CLEAR RECEIVER
023762                                  BDINIT  XMTR                    ;CLEAR XMTR
022770  012777  010400  012264          MOV     #10400,@TMMR            ;SET MASTER AND AUTO ADDR
022776  004767  000424                  JSR     PC,FILRCV               ;FILL RCVR SILO
023002  012777  177600  012266          MOV     #-128.,@RDBC            ;SET UP RCVR TO INITIATE
023010  016777  012240  012262          MOV     TSLB,@RDBA              ;NPR TO XMTR SILO
023016  012777  040064  012244          MOV     #40064,@RCR             ;START NPR, INHIB ADDR INCR
023024  016702  006574                  MOV     DLCON,R2
023030  005003                  NPTST1: CLR     R3
023032  012704  177777                  MOV     #-1,R4                  ;SET UP FOR  DELAY
023036  022777  000200  012212  XRA1:   CMP     #128.,@TSBC             ;TRANSFERRED 64 WORDS?
023044  001422                          BEQ     XRA2                    ;NO, KEEP LOOKING FOR A SECOND
023046  005203                          INC     R3
023050  001372                          BNE     XRA1
023052  005204                          INC     R4
023054  001370                          BNE     XRA1
023056  005302                          DEC     R2
023060  001363                          BNE     NPTST1
023062                                  ERROR    N              ;ERROR: RCVR NPR NOT COMPLETE IN TIME
                                                                ;******* ERROR 300 *******
023062  032777  040000  006532          BIT     #B14,@SR
023070  001005                          BNE     .+14
023072  012767  000300  006754          MOV     #300,ERRNUM
023100  004767  006522                  JSR     PC,ERR
000301                          N       =       N+1
023104                                  SCOPE   NPRTST
023104  004567  160702                  JSR     R5,SCPRTN
023110  022754                          NPRTST
023112  004767  000352          XRA2:   JSR     PC,CHXDAT               ;CHECK DATA IN XMTR SILO
023116  000414                          BR      XRA2A                   ;DATA O.K. , CONTINUE
023120                                  DATERR   N             ;ERROR: BAD DATA NPR'D TO XMTR SILO
                                                                ;******* ERROR 301 *******
023120  032777  040000  006474          BIT     #B14,@SR
023126  001005                          BNE     .+14
023130  012767  000301  006716          MOV     #301,ERRNUM
023136  004767  006550                  JSR     PC,DERR
000302                          N       =       N+1
023142                                  SCOPE   NPRTST
023142  004567  160644                  JSR     R5,SCPRTN
023146  022754                          NPRTST
023150  005777  012122          XRA2A:  TST     @RDBC                   ;CHECK THAT RDBC = 0
023154  001421                          BEQ     XRA3
023156  005067  006676                  CLR     GOOD
023162  017767  012110  006666          MOV     @RDBC,BAD
023170                                  DATERR   N             ;ERROR: RCV BYTE COUNT SHD BE 0 AT END OF NPR
                                                                ;******* ERROR 302 *******
023170  032777  040000  006424          BIT     #B14,@SR
023176  001005                          BNE     .+14
023200  012767  000302  006646          MOV     #302,ERRNUM
023206  004767  006500                  JSR     PC,DERR
000303                          N       =       N+1
023212                                  SCOPE   NPRTST
023212  004567  160574                  JSR     R5,SCPRTN
023216  022754                          NPRTST
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```
 2331  023220                          XRA3:   BDINIT  XMTR                    ;CLR    XMTR
 2332  023226                                  BDINIT  RCVR                    ;CLR RCVR
 2333  023234  004767  000166                  JSR     PC,FILRCV               ;FILL RECEIVER SILO
 2334  023240  012777  177600  012010          MOV     #-128.,@TSBC            ;SET UP FOR XMTR TO INITIATE
 2335  023246  016777  012022  012004          MOV     RDDB,@TSBA              ;NPR FROM RCVR SILO
 2336  023254  012777  040064  011766          MOV     #40064,@TCR             ;SET TX NPR, INHIB ADR INC
 2337  023262  016702  006336                  MOV     DLCON,R2
 2338  023266  005003                  XRA3A:  CLR     R3
 2339  023270  012704  177777                  MOV     #-1,R4                  ;SET UP FOR 1 SEC DELAY
 2340  023274  005777  011756          XRA4:   TST     @TSBC                   ;TRANSFERRED 64 WORDS?
 2341  023300  001422                          BEQ     XRA5
 2342  023302  005203                          INC     R3                      ;IF NOT, WATCH FOR A SECOND
 2343  023304  001373                          BNE     XRA4
 2344  023306  005204                          INC     R4
 2345  023310  001371                          BNE     XRA4
 2346  023312  005302                          DEC     R2
 2347  023314  001364                          BNE     XRA3A
 2348  023316                                  ERROR    N              ;ERROR: XMTR NPR NOT COMPLETE IN 1 SEC
  (1)                                                                         ;******* ERROR 303 *******
  (1)   023316  032777  040000  006276          BIT     #B14,@SR
  (1)   023324  001005                          BNE     .+14
  (1)   023326  012767  000303  006520          MOV     #303,ERRNUM
  (1)   023334  004767  006266                  JSR     PC,ERR
  (1)           000304                  N       =       N+1
 2349  023340                                  SCOPE   XRA3
  (1)   023340  004567  160446                  JSR     R5,SCPRTN
  (1)   023344  023220                          XRA3
 2350  023346  004767  000116          XRA5:   JSR     PC,CHXDAT               ;CHK DATA IN XMTR SILO
 2351  023352  000414                          BR      XRA6
 2352  023354                                  DATERR   N              ;ERROR: BAD DATA NPR'D TO XMTR SILO
  (1)                                                                         ;******* ERROR 304 *******
  (1)   023354  032777  040000  006240          BIT     #B14,@SR
  (1)   023362  001005                          BNE     .+14
  (1)   023364  012767  000304  006462          MOV     #304,ERRNUM
  (1)   023372  004767  006314                  JSR     PC,DERR
  (1)           000305                  N       =       N+1
 2353  023376                                  SCOPE   XRA3
  (1)   023376  004567  160410                  JSR     R5,SCPRTN
  (1)   023402  023220                          XRA3
 2354  023404  004767  005616          XRA6:   JSR     PC,MONIT
 2355  023410  032777  010000  006204          BIT     #B12,@SR                ;SW 12 = 1?
 2356  023416  001402                          BEQ     XRART                   ;NO, EXIT
 2357  023420  000167  177330                  JMP     NPRTST                  ;YES, STAY HERE
 2358  023424  000207                  XRART:  RTS     PC
 2359  023426  012700  032700          FILRCV: MOV     #SILDAT,R0              ;R0 IS DATA POINTER
 2360  023432  012777  000200  011630          MOV     #B07,@RCR               ;SET RCVR "LD SILO"
 2361  023440  012701  000100                  MOV     #64.,R1                 ;R1 IS WORD COUNTER
 2362  023444  012077  011624          LDLP:   MOV     (R0)+,@RDDB             ;MOVE WORDS INTO SILO
 2363  023450  004567  160656                  JSR     R5,DELAY                ;WAIT FOR INPUT RDY
 2364  023454  000005                          .WORD   5
 2365  023456  005301                          DEC     R1                      ;LOADED ALL 64 WORDS?
 2366  023460  001371                          BNE     LDLP                    ;IF NOT, CONTINUE LOADING
 2367  023462  005077  011602                  CLR     @RCR                    ;CLR RCR AND EXIT
 2368  023466  000207                          RTS     PC
 2369
 2370  023470  012702  000100          CHXDAT: MOV     #64.,R2                 ;R2 IS WORD COUNTER
```

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 2371  023474  012701  032700                MOV     #SILDAT,R1              ;R1 POINTS TO GOOD DATA
 2372  023500  052777  000200  011542        BIS     #B07,@TCR               ;SET "RD SILO" IN XMTR
 2373  023506  017767  011542  006342 XRCNT: MOV     @TSDB,BAD               ;POP SILO WORD INTO BAD
 2374  023514  012167  006340                MOV     (R1)+,GOOD              ;POP LIST WORD INTO GOOD
 2375  023520  026767  006334  006330        CMP     GOOD,BAD
 2376  023526  001005                        BNE     XRERXT                  ;IF DATA BAD, ERROR EXIT
 2377  023530  005302                        DEC     R2                      ;DONE CHECKING SILO?
 2378  023532  001365                        BNE     XRCNT                   ;NO, CONTINUE
 2379  023534  005077  011510        XRLV:   CLR     @TCR                    ;CLR COMMAND REG
 2380  023540  000207                        RTS     PC                      ;EXIT
 2381  023542  062716  000002        XRERXT: ADD     #2,(SP)                 ;FIX PC FOR ERROR RETURN
 2382  023546  000772                        BR      XRLV
```

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                                                .SBTTL  DATA LOOPS TESTS

023550                                  DATLPS: BDINIT  XMTR                    ;CLR XMTR
023556                                          BDINIT  RCVR                    ;CLR RCVR
023564  012777  177777  011462                  MOV     #-1,@TSDB               ;LOAD A WORD INTO TXM SILO
023572  012777  010400  011462                  MOV     #10400,@TMMR            ;SET MASTER FLOP & SET AUTO ADDR
023600  012777  177776  011470                  MOV     #-2,@RDBC               ;SET BYTE COUNT FOR 1 WORD
023606  016777  011412  011434                  MOV     RCWD,@TCR               ;LOAD DESTINATION CODE
023614  052777  020000  011446                  BIS     #B13,@RCR               ;SET RCV WD
023622  012777  177776  011426                  MOV     #-2,@TSBC               ;SET XMTR BYTE CNT FOR 1 WORD
023630  052777  020000  011412                  BIS     #B13,@TCR               ;SET SEND WORD
023636  016704  005762                          MOV     DLCON,R4
023642  012703  177500          DTLPS1: MOV     #177500,R3              ;SET UP 2 MS DELAY
023646  005777  011420          XRB1:   TST     @RSR                    ;ANY ERRORS?
023652  100427                          BMI     2$                      ;YES
023654  032777  000400  011410                  BIT     #B08,@RSR               ;IS DAT OUTP RDY SET IN RCVR?
023662  001020                          BNE     1$
023664  005203                          INC     R3                      ;WAIT A COUPLE OF MS FOR IT
023666  001367                          BNE     XRB1
023670  005304                          DEC     R4
023672  001363                          BNE     DTLPS1
023674                                  ERROR    N              ;ERROR: DAT OUTP RDY IN RCVR NOT SET IN 2 MS.
                                                                        ;******* ERROR 305 *******
 (1)
 (1)    023674  032777  040000  005720          BIT     #B14,@SR
 (1)    023702  001005                  BNE     .+14
 (1)    023704  012767  000305  006142          MOV     #305,ERRNUM
 (1)    023712  004767  005710                  JSR     PC,ERR
 (1)            000306                  N       =       N+1
023716                                  SCOPE   DATLPS
 (1)    023716  004567  160070                  JSR     R5,SCPRTN
 (1)    023722  023550                  DATLPS
023724  005777  011342          1$:     TST     @RSR                    ;ANY HARD ERRORS?
023730  100024                          BPL     XRB2
023732                          2$:     ERROR    N              ;ERROR; HARD ERROR ON 1 WD XFER
                                                                        ;******* ERROR 306 *******
 (1)
 (1)    023732  032777  040000  005662          BIT     #B14,@SR
 (1)    023740  001005                  BNE     .+14
 (1)    023742  012767  000306  006104          MOV     #306,ERRNUM
 (1)    023750  004767  005652                  JSR     PC,ERR
 (1)            000307                  N       =       N+1
023754                                  PNTM    RCSTAT                  ;IF SO PRINT "RECEIVER STATUS = "
 (1)    023754  012700  033723                  MOV     #RCSTAT,R0              ;PRINT MESSAGE
 (1)    023760  004767  006076                  JSR     PC,TYPOUT               ;POINTED TO BY RCSTAT
023764  017700  011302                  MOV     @RSR,R0
023770  004767  006404                  JSR     PC,OCTPNT               ;PRINT CONTENTS OF RSR
023774                                  SCOPE   DATLPS
 (1)    023774  004567  160012                  JSR     R5,SCPRTN
 (1)    024000  023550                  DATLPS
024002  105777  011244          XRB2:   TSTB    @TSR                    ;IS SUC TXF SET IN XMTR?
024006  100427                          BMI     XRB3
024010                                  ERROR    N              ;ERROR: SUC TXF IN XMTR NOT SET IN 2 MS.
                                                                        ;******* ERROR 307 *******
 (1)
 (1)    024010  032777  040000  005604          BIT     #B14,@SR
 (1)    024016  001005                  BNE     .+14
 (1)    024020  012767  000307  006026          MOV     #307,ERRNUM
 (1)    024026  004767  005574                  JSR     PC,ERR
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  (1)           000310                       N       =       N+1
2417  024032    005777  011214                       TST     @TSR                    ;ANY HARD ERRORS?
2418  024036    100010                               BPL     XRBS2
2419  024040                                         PNTM    TXSTAT                  ;IF SO, PRINT "TRANSMITTER STATUS = "
  (1) 024040    012700  033670                       MOV     #TXSTAT,R0              ;PRINT MESSAGE
  (1) 024044    004767  006012                       JSR     PC,TYPOUT               ;POINTED TO BY TXSTAT
2420  024050    017700  011176                       MOV     @TSR,R0
2421  024054    004767  006320                       JSR     PC,OCTPNT               ;PRINT CONTENTS OF TSR
2422  024060                               XRBS2:    SCOPE   DATLPS
  (1) 024060    004567  157726                       JSR     R5,SCPRTN
  (1) 024064    023550                               DATLPS
2423  024066    012767  177777  005764   XRB3:       MOV     #-1,GOOD
2424  024074    017767  011174  005754               MOV     @RDDB,BAD               ;CHECK DATA RECEIVED
2425  024102    026767  005752  005746               CMP     GOOD,BAD                ;IS IT O.K. ?
2426  024110    001414                               BEQ     XRB4
2427  024112                                         DATERR   N              ;ERROR: DATA RECEIVED IS WRONG (DROPPED BITS)
  (1)                                                                              ;******* ERROR 310 *******
  (1) 024112    032777  040000  005502               BIT     #B14,@SR
  (1) 024120    001005                               BNE     .+14
  (1) 024122    012767  000310  005724               MOV     #310,ERRNUM
  (1) 024130    004767  005556                       JSR     PC,DERR
  (1)           000311                       N       =       N+1
2428  024134                                         SCOPE DATLPS
  (1) 024134    004567  157652                       JSR     R5,SCPRTN
  (1) 024140    023550                               DATLPS
2429  024142    016767  011060  005710   XRB4:       MOV     TRAD,GOOD               ;GET TRANSMITTER TDM BUS ADDRESS
2430  024150    017767  011114  005700               MOV     @RCR,BAD                ;READ IDENT BITS IN RCR
2431  024156    042767  160377  005672               BIC     #160377,BAD             ;IGNORE ALL OTHER BITS
2432  024164    026767  005670  005664               CMP     GOOD,BAD                ;D.C. RECEIVED OK?
2433  024172    001414                               BEQ     XRB4C
2434  024174                                         DATERR   N              ;ERROR: XMTR IDENT BITS NOT REC'D BY RCVR
  (1)                                                                              ;******* ERROR 311 *******
  (1) 024174    032777  040000  005420               BIT     #B14,@SR
  (1) 024202    001005                               BNE     .+14
  (1) 024204    012767  000311  005642               MOV     #311,ERRNUM
  (1) 024212    004767  005474                       JSR     PC,DERR
  (1)           000312                       N       =       N+1
2435  024216                                         SCOPE   DATLPS
  (1) 024216    004567  157570                       JSR     R5,SCPRTN
  (1) 024222    023550                               DATLPS
2436  024224                               XRB4C:    BDINIT  XMTR                    ;CLR XMTR
2437  024232                                         BDINIT  RCVR                    ;CLR RCVR
2438  024240    012777  000000  011006               MOV     #0,@TSDB                ;LOAD A WORD OF 0'S INTO SILO
2439  024246    012777  177776  011002               MOV     #-2,@TSBC               ;SET BYTE CNT FOR 1 WORD
2440  024254    012777  177776  011014               MOV     #-2,@RDBC
2441  024262    016777  010736  010760               MOV     RCAD,@TCR               ;POINT XMTR AT RCVR
2442  024270    052777  020000  010772               BIS     #B13,@RCR               ;SET RCV WD
2443  024276    052777  020000  010744               BIS     #B13,@TCR               ;SET SND WD
2444  024304    016704  005314                       MOV     DLCON,R4
2445  024310    012703  177570               XRB4D:  MOV     #177570,R3              ;SET UP 2 MS DELAY
2446  024314    005777  010752               XRB5:   TST     @RSR                    ;ANY ERRORS?
2447  024320    100427                               BMI     2$                      ;YES, ERROR
2448  024322    032777  000400  010742               BIT     #B08,@RSR               ;DATA OUTPUT READY YET?
2449  024330    001020                               BNE     1$
2450  024332    005203                               INC     R3                      ;WAIT A COUPLE OF MS FOR IT
2451  024334    001367                               BNE     XRB5
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 2452  024336  005304                          DEC     R4
 2453  024340  001363                          BNE     XRB4D
 2454  024342                                  ERROR    N              ;ERROR: DAT OUTP RDY IN RCVR NOT SET IN 2 MS.
  (1)                                                                          ;******* ERROR 312 *******
  (1)  024342  032777  040000  005252          BIT     #B14,@SR
  (1)  024350  001005                          BNE     .+14
  (1)  024352  012767  000312  005474          MOV     #312,ERRNUM
  (1)  024360  004767  005242                  JSR     PC,ERR
  (1)          000313                  N       =       N+1
 2455  024364                                  SCOPE   XRB4C
  (1)  024364  004567  157422                  JSR     R5,SCPRTN
  (1)  024370  024224                          XRB4C
 2456  024372  005777  010674          1$:     TST     @RSR                   ;ANY HARD ERRORS IN RCVR?
 2457  024376  100024                          BPL     XRB6
 2458  024400                          2$:     ERROR    N              ;ERROR: HARD ERROR ON 1 WD XFER
  (1)                                                                          ;******* ERROR 313 *******
  (1)  024400  032777  040000  005214          BIT     #B14,@SR
  (1)  024406  001005                          BNE     .+14
  (1)  024410  012767  000313  005436          MOV     #313,ERRNUM
  (1)  024416  004767  005204                  JSR     PC,ERR
  (1)          000314                  N       =       N+1
 2459  024422                                  PNTM    RCSTAT                 ;IF SO, PRINT "RECEIVER STATUS = "
  (1)  024422  012700  033723                  MOV     #RCSTAT,R0             ;PRINT MESSAGE
  (1)  024426  004767  005430                  JSR     PC,TYPOUT              ;POINTED TO BY RCSTAT
 2460  024432  017700  010634                  MOV     @RSR,R0
 2461  024436  004767  005736                  JSR     PC,OCTPNT              ;PRINT CONTENTS OF RSR
 2462  024442                                  SCOPE   XRB4C
  (1)  024442  004567  157344                  JSR     R5,SCPRTN
  (1)  024446  024224                          XRB4C
 2463  024450  105777  010576          XRB6:   TSTB    @TSR                   ;IS SUC TXF SET IN XMTR?
 2464  024454  100427                          BMI     XRB7
 2465  024456                                  ERROR    N              ;ERROR: SUC TXF IN XMTR NOT SET IN 2 MS.
  (1)                                                                          ;******* ERROR 314 *******
  (1)  024456  032777  040000  005136          BIT     #B14,@SR
  (1)  024464  001005                          BNE     .+14
  (1)  024466  012767  000314  005360          MOV     #314,ERRNUM
  (1)  024474  004767  005126                  JSR     PC,ERR
  (1)          000315                  N       =       N+1
 2466  024500  005777  010546                  TST     @TSR                   ;ANY HARD ERRORS IN XMTR?
 2467  024504  100010                          BPL     XRB6S
 2468  024506                                  PNTM    TXSTAT                 ;IF SO, PRINT "TRANSMITTER STATUS = "
  (1)  024506  012700  033670                  MOV     #TXSTAT,R0             ;PRINT MESSAGE
  (1)  024512  004767  005344                  JSR     PC,TYPOUT              ;POINTED TO BY TXSTAT
 2469  024516  017700  010530                  MOV     @TSR,R0
 2470  024522  004767  005652                  JSR     PC,OCTPNT              ;PRINT CONTENTS OF TSR
 2471  024526                          XRB6S:  SCOPE   XRB4C
  (1)  024526  004567  157260                  JSR     R5,SCPRTN
  (1)  024532  024224                          XRB4C
 2472  024534  005067  005320          XRB7:   CLR     GOOD
 2473  024540  017767  010530  005310          MOV     @RDDB,BAD              ;CHECK DATA RECEIVED
 2474  024546  026767  005306  005302          CMP     GOOD,BAD               ;IS IT O.K.?
 2475  024554  001414                          BEQ     XRB8
 2476  024556                                  DATERR   N             ;ERROR: DATA RECEIVED IS WRONG (PICKED UP BITS)
  (1)                                                                          ;******* ERROR 315 *******
  (1)  024556  032777  040000  005036          BIT     #B14,@SR
  (1)  024564  001005                          BNE     .+14
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  (1)  024566  012767  000315  005260          MOV     #315,ERRNUM
  (1)  024574  004767  005112                  JSR     PC,DERR
  (1)          000316                  N       =       N+1
 2477  024600                                  SCOPE   XRB4C
  (1)  024600  004567  157206                  JSR     R5,SCPRTN
  (1)  024604  024224                          XRB4C
 2478  024606  004767  173062          XRB8:   JSR     PC,CLRCBF       ;MAKE SURE CMPBUF IS CLEAR
 2479  024612                                  BDINIT  XMTR            ;CLR XMTR
 2480  024620                                  BDINIT  RCVR            ;CLR RCVR
 2481  024626  012777  032700  010424          MOV     #SILDAT,@TSBA   ;GET XMTR DATA FROM SILDAT
 2482  024634  012777  033300  010436          MOV     #CMPBUF,@RDBA   ;PUT RCV'D DATA IN CMPBUF
 2483  024642  012777  177600  010406          MOV     #-128.,@TSBC    ;SET UP TO SEND 64 WORDS
 2484  024650  012777  177600  010420          MOV     #-128.,@RDBC    ;SET UP TO RECEIVE 64 WORDS
 2485  024656  016777  010342  010364          MOV     RCAD,@TCR       ;POINT XMTR AT RCVR
 2486  024664  052777  060001  010376          BIS     #60001,@RCR     ;SET RC NPR, RCV WD, & ST TXF IN RCVR
 2487  024672  052777  060001  010350          BIS     #60001,@TCR     ;AND IN XMTR
 2488  024700  016702  004720                  MOV     DLCON,R2
 2489  024704  005003                  XRB8A:  CLR     R3
 2490  024706  012704  177777                  MOV     #-1,R4          ;SET UP 1 SEC DELAY
 2491  024712  105777  010334          XRB9:   TSTB    @TSR            ;IS SUC TXF SET IN XMTR?
 2492  024716  100443                          BMI     XRB10           ;YES, GO CHECK RECEIVER
 2493  024720  005777  010326                  TST     @TSR            ;ERROR BIT SET?
 2494  024724  100411                          BMI     $2$
 2495  024726  005777  010340                  TST     @RSR            ;RCVR ERROR BIT SET?
 2496  024732  100440                          BMI     $3$
 2497  024734  005203                          INC     R3              ;NO, WATCH FOR A SECOND
 2498  024736  001365                          BNE     XRB9
 2499  024740  005204                          INC     R4
 2500  024742  001363                          BNE     XRB9
 2501  024744  005302                          DEC     R2
 2502  024746  001356                          BNE     XRB8A
 2503  024750                          $2$:    ERROR    N              ;ERROR: NO SUC TXF IN XMTR IN 1 SEC
  (1)                                                                     ;******* ERROR 316 *******
  (1)  024750  032777  040000  004644          BIT     #B14,@SR
  (1)  024756  001005                          BNE     .+14
  (1)  024760  012767  000316  005066          MOV     #316,ERRNUM
  (1)  024766  004767  004634                  JSR     PC,ERR
  (1)          000317                  N       =       N+1
 2504  024772  005777  010254                  TST     @TSR            ;ANY HARD ERRORS IN XMTR?
 2505  024776  100010                          BPL     XRB9S
 2506  025000                                  PNTM    TXSTAT          ;IF SO, PRINT "TRANSMITTER STATUS = "
  (1)  025000  012700  033670                  MOV     #TXSTAT,R0      ;PRINT MESSAGE
  (1)  025004  004767  005052                  JSR     PC,TYPOUT       ;POINTED TO BY TXSTAT
 2507  025010  017700  010236                  MOV     @TSR,R0
 2508  025014  004767  005360                  JSR     PC,OCTPNT       ;PRINT CONTENTS OF TSR
 2509  025020                          XRB9S:  SCOPE   XRB8
  (1)  025020  004567  156766                  JSR     R5,SCPRTN
  (1)  025024  024606                          XRB8
 2510  025026  105777  010240          XRB10:  TSTB    @RSR            ;IS SUC TXF SET IN RCVR?
 2511  025032  100427                          BMI     XRB11           ;YES, GO CHECK DATA
 2512  025034                          $3$:    ERROR    N              ;ERROR: NO SUC TXF IN RCVR IN 1 SEC
  (1)                                                                     ;******* ERROR 317 *******
  (1)  025034  032777  040000  004560          BIT     #B14,@SR
  (1)  025042  001005                          BNE     .+14
  (1)  025044  012767  000317  005002          MOV     #317,ERRNUM
  (1)  025052  004767  004550                  JSR     PC,ERR
```

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  (1)           000320                    N       =       N+1
2513  025056    005777  010210                    TST     @RSR                    ;ANY HARD ERRORS IN RCVR?
2514  025062    100010                            BPL     XRB10S
2515  025064                                      PNTM    RCSTAT                  ;IF SO, PRINT "RECEIVER STATUS = "
  (1) 025064    012700  033723                    MOV     #RCSTAT,R0              ;PRINT MESSAGE
  (1) 025070    004767  004766                    JSR     PC,TYPOUT               ;POINTED TO BY RCSTAT
2516  025074    017700  010172                    MOV     @RSR,R0
2517  025100    004767  005274                    JSR     PC,OCTPNT               ;PRINT CONTENTS OF RSR
2518  025104                            XRB10S:   SCOPE   XRB8
  (1) 025104    004567  156702                    JSR     R5,SCPRTN
  (1) 025110    024606                            XRB8
2519  025112    012703  000100            XRB11:  MOV     #64.,R3                 ;R3 IS WORD COUNTER
2520  025116    012701  032700                    MOV     #SILDAT,R1              ;R1 IS GOOD DATA POINTER
2521  025122    012702  033300                    MOV     #CMPBUF,R2              ;R2 IS "BAD"DATA POINTER
2522  025126    012167  004726            XRB11L: MOV     (R1)+,GOOD
2523  025132    012267  004720                    MOV     (R2)+,BAD
2524  025136    026767  004716  004712            CMP     GOOD,BAD                ;DATA WORD OK?
2525  025144    001420                            BEQ     XRB11C                  ;IF SO, CONTINUE
2526  025146                                      DATERR   N              ;ERROR: BAD DATA RECEIVED FROM XMTR
  (1)                                                                           ;******* ERROR 320 *******
  (1) 025146    032777  040000  004446            BIT     #B14,@SR
  (1) 025154    001005                            BNE     .+14
  (1) 025156    012767  000320  004670            MOV     #320,ERRNUM
  (1) 025164    004767  004522                    JSR     PC,DERR
  (1)           000321                    N       =       N+1
2527  025170    005303                            DEC     R3                      ;CHECKED ALL WORDS?
2528  025172    001355                            BNE     XRB11L
2529  025174                                      SCOPE   XRB8                    ;RE-TRY BECAUSE OF ERROR
  (1) 025174    004567  156612                    JSR     R5,SCPRTN
  (1) 025200    024606                            XRB8
2530  025202    000167  000004                    JMP     XRB12
2531  025206    005303                    XRB11C: DEC     R3                      ;CHECKED ALL WORDS?
2532  025210    001346                            BNE     XRB11L
2533  025212                            XRB12:  BDINIT  XMTR                    ;CLR XMTR
2534  025220                                    BDINIT  RCVR                    ;CLR RCVR
2535  025226    012777  035316  010024            MOV     #TSTWRD,@TSBA           ;POINT XMTR AT LOC WITH TEST WORD
2536  025234    012777  177200  010014            MOV     #-600,@TSBC             ;SET UP FOR 300 WORD XFR
2537  025242    016777  007756  010000            MOV     RCAD,@TCR               ;POINT XMTR AT RCVR
2538  025250    012777  020001  010012            MOV     #20001,@RCR             ;SET RCV WD, RCV DAT, IN RCVR
2539  025256    052777  060005  007764            BIS     #60005,@TCR             ;SET TX NPR, INH ADR INC, ST TXM,&SND WD
2540  025264    012701  000300                    MOV     #300,R1                 ;R1 COUNTS WORDS RECEIVED
2541  025270    016704  004330            XRB12L: MOV     DLCON,R4
2542  025274    012703  177700            XRB12K: MOV     #-100,R3                ;SET UP 10 MS COUNTER
2543  025300    032777  000400  007764    XRB12M: BIT     #B08,@RSR               ;RCVR SILO RDY FOR OUTPUT?
2544  025306    001057                            BNE     XRB13                   ;YES, LOOK AT WORD
2545  025310    005203                            INC     R3
2546  025312    001372                            BNE     XRB12M                  ;IF NOT, WAIT 10 MS.
2547  025314    005304                            DEC     R4
2548  025316    001366                            BNE     XRB12K
2549  025320                                      ERROR    N              ;ERROR: NO DATA WORD IN RCVR SILO IN 10 MS.
  (1)                                                                           ;******* ERROR 321 *******
  (1) 025320    032777  040000  004274            BIT     #B14,@SR
  (1) 025326    001005                            BNE     .+14
  (1) 025330    012767  000321  004516            MOV     #321,ERRNUM
  (1) 025336    004767  004264                    JSR     PC,ERR
  (1)           000322                    N       =       N+1
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 2550  025342  005777  007704                TST     @TSR                    ;ANY HARD ERRORS IN XMTR?
 2551  025346  100010                      BPL     XRB12R
 2552  025350                              PNTM    TXSTAT                  ;IF SO, PRINT "TRANSMITTER STATUS = "
  (1)  025350  012700  033670                MOV     #TXSTAT,R0              ;PRINT MESSAGE
  (1)  025354  004767  004502                JSR     PC,TYPOUT               ;POINTED TO BY TXSTAT
 2553  025360  017700  007666                MOV     @TSR,R0
 2554  025364  004767  005010                JSR     PC,OCTPNT               ;PRINT CONTENTS OF TSR
 2555  025370  005777  007676      XRB12R:   TST     @RSR                    ;ANY HARD ERRORS IN RCVR?
 2556  025374  100010                      BPL     XRB12T
 2557  025376                              PNTM    RCSTAT                  ;IF SO, PRINT "RECEIVER STATUS = "
  (1)  025376  012700  033723                MOV     #RCSTAT,R0              ;PRINT MESSAGE
  (1)  025402  004767  004454                JSR     PC,TYPOUT               ;POINTED TO BY RCSTAT
 2558  025406  017700  007660                MOV     @RSR,R0
 2559  025412  004767  004762                JSR     PC,OCTPNT               ;PRINT CONTENTS OF RSR
 2560  025416            XRB12T:   PNTM    RCBTCN                  ;PRINT "NO. OF WORDS RECEIVED = "
  (1)  025416  012700  033753                MOV     #RCBTCN,R0              ;PRINT MESSAGE
  (1)  025422  004767  004434                JSR     PC,TYPOUT               ;POINTED TO BY RCBTCN
 2561  025426  012700  000300                MOV     #300,R0
 2562  025432  160100                      SUB     R1,R0                   ;CALCULATE WORDS RECV'D
 2563  025434  004767  004740                JSR     PC,OCTPNT               ;PRINT RESULT
 2564  025440            XRB12S:   SCOPE   XRB12                   ;START ALL OVER
  (1)  025440  004567  156346                JSR     R5,SCPRTN
  (1)  025444  025212                      XRB12
 2565  025446  016767  007644  004404  XRB13:   MOV     TSTWRD,GOOD
 2566  025454  017767  007614  004374          MOV     @RDDB,BAD               ;GET WORD FROM SILO
 2567  025462  026767  004372  004366          CMP     GOOD,BAD                ;WAS IT = TEST WORD?
 2568  025470  001425                      BEQ     XRB13C
 2569  025472                              DATERR   N               ;ERROR: DATA WORD IN RCVR SILO WRONG
  (1)                                                                 ;******* ERROR 322 *******
  (1)  025472  032777  040000  004122          BIT     #B14,@SR
  (1)  025500  001005                      BNE     .+14
  (1)  025502  012767  000322  004344          MOV     #322,ERRNUM
  (1)  025510  004767  004176                JSR     PC,DERR
  (1)          000323              N       =       N+1
 2570  025514                              PNTM    RCBTCN                  ;PRINT "NO. OF WORDS RECEIVED = "
  (1)  025514  012700  033753                MOV     #RCBTCN,R0              ;PRINT MESSAGE
  (1)  025520  004767  004336                JSR     PC,TYPOUT               ;POINTED TO BY RCBTCN
 2571  025524  012700  000301                MOV     #301,R0
 2572  025530  160100                      SUB     R1,R0                   ;CALCULATE WORDS RECV'D
 2573  025532  004767  004642                JSR     PC,OCTPNT               ;PRINT RESULT
 2574  025536                              SCOPE   XRB12                   ;START ALL OVER
  (1)  025536  004567  156250                JSR     R5,SCPRTN
  (1)  025542  025212                      XRB12
 2575  025544  005301            XRB13C:   DEC     R1                      ;UPDATE RCVR WORD COUNT
 2576  025546  001250                      BNE     XRB12L                  ;GET ANOTHER WORD
 2577  025550  016704  004050                MOV     DLCON,R4
 2578  025554  012703  177000      XRB13E:   MOV     #177000,R3              ;SET UP TO WAIT FOR TXFR
 2579  025560  005203            XRB13D:   INC     R3
 2580  025562  001376                      BNE     XRB13D                  ;WAIT FOR LATEST POSSIBLE TIMSL
 2581  025564  105777  007462                TSTB    @TSR                    ;XMTR SUC TXF SET?
 2582  025570  100431                      BMI     XRB14                   ;YES, GO CHECK RCVR
 2583  025572  005304                      DEC     R4
 2584  025574  001367                      BNE     XRB13E
 2585  025576                              ERROR    N               ;ERROR: XMTR SUC TXF NOT SET
  (1)                                                                 ;******* ERROR 323 *******
  (1)  025576  032777  040000  004016          BIT     #B14,@SR
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  (1)  025604  001005                        BNE     .+14
  (1)  025606  012767  000323  004240        MOV     #323,ERRNUM
  (1)  025614  004767  004006                JSR     PC,ERR
  (1)          000324                 N      =       N+1
 2586  025620  005777  007426                TST     @TSR                    ;ANY HARD ERRORS IN XMTR?
 2587  025624  100010                        BPL     XRB13S
 2588  025626                                PNTM    TXSTAT                  ;IF SO, PRINT "TRANSMITTER STATUS = "
  (1)  025626  012700  033670                MOV     #TXSTAT,R0              ;PRINT MESSAGE
  (1)  025632  004767  004224                JSR     PC,TYPOUT               ;POINTED TO BY TXSTAT
 2589  025636  017700  007410                MOV     @TSR,R0
 2590  025642  004767  004532                JSR     PC,OCTPNT               ;PRINT CONTENTS OF TSR
 2591  025646                        XRB13S: SCOPE   XRB12                   ;START OVER
  (1)  025646  004567  156140                JSR     R5,SCPRTN
  (1)  025652  025212                        XRB12
 2592  025654  105777  007412        XRB14:  TSTB    @RSR                    ;RCVR SUC TXF SET?
 2593  025660  100427                        BMI     XRB15                   ;YES, ALL DONE
 2594  025662                                ERROR    N              ;ERROR: RCVR SUC TXF NOT SET
  (1)                                                                       ;******* ERROR 324 *******
  (1)  025662  032777  040000  003732        BIT     #B14,@SR
  (1)  025670  001005                        BNE     .+14
  (1)  025672  012767  000324  004154        MOV     #324,ERRNUM
  (1)  025700  004767  003722                JSR     PC,ERR
  (1)          000325                 N      =       N+1
 2595  025704  005777  007362                TST     @RSR                    ;ANY HARD ERRORS IN RCVR?
 2596  025710  100010                        BPL     XRB14S
 2597  025712                                PNTM    RCSTAT                  ;IF SO, PRINT "RECEIVER STATUS = "
  (1)  025712  012700  033723                MOV     #RCSTAT,R0              ;PRINT MESSAGE
  (1)  025716  004767  004140                JSR     PC,TYPOUT               ;POINTED TO BY RCSTAT
 2598  025722  017700  007344                MOV     @RSR,R0
 2599  025726  004767  004446                JSR     PC,OCTPNT               ;PRINT CONTENTS OF RSR
 2600  025732                        XRB14S: SCOPE   XRB12                   ;START OVER
  (1)  025732  004567  156054                JSR     R5,SCPRTN
  (1)  025736  025212                        XRB12
 2601  025740  004767  003262        XRB15:  JSR     PC,MONIT
 2602  025744  032777  010000  003650        BIT     #B12,@SR                ;SW 12 = 1?
 2603  025752  001402                        BEQ     XRBRT                   ;NO, EXIT
 2604  025754  000167  175570                JMP     DATLPS                  ;YES, DON'T EXIT
 2605  025760  000207                XRBRT:  RTS     PC
```

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                                                                    B  8
2607                                        .SBTTL  TRANSMISSION ERRORS TESTS
2608
2609                                        ;TEST TO CHECK FOR RCVR TIMEOUT.
2610                                        ;OPEN CHANNEL, THEN DON'T SEND ANY DATA FOR
2611                                        ; 3 SECONDS.
2612
2613
2614  025762                                TXMERS: BDINIT  XMTR                    ;CLR XMTR
2615  025770                                        BDINIT  RCVR                    ;CLR RCVR
2616  025776  052777  010400  007256               BIS     #10400,@TMMR            ;SET MASTER & AUTO ADDR
2617  026004  012777  177774  007244               MOV     #-4,@TSBC               ;INDICATE 2 WD XFR
2618  026012  012777  177777  007234               MOV     #-1,@TSDB               ;PUT 1 WD IN XMTR SILO
2619  026020  016777  007200  007222               MOV     RCAD,@TCR               ;POINT XMTR AT RCVR
2620  026026  052777  020000  007234               BIS     #B13,@RCR               ;SET RCV WD
2621  026034  052777  020000  007206               BIS     #B13,@TCR               ;SET SND WD
2622  026042  016702  003556                       MOV     DLCON,R2
2623  026046  005003                       TXMR1:  CLR     R3
2624  026050  012704  177775                       MOV     #-3,R4                  ;SET UP 1 SEC DELAY
2625  026054  032777  002000  007210       XRC1:   BIT     #B10,@RSR               ;IS RCVR TIMEOUT SET?
2626  026062  001022                               BNE     XRC2
2627  026064  005203                               INC     R3                      ;IF NOT, WAIT 3 SEC FOR IT
2628  026066  001372                               BNE     XRC1
2629  026070  005204                               INC     R4
2630  026072  001370                               BNE     XRC1
2631  026074  005302                               DEC     R2
2632  026076  001363                               BNE     TXMR1
2633  026100                                       ERROR    N                  ;ERROR: NO TIMEOUT IN 3 SEC WITH NULL ON INPUT
                                                                                ;******* ERROR 325 *******
 (1)
 (1)  026100  032777  040000  003514               BIT     #B14,@SR
 (1)  026106  001005                               BNE     .+14
 (1)  026110  012767  000325  003736               MOV     #325,ERRNUM
 (1)  026116  004767  003504                       JSR     PC,ERR
 (1)          000326                       N       =       N+1
2634  026122                                       SCOPE   TXMERS
 (1)  026122  004567  155664                       JSR     R5,SCPRTN
 (1)  026126  025762                               TXMERS
2635
2636                                        ;TEST TO DETERMINE THAT ADDRESSING RCVR AND GENERATING A NULL
2637                                        ;CYCLE FIRST PROPERLY GENERATES CORRECT RESPONSE CODES
2638                                        ;AND THAT THE RECEIVER DOES NOT RESPOND.
2639                                        ;CHANNEL IS OPENED BY POPPING A WORD FROM XMTR SILO.
2640
2641  026130                                XRC2:   BDINIT  XMTR                    ;CLR XMTR
2642  026136                                        BDINIT  RCVR                    ;CLR RCVR
2643  026144  012777  177774  007104               MOV     #-4,@TSBC               ;SET UP FOR 1 WD XFR
2644  026152  016777  007046  007070               MOV     RCAD,@TCR               ;POINT XMTR AT RCVR
2645  026160  012777  177777  007066               MOV     #-1,@TSDB               ;PUT 1 WD INTO TXM SILO
2646  026166  052777  000200  007054               BIS     #B07,@TCR               ;SET RD SILO
2647  026174  052777  020001  007066               BIS     #B13+B00,@RCR           ;SET RCV WD AND RCV DATA
2648  026202  004567  156124                       JSR     R5,DELAY                ;WAIT FOR WORD TO HIT BOTTOM
2649  026206  000010                               .WORD   10
2650  026210  005777  007040                       TST     @TSDB                   ;POP WORD OUT
2651  026214  042777  000200  007026               BIC     #B07,@TCR               ;CLR RD SILO
2652  026222  016704  003376                       MOV     DLCON,R4
2653  026226  012703  177757               XRC2D:  MOV     #177757,R3              ;SET UP TO STALL 100 US.
2654  026232  005203                       XRC2A:  INC     R3
```

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 2655  026234  001376                          BNE     XRC2A                   ;STALL (WAIT FOR TIME SLICE
 2656  026236  005304                          DEC     R4
 2657  026240  001372                          BNE     XRC2D
 2658  026242  012767  000000  003610          MOV     #0,GOOD
 2659  026250  017767  007016  003600          MOV     @RSR,BAD                ;CHK RESPONSE CODES IN RCVR
 2660  026256  042767  177760  003572          BIC     #177760,BAD
 2661  026264  026767  003570  003564          CMP     GOOD,BAD                ;RSP CODES = 00 & 00 ?
 2662  026272  001414                          BEQ     XRC3
 2663  026274                                  DATERR   N              ;ERROR: RESPONSE CODES AT RECEIVER WRONG
  (1)                                                                    ;******* ERROR 326 *******
  (1)  026274  032777  040000  003320          BIT     #B14,@SR
  (1)  026302  001005                          BNE     .+14
  (1)  026304  012767  000326  003542          MOV     #326,ERRNUM
  (1)  026312  004767  003374                  JSR     PC,DERR
  (1)          000327                  N       =       N+1
 2664  026316                                  SCOPE   XRC2
  (1)  026316  004567  155470                  JSR     R5,SCPRTN
  (1)  026322  026130                          XRC2
 2665  026324  012767  000001  003526  XRC3:   MOV     #1,GOOD
 2666  026332  017767  006714  003516          MOV     @TSR,BAD                ;CHECK RESPONSE CODES IN XMTR
 2667  026340  042767  177760  003510          BIC     #177760,BAD
 2668  026346  026767  003506  003502          CMP     GOOD,BAD                ;RSP CODES = 00 & 01 ?
 2669  026354  001414                          BEQ     XRC4
 2670  026356                                  DATERR   N              ;ERROR: RSP CODES AT XMTR WRONG
  (1)                                                                    ;******* ERROR 327 *******
  (1)  026356  032777  040000  003236          BIT     #B14,@SR
  (1)  026364  001005                          BNE     .+14
  (1)  026366  012767  000327  003460          MOV     #327,ERRNUM
  (1)  026374  004767  003312                  JSR     PC,DERR
  (1)          000330                  N       =       N+1
 2671  026400                                  SCOPE   XRC2
  (1)  026400  004567  155406                  JSR     R5,SCPRTN
  (1)  026404  026130                          XRC2
 2672  026406  032777  010000  006656  XRC4:   BIT     #B12,@RSR                       ;IS RSR BIT 12 (TXM ERR) SET?
 2673  026414  001414                          BEQ     XRC5            ;ERROR: RCVR SHOULD NOT BE ADDRESSED
 2674  026416                                  ERROR    N                      ;UPON OPENING A CHANNEL WITH INVALID WORD
  (1)                                                                    ;******* ERROR 330 *******
  (1)  026416  032777  040000  003176          BIT     #B14,@SR
  (1)  026424  001005                          BNE     .+14
  (1)  026426  012767  000330  003420          MOV     #330,ERRNUM
  (1)  026434  004767  003166                  JSR     PC,ERR
  (1)          000331                  N       =       N+1
 2675  026440                                  SCOPE   XRC2
  (1)  026440  004567  155346                  JSR     R5,SCPRTN
  (1)  026444  026130                          XRC2
 2676
 2677                                  ;TEST TO DETERMINE THAT CHANNEL OPEN CAN BE ACHEIVED LEGALLY
 2678                                  ;AND THAT, ONCE ACHIEVED, KNOCKING DOWN THE TRANSMITTER BY
 2679                                  ;FAKING A XMTR TXM ERROR CAUSES THE CORRECT RESPONSES AND
 2680                                  ;CAUSES A RECVR TXM ERROR.
 2681
 2682  026446                          XRC5:   BDINIT  XMTR                    ;CLR XMTR
 2683  026454                                  BDINIT  RCVR                    ;CLR RCVR
 2684  026462  012777  177774  006566          MOV     #-4,@TSBC               ;SET UP FOR 2 WD XFR
 2685  026470  012777  177777  006556          MOV     #-1,@TSDB               ;LOAD A WORD INTO XMTR SILO
 2686  026476  016777  006522  006544          MOV     RCAD,@TCR               ;POINT XMTR AT RCVR
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 2687  026504  012777  177777  006542          MOV     #-1,@TSDB               ;LOAD 2ND WORD
 2688  026512  052777  020000  006550          BIS     #B13,@RCR               ;SET RCV WORD
 2689  026520  052777  020000  006522          BIS     #B13,@TCR               ;SET SND WORD
 2690  026526  016704  003072                  MOV     DLCON,R4
 2691  026532  012703  177500          XRC5A:  MOV     #177500,R3              ;SET UP FOR DELAY
 2692  026536  132777  000010  006520  XRC6:   BITB    #B03,@TMMRH             ;CHECK FOR CHANNEL OPEN
 2693  026544  001020                          BNE     XRC6A
 2694  026546  005203                          INC     R3                      ;WAIT A BIT
 2695  026550  001372                          BNE     XRC6
 2696  026552  005304                          DEC     R4
 2697  026554  001366                          BNE     XRC5A
 2698  026556                                  ERROR    N              ;ERROR: CANNOT GET "CHAN OPEN" IN XMTR
  (1)                                                                         ;******* ERROR 331 *******
  (1)   026556  032777  040000  003036          BIT     #B14,@SR
  (1)   026564  001005                          BNE     .+14
  (1)   026566  012767  000331  003260          MOV     #331,ERRNUM
  (1)   026574  004767  003026                  JSR     PC,ERR
  (1)           000332                  N       =       N+1
 2699  026600                                  SCOPE   XRC5
  (1)   026600  004567  155206                  JSR     R5,SCPRTN
  (1)   026604  026446                          XRC5
 2700  026606  132777  000020  006456  XRC6A:  BITB    #B04,@RSR               ;CHECK FOR CHANNEL OPEN IN RCVR
 2701  026614  001014                          BNE     XRC7
 2702  026616                                  ERROR    N              ;ERROR: CANNOT GET "CHANNEL OPEN" IN RCVR
  (1)                                                                         ;******* ERROR 332 *******
  (1)   026616  032777  040000  002776          BIT     #B14,@SR
  (1)   026624  001005                          BNE     .+14
  (1)   026626  012767  000332  003220          MOV     #332,ERRNUM
  (1)   026634  004767  002766                  JSR     PC,ERR
  (1)           000333                  N       =       N+1
 2703  026640                                  SCOPE   XRC5
  (1)   026640  004567  155146                  JSR     R5,SCPRTN
  (1)   026644  026446                          XRC5
 2704
 2705  026646  052777  010000  006376  XRC7:   BIS     #B12,@TSR               ;KNOCK DOWN THE XMTR
 2706  026654  016704  002744                  MOV     DLCON,R4
 2707  026660  012703  177757          XRC7D:  MOV     #177757,R3              ;SET UP TO STALL 100 US,
 2708  026664  005203                  XRC7A:  INC     R3
 2709  026666  001376                          BNE     XRC7A                   ;STALL (WAIT FOR TIME SLICE)
 2710  026670  005304                          DEC     R4
 2711  026672  001372                          BNE     XRC7D
 2712  026674  012767  000004  003156          MOV     #4,GOOD
 2713  026702  017767  006364  003146          MOV     @RSR,BAD
 2714  026710  042767  177760  003140          BIC     #177760,BAD             ;ARE RESPONSE CODES = 01 & 00 ?
 2715  026716  026767  003136  003132          CMP     GOOD,BAD
 2716  026724  001414                          BEQ     XRC8
 2717  026726                                  DATERR   N             ;ERROR: RCVR RSP CODES WRONG
  (1)                                                                         ;******* ERROR 333 *******
  (1)   026726  032777  040000  002666          BIT     #B14,@SR
  (1)   026734  001005                          BNE     .+14
  (1)   026736  012767  000333  003110          MOV     #333,ERRNUM
  (1)   026744  004767  002742                  JSR     PC,DERR
  (1)           000334                  N       =       N+1
 2718  026750                                  SCOPE   XRC5
  (1)   026750  004567  155036                  JSR     R5,SCPRTN
  (1)   026754  026446                          XRC5
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 2719  026756  032777  010000  006306  XRC8:   BIT     #B12,@RSR               ;IS RSR BIT 12 (TXM ERR) SET?
 2720  026764  001014                          BNE     XRC9            ;ERROR: XMTR OFF LINE WHILE CHAN OPEN
 2721  026766                                  ERROR    N                      ;DIDN'T SET RCVR TXM ERR
  (1)                                                                    ;******* ERROR 334 *******
  (1)  026766  032777  040000  002626          BIT     #B14,@SR
  (1)  026774  001005                          BNE     .+14
  (1)  026776  012767  000334  003050          MOV     #334,ERRNUM
  (1)  027004  004767  002616                  JSR     PC,ERR
  (1)          000335                  N       =       N+1
 2722  027010                                  SCOPE   XRC5
  (1)  027010  004567  154776                  JSR     R5,SCPRTN
  (1)  027014  026446                          XRC5
 2723
 2724                                  ;TEST TO DETERMINE IF INCORRECT CRC WILL CAUSE A CHECK-FAIL
 2725                                  ;AND GENERATE CORRECT RESPONSES IN RCVR AND XMTR THEREBY CAUSING
 2726                                  ;TRANSMISSION ERRORS IN BOTH.
 2727
 2728  027016                          XRC9:   BDINIT  XMTR                    ;CLR XMTR
 2729  027024                                  BDINIT  RCVR                    ;CLR RCVR
 2730  027032  012777  177772  006216          MOV     #-6,@TSBC               ;SET UP FOR 3 WD XFR
 2731  027040  012777  177777  006206          MOV     #-1,@TSDB               ;LOAD A WORD INTO XMTR SILO
 2732  027046  012777  000002  006200          MOV     #2,@TSDB                ;LOAD 2ND WORD INTO XMTR SILO
 2733  027054  012777  177772  006214          MOV     #-6,@RDBC
 2734  027062  012777  177775  006164          MOV     #-3,@TSDB               ;LOAD 3RD WORD INTO XMTR SILO
 2735  027070  016777  006130  006152          MOV     RCAD,@TCR               ;POINT XMTR AT RCVR
 2736  027076  052777  020000  006164          BIS     #B13,@RCR               ;SET RCV WD
 2737  027104  052777  020000  006136          BIS     #B13,@TCR               ;SET SND WD
 2738  027112  105777  006134          XRC10:  TSTB    @TSR                    ;WAIT FOR SUC TXF
 2739  027116  100375                          BPL     XRC10
 2740  027120  052777  000200  006122          BIS     #B07,@TCR               ;SET XMTR RD SILO
 2741  027126  005777  006122                  TST     @TSDB                   ;POP A WORD FROM SILO
 2742  027132  042777  000200  006110          BIC     #B07,@TCR               ;CLR RD SILO
 2743  027140  052777  000200  006122          BIS     #B07,@RCR               ;SET RCVR LD SILO
 2744  027146  012777  000014  006120          MOV     #14,@RDDB               ;LOAD DIFFERENT 2ND WORD
 2745  027154  042777  000200  006106          BIC     #B07,@RCR               ;CLR LD SILO
 2746  027162  042777  000200  006062          BIC     #B07,@TSR               ;CLR SUC TXF
 2747  027170  042777  000200  006074          BIC     #B07,@RSR
 2748  027176  052777  000001  006064          BIS     #B00,@RCR               ;SET RCV DATA
 2749  027204  052777  000001  006036          BIS     #B00,@TCR               ;SET ST TXM
 2750  027212  016704  002406                  MOV     DLCON,R4
 2751  027216  012703  177000          XRC10B: MOV     #177000,R3              ;SET UP TO STALL
 2752  027222  005203                  XRC10A: INC     R3
 2753  027224  001376                          BNE     XRC10A                  ;STALL (WAIT FOR LAST 2 WORDS)
 2754  027226  005304                          DEC     R4
 2755  027230  001372                          BNE     XRC10B
 2756  027232  012767  000013  002620          MOV     #13,GOOD
 2757  027240  017767  006026  002610          MOV     @RSR,BAD                ;CHECK RCVR RSP CODES
 2758  027246  042767  177760  002602          BIC     #177760,BAD
 2759  027254  026767  002600  002574          CMP     GOOD,BAD                ;ARE RSP CODES = 10 & 11 ?
 2760  027262  001414                          BEQ     XRC11
 2761  027264                                  DATERR   N              ;ERROR: RCVR RSP CODES WRONG
  (1)                                                                    ;******* ERROR 335 *******
  (1)  027264  032777  040000  002330          BIT     #B14,@SR
  (1)  027272  001005                          BNE     .+14
  (1)  027274  012767  000335  002552          MOV     #335,ERRNUM
  (1)  027302  004767  002404                  JSR     PC,DERR
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  (1)           000336                      N       =       N+1
2762  027306                                        SCOPE   XRC9
  (1)  027306   004567  154500                      JSR     R5,SCPRTN
  (1)  027312   027016                              XRC9
2763  027314   017767  005732  002534      XRC11:  MOV     @TSR,BAD
2764  027322   042767  177760  002526              BIC     #177760,BAD             ;CHK XMTR RSP CODES
2765  027330   026767  002524  002520              CMP     GOOD,BAD                ;ARE THEY 10 & 11 ?
2766  027336   001414                              BEQ     XRC12
2767  027340                                        DATERR   N                ;ERROR: XMTR RSP CODES WRONG
  (1)                                                                             ;******* ERROR 336 *******
  (1)  027340   032777  040000  002254              BIT     #B14,@SR
  (1)  027346   001005                              BNE     .+14
  (1)  027350   012767  000336  002476              MOV     #336,ERRNUM
  (1)  027356   004767  002330                      JSR     PC,DERR
  (1)           000337                      N       =       N+1
2768  027362                                        SCOPE   XRC9
  (1)  027362   004567  154424                      JSR     R5,SCPRTN
  (1)  027366   027016                              XRC9
2769  027370   032777  010000  005654      XRC12:  BIT     #B12,@TSR               ;IS TXM ERR SET IN THE XMTR ?
2770  027376   001014                              BNE     XRC13
2771  027400                                        ERROR    N               ;ERROR: XMTR TXM ERR NOT SET WITH INVALID DATA
  (1)                                                                             ;******* ERROR 337 *******
  (1)  027400   032777  040000  002214              BIT     #B14,@SR
  (1)  027406   001005                              BNE     .+14
  (1)  027410   012767  000337  002436              MOV     #337,ERRNUM
  (1)  027416   004767  002204                      JSR     PC,ERR
  (1)           000340                      N       =       N+1
2772  027422                                        SCOPE   XRC9
  (1)  027422   004567  154364                      JSR     R5,SCPRTN
  (1)  027426   027016                              XRC9
2773  027430   032777  010000  005634      XRC13:  BIT     #B12,@RSR               ;IS TXM ERR SET IN THE RCVR?
2774  027436   001014                              BNE     XRC14
2775  027440                                        ERROR    N               ;ERROR: RCVR TXM ERR NOT SET WITH INVALID DATA
  (1)                                                                             ;******* ERROR 340 *******
  (1)  027440   032777  040000  002154              BIT     #B14,@SR
  (1)  027446   001005                              BNE     .+14
  (1)  027450   012767  000340  002376              MOV     #340,ERRNUM
  (1)  027456   004767  002144                      JSR     PC,ERR
  (1)           000341                      N       =       N+1
2776  027462                                        SCOPE   XRC9
  (1)  027462   004567  154324                      JSR     R5,SCPRTN
  (1)  027466   027016                              XRC9
2777
2778                                    ;TEST THAT IF THE CHANNEL IS OPENED AND THE RECEIVER RESPONDS
2779                                    ;TO THE FIRST VALID WORD WITH A NULL, A XMTR TXM ERR RESULTS
2780                                    ;  NULL ON FIRST WORD IS ACHEIVED BY MANUALLY FILLING UP THE
2781                                    ;RECVR SILO, THEN TRYING TO SEND A WORD FROM XMTR TO RCVR.
2782
2783  027470                            XRC14:  BDINIT  XMTR
2784  027476                                    BDINIT  RCVR
2785  027504   052777  000200  005556          BIS     #B07,@RCR               ;SET LD SILO IN RCVR
2786  027512   012703  000100                  MOV     #64.,R3                 ;R3 IS WORD COUNTER
2787  027516   012704  032700                  MOV     #SILDAT,R4              ;R4 IS CURRENT ADDRESS
2788  027522   012477  005546          XRC15:  MOV     (R4)+,@RDDB             ;FILL UP RCVR SILO
2789  027526   005303                          DEC     R3                      ;FULL?
2790  027530   001374                          BNE     XRC15
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 2791  027532  016777  005466  005510          MOV     RCAD,@TCR               ;POINT XMTR AT RCVR
 2792  027540  042777  000200  005522          BIC     #B07,@RCR               ;CLR LD SILO IN RCVR
 2793  027546  012777  177777  005500          MOV     #-1,@TSDB               ;LOAD A WORD INTO XMTR SILO
 2794  027554  012777  177774  005474          MOV     #-4,@TSBC               ;SET UP TO XFR 2 WDS
 2795  027562  012777  177777  005464          MOV     #-1,@TSDB               ;LOAD 2ND WORD INTO XMTR SILO
 2796  027570  052777  020001  005472          BIS     #B13+B00,@RCR           ;SET RCV WD & RCV DATA
 2797  027576  052777  020001  005444          BIS     #B13+B00,@TCR           ;SET SND WD & ST TXM
 2798  027604  016704  002014                  MOV     DLCON,R4
 2799  027610  012703  177000          XRC15B: MOV     #177000,R3              ;SET UP TO STALL
 2800  027614  005203                  XRC15A: INC     R3
 2801  027616  001376                          BNE     XRC15A                  ;STALL (WAIT FOR TIME SLICE)
 2802  027620  005304                          DEC     R4
 2803  027622  001372                          BNE     XRC15B
 2804  027624  012767  000006  002226          MOV     #6,GOOD                 ;CHK TXM RSP CODES
 2805  027632  017767  005414  002216          MOV     @TSR,BAD
 2806  027640  042767  177760  002210          BIC     #177760,BAD
 2807  027646  026767  002206  002202          CMP     GOOD,BAD                ;ARE THEY 01 & 10 ?
 2808  027654  001414                          BEQ     XRC16
 2809  027656                                  DATERR   N              ;ERROR: XMTR RSP CODES WRONG
  (1)                                                                    ;******* ERROR 341 *******
  (1)  027656  032777  040000  001736          BIT     #B14,@SR
  (1)  027664  001005                          BNE     .+14
  (1)  027666  012767  000341  002160          MOV     #341,ERRNUM
  (1)  027674  004767  002012                  JSR     PC,DERR
  (1)          000342                  N       =       N+1
 2810  027700                                  SCOPE   XRC14
  (1)  027700  004567  154106                  JSR     R5,SCPRTN
  (1)  027704  027470                          XRC14
 2811  027706  032777  010000  005336  XRC16:  BIT     #B12,@TSR               ;IS XMTR TXM ERR SET?
 2812  027714  001014                          BNE     XRC17           ;ERROR: XMISSION TO FULL RCVR SILO
 2813  027716                                  ERROR    N                      ;DID NOT SET TXM ERR IN XMTR
  (1)                                                                    ;******* ERROR 342 *******
  (1)  027716  032777  040000  001676          BIT     #B14,@SR
  (1)  027724  001005                          BNE     .+14
  (1)  027726  012767  000342  002120          MOV     #342,ERRNUM
  (1)  027734  004767  001666                  JSR     PC,ERR
  (1)          000343                  N       =       N+1
 2814  027740                                  SCOPE   XRC14
  (1)  027740  004567  154046                  JSR     R5,SCPRTN
  (1)  027744  027470                          XRC14
 2815
 2816                                  ;TEST TO DETERMINE IF , WITH CHANNEL OPEN, THE RECVR IS KNOCKED DOWN
 2817                                  ;THE CORRECT RESPONSE CODES ARE GENERATED AND THE XMTR
 2818                                  ;GETS A TXM ERROR.
 2819                                  ;   THE RECVR IS KNOCKED DOWN VIA FORCING A TIMEOUT IN THE RCVR.
 2820
 2821  027746                  XRC17:  BDINIT  XMTR
 2822  027754                          BDINIT  RCVR
 2823  027762  012777  177777  005264          MOV     #-1,@TSDB               ;LOAD A WORD INTO XMTR SILO
 2824  027770  012777  177774  005260          MOV     #-4,@TSBC               ;SETUP FOR 2 WD XFR
 2825  027776  012777  177777  005250          MOV     #-1,@TSDB               ;LOAD 2ND WD INTO XMTR SILO
 2826  030004  016777  005214  005236          MOV     RCAD,@TCR               ;POINT XMTR AT RCVR
 2827  030012  052777  020000  005250          BIS     #B13,@RCR               ;SET RCV WD
 2828  030020  052777  020000  005222          BIS     #B13,@TCR               ;SET SND WD
 2829  030026  132777  000010  005230  XRC18:  BITB    #B03,@TMMRH             ;IS CHANNEL OPEN SET?
 2830  030034  001774                          BEQ     XRC18                   ;WAIT FOR IT
```

```
 2831  030036  016704  001562                    MOV     DLCON,R4
 2832  030042  012703  177000          XRC18X:   MOV     #177000,R3          ;DELAY FOR SYNC
 2833  030046  005203                  XRC18L:   INC     R3
 2834  030050  001376                            BNE     XRC18L
 2835  030052  005304                            DEC     R4
 2836  030054  001372                            BNE     XRC18X
 2837  030056  052777  002000  005206            BIS     #B10,@RSR           ;KNOCK DOWN RCVR WITH TIMEOUT
 2838  030064  016704  001534                    MOV     DLCON,R4
 2839  030070  012703  177000          XRC18Y:   MOV     #177000,R3          ;SET UP FOR STALL
 2840  030074  005203                  XRC18A:   INC     R3
 2841  030076  001376                            BNE     XRC18A              ;STALL (WAIT FOR TIME SLICE)
 2842  030100  005304                            DEC     R4
 2843  030102  001372                            BNE     XRC18Y
 2844  030104  012767  000001  001746            MOV     #1,GOOD
 2845  030112  017767  005134  001736            MOV     @TSR,BAD            ;CHECK TXM RESP CODES
 2846  030120  042767  177760  001730            BIC     #177760,BAD
 2847  030126  026767  001726  001722            CMP     GOOD,BAD            ;ARE THEY 00 & 01 ?
 2848  030134  001414                            BEQ     XRC19
 2849  030136                                    DATERR   N          ;ERROR: XMTR RSP CODES WRONG
   (1)                                                                       ;******* ERROR 343 *******
   (1)  030136  032777  040000  001456            BIT     #B14,@SR
   (1)  030144  001005                            BNE     .+14
   (1)  030146  012767  000343  001700            MOV     #343,ERRNUM
   (1)  030154  004767  001532                    JSR     PC,DERR
   (1)          000344                  N         =       N+1
 2850  030160                                    SCOPE   XRC17
   (1)  030160  004567  153626                    JSR     R5,SCPRTN
   (1)  030164  027746                            XRC17
 2851  030166  032777  010000  005056  XRC19:   BIT     #B12,@TSR           ;IS TX ERR SET IN XMTR
 2852  030174  001014                            BNE     XRC19A      ;ERROR: XMIT TO OFFLINE RCVR DIDN'T
 2853  030176                                    ERROR    N                  ;CAUSE TXM ERR IN XMTR
   (1)                                                                       ;******* ERROR 344 *******
   (1)  030176  032777  040000  001416            BIT     #B14,@SR
   (1)  030204  001005                            BNE     .+14
   (1)  030206  012767  000344  001640            MOV     #344,ERRNUM
   (1)  030214  004767  001406                    JSR     PC,ERR
   (1)          000345                  N         =       N+1
 2854  030220                                    SCOPE   XRC17
   (1)  030220  004567  153566                    JSR     R5,SCPRTN
   (1)  030224  027746                            XRC17
 2855  030226  004767  000774          XRC19A:   JSR     PC,MONIT
 2856  030232  032777  010000  001362            BIT     #B12,@SR            ;IS SW 12 SET?
 2857  030240  001402                            BEQ     XRCRET              ;NO, EXIT
 2858  030242  000167  175514                    JMP     TXMERS              ;YES, STAY HERE
 2859  030246  000207                  XRCRET:   RTS     PC
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                                                                    ! 8
2861                                        .SBTTL  REJECT TEST
2862
2863
2864                                        ;TEST OF THE REJECT-RELATED HARDWARE
2865                                        ; CAUSE A REJECT IN THE RECVR AND CHECK ALL RELATED
2866                                        ;RESPONSES IN RCVR AND XMTR
2867
2868  030250                                XRC20:  BDINIT  XMTR                    ;CLR XMTR
2869  030256                                        BDINIT  RCVR                    ;CLR RCVR
2870  030264  012777  177777  004762               MOV     #-1,@TSDB               ;LOAD A WORD INTO SILO
2871  030272  012777  177774  004756               MOV     #-4,@TSBC               ;BYTE COUNT FOR 2 WD XFR
2872  030300  012777  177777  004746               MOV     #-1,@TSDB               ;LOAD 2ND WD INTO SILO
2873  030306  012777  177774  004762               MOV     #-4,@RDBC
2874  030314  016777  004704  004726               MOV     RCAD,@TCR               ;POINT XMTR AT RCVR
2875  030322  052777  020000  004740               BIS     #B13,@RCR               ;SET RCV WD
2876  030330  052777  020001  004712               BIS     #B13+B00,@TCR           ;SET SND WD & ST TXM
2877  030336  032777  000400  004726  XRC21:      BIT     #B08,@RSR               ;DAT OUTP RDY IN XMTR?
2878  030344  001774                               BEQ     XRC21
2879  030346  052777  100000  004714               BIS     #B15,@RCR               ;SET R E J E C T
2880  030354  016704  001244                       MOV     DLCON,R4
2881  030360  012703  177500               XRC21A: MOV     #177500,R3
2882  030364  032777  000040  004700  XRC22:      BIT     #B05,@RSR               ;CHECK FOR RECOM IN RCVR
2883  030372  001020                               BNE     XRC23
2884  030374  005203                               INC     R3
2885  030376  001372                               BNE     XRC22                   ;WAIT A COUPLE OF MS FOR IT
2886  030400  005304                               DEC     R4
2887  030402  001366                               BNE     XRC21A
2888  030404                                       ERROR    N                ;ERROR: REJECT DID NOT RESULT IN SETTING RSR-05
 (1)                                                                                ;******* ERROR 345 *******
 (1)  030404  032777  040000  001210               BIT     #B14,@SR
 (1)  030412  001005                               BNE     .+14
 (1)  030414  012767  000345  001432               MOV     #345,ERRNUM
 (1)  030422  004767  001200                       JSR     PC,ERR
 (1)          000346                 N             =       N+1
2889  030426                                       SCOPE   XRC20
 (1)  030426  004567  153360                       JSR     R5,SCPRTN
 (1)  030432  030250                               XRC20
2890  030434  032777  000001  004606  XRC23:      BIT     #B00,@TCR               ;IS ST TXM CLR (CLR'D BY INTR REQ)?
2891  030442  001414                               BEQ     XRC24
2892  030444                                       ERROR    N                ;ERROR:  SORE DID NOT INTERRUPT XMTR
 (1)                                                                                ;******* ERROR 346 *******
 (1)  030444  032777  040000  001150               BIT     #B14,@SR
 (1)  030452  001005                               BNE     .+14
 (1)  030454  012767  000346  001372               MOV     #346,ERRNUM
 (1)  030462  004767  001140                       JSR     PC,ERR
 (1)          000347                 N             =       N+1
2893  030466                                       SCOPE   XRC20
 (1)  030466  004567  153320                       JSR     R5,SCPRTN
 (1)  030472  030250                               XRC20
2894  030474  032777  100000  004566  XRC24:      BIT     #B15,@RCR               ;CHECK IF REJECT GOT CLR'D
2895  030502  001414                               BEQ     XRC25
2896  030504                                       ERROR    N                ;ERROR: RECOM DID NOT CLR REJECT
 (1)                                                                                ;******* ERROR 347 *******
 (1)  030504  032777  040000  001110               BIT     #B14,@SR
 (1)  030512  001005                               BNE     .+14
 (1)  030514  012767  000347  001332               MOV     #347,ERRNUM
```

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  (1)  030522  004767  001100            JSR     PC,ERR
  (1)          000350                N   =       N+1
2897   030526                            SCOPE   XRC20
  (1)  030526  004567  153260            JSR     R5,SCPRTN
  (1)  030532  030250                    XRC20
2898   030534  032777  000040  004510 XRC25: BIT   #B05,@TSR          ;CHECK IF REJECT SET SORE IN XMTR
2899   030542  001014                    BNE     XRC26
2900   030544                            ERROR    N             ;ERROR: REJECT DID NOT SET SORE IN XMTR
  (1)                                               ;******* ERROR 350 *******
  (1)  030544  032777  040000  001050    BIT     #B14,@SR
  (1)  030552  001005                    BNE     .+14
  (1)  030554  012767  000350  001272    MOV     #350,ERRNUM
  (1)  030562  004767  001040            JSR     PC,ERR
  (1)          000351                N   =       N+1
2901   030566                            SCOPE   XRC20
  (1)  030566  004567  153220            JSR     R5,SCPRTN
  (1)  030572  030250                    XRC20
2902   030574                        XRC26: BDINIT  RCVR
2903   030602                            BDINIT  XMTR
2904   030610  052777  020000  004452    BIS     #B13,@RCR          ;SET RCV WD IN RCVR
2905   030616  052777  000040  004446    BIS     #B05,@RSR          ;SET RECOM
2906   030624  032777  020000  004436    BIT     #B13,@RCR          ;CHECK IF RCV WD GOT CLR'D
2907   030632  001414                    BEQ     XRC27
2908   030634                            ERROR    N             ;ERROR: RECOM DID NOT INTERRUPT RCVR
  (1)                                               ;******* ERROR 351 *******
  (1)  030634  032777  040000  000760    BIT     #B14,@SR
  (1)  030642  001005                    BNE     .+14
  (1)  030644  012767  000351  001202    MOV     #351,ERRNUM
  (1)  030652  004767  000750            JSR     PC,ERR
  (1)          000352                N   =       N+1
2909   030656                            SCOPE   XRC26
  (1)  030656  004567  153130            JSR     R5,SCPRTN
  (1)  030662  030574                    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.

030664                          XRC27:  BDINIT  XMTR                    ;CLR XMTR
030672                                  BDINIT  RCVR                    ;CLR RCVR
030700  012777  177754  004350          MOV     #-20.,@TSBC             ;SET TXM BYTE CNT FOR 10 WORD XFR
030706  012777  177770  004362          MOV     #-8.,@RDBC              ;SET RCVR BYTE CNT FOR 4 WORDS
030714  012777  032700  004336          MOV     #SILDAT,@TSBA           ;POINT XMTR SILO AT DATA BUFFER
030722  012777  033300  004350          MOV     #CMPBUF,@RDBA           ;POINT RCVR SILO TO DATA BUFFER
030730  016777  004270  004312          MOV     RCAD,@TCR               ;POINT XMTR AT RCVR
030736  052777  060001  004324          BIS     #B14+B13+B00,@RCR       ;SET RCV WD & RCV DATA &START NPR
030744  052777  060001  004276          BIS     #B14+B13+B00,@TCR       ;SET SND WD & ST TXM & START NPR
030752  032777  001000  004312  XRC29:  BIT     #B09,@RSR
030760  001774                          BEQ     XRC29                   ;WAIT FOR BYTE COUNT OVERFLOW
030762  052777  100000  004300          BIS     #B15,@RCR               ;SET REJECT (TRUNCATE MESSAGE)
030770  016704  000630                  MOV     DLCON,R4
030774  012703  175000          XRC29A: MOV     #175000,R3
031000  105777  004246          XRC30:  TSTB    @TSR                    ;LOOK FOR XMTR SUC TXF
031004  100420                          BMI     XRC31
031006  005203                          INC     R3
031010  001373                          BNE     XRC30                   ;WAIT ABOUT 20 MS
031012  005304                          DEC     R4
031014  001367                          BNE     XRC29A
031016                                  ERROR    N              ;ERROR: NO SUC TXF AFTER TRUNCATION
 (1)                                                                    ;******* ERROR 352 *******
 (1)    031016  032777  040000  000576          BIT     #B14,@SR
 (1)    031024  001005                  BNE     .+14
 (1)    031026  012767  000352  001020          MOV     #352,ERRNUM
 (1)    031034  004767  000566                  JSR     PC,ERR
 (1)            000353                  N       =       N+1
031040                                  SCOPE   XRC27
 (1)    031040  004567  152746                  JSR     R5,SCPRTN
 (1)    031044  030664                          XRC27
031046  032777  000040  004176  XRC31:  BIT     #B05,@TSR               ;IS SORE SET?
031054  001014                          BNE     XRC32
031056                                  ERROR    N              ;ERROR: SORE NOT SET BY TRUNCATION
 (1)                                                                    ;******* ERROR 353 *******
 (1)    031056  032777  040000  000536          BIT     #B14,@SR
 (1)    031064  001005                  BNE     .+14
 (1)    031066  012767  000353  000760          MOV     #353,ERRNUM
 (1)    031074  004767  000526                  JSR     PC,ERR
 (1)            000354                  N       =       N+1
031100                                  SCOPE   XRC27
 (1)    031100  004567  152706                  JSR     R5,SCPRTN
 (1)    031104  030664                          XRC27
031106  105777  004160          XRC32:  TSTB    @RSR                    ;IS RCVR SUC TXF SET?
031112  100414                          BMI     XRC33
031114                                  ERROR    N              ;ERROR: NO RCVR SUC TXF AFTER TRUNCATION
 (1)                                                                    ;******* ERROR 354 *******
 (1)    031114  032777  040000  000500          BIT     #B14,@SR
 (1)    031122  001005                  BNE     .+14
 (1)    031124  012767  000354  000722          MOV     #354,ERRNUM
```

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  (1)  031132  004767  000470              JSR     PC,ERR
  (1)          000355              N      =       N+1
2947   031136                              SCOPE   XRC27
  (1)  031136  004567  152650              JSR     R5,SCPRTN
  (1)  031142  030664                      XRC27
2948   031144  032777  000040  004120 XRC33: BIT    #B05,@RSR          ;IS RECOM SET?
2949   031152  001014                      BNE     XRC34
2950   031154                              ERROR    N             ;ERROR: RECOM NOT SET BY TRUNCATION
  (1)                                                             ;******* ERROR 355 *******
  (1)  031154  032777  040000  000440      BIT     #B14,@SR
  (1)  031162  001005                      BNE     .+14
  (1)  031164  012767  000355  000662      MOV     #355,ERRNUM
  (1)  031172  004767  000430              JSR     PC,ERR
  (1)          000356              N      =       N+1
2951   031176                              SCOPE   XRC27
  (1)  031176  004567  152610              JSR     R5,SCPRTN
  (1)  031202  030664                      XRC27
2952   031204  004767  000016      XRC34: JSR     PC,MONIT
2953   031210  032777  010000  000404      BIT     #B12,@SR           ;IS SW 12 SET?
2954   031216  001402                      BEQ     XRCRT              ;NO, EXIT
2955   031220  000167  177024              JMP     XRC20              ;YES, STAY HERE
2956   031224  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)

031226  005000          MONIT:  CLR     R0
031230  105777  004050          TSTB    @KBS                    ;CHECK KEYBOARD FLAG
031234  100402                  BMI     MONIC                   ;IF SET, CHECK WHAT CHAR.
031236  000167  000270          JMP     EX5                     ;OTHERWISE, EXIT
031242  017700  004040  MONIC:  MOV     @KBD,R0
031246  042700  177600  MONCH:  BIC     #177600,R0              ;TRIM OFF PARITY BIT
031252  020027  000023          CMP     R0,#23                  ;WAS IT  S?
031256  001056                  BNE     EX1                     ;NO, EXIT
031260          SWDMP:  PNTM    SWRMSG                          ;PRINT "SWR = "
(1)     031260  012700  031534  MOV     #SWRMSG,R0              ;PRINT MESSAGE
(1)     031264  004767  000572  JSR     PC,TYPOUT               ;POINTED TO BY SWRMSG
031270  017700  000326          MOV     @SR,R0                  ;GET CONTENTS OF SR
031274  004767  001100          JSR     PC,OCTPNT               ;PRINT IT
031300          PNTM    TWOSP                                   ;SPACE AND PROMPT (: )
(1)     031300  012700  031614  MOV     #TWOSP,R0               ;PRINT MESSAGE
(1)     031304  004767  000552  JSR     PC,TYPOUT               ;POINTED TO BY TWOSP
031310  017767  000306  001060  MOV     @SR,KBBUF               ;LOAD OLD SWITCHES
031316  004767  000602          JSR     PC,INPKB                ;GET KBD INPUT
031322  016777  001050  000272  MOV     KBBUF,@SR               ;LOAD NEW SWITCHES
031330          CCRTN:  PNTM    TYPCTP                          ;PRINT "CNTRL-P TO CONTINUE"
(1)     031330  012700  031567  MOV     #TYPCTP,R0              ;PRINT MESSAGE
(1)     031334  004767  000522  JSR     PC,TYPOUT               ;POINTED TO BY TYPCTP
031340  105777  003740  CONTW1: TSTB    @KBS
031344  100375                  BPL     CONTW1
031346  017700  003734          MOV     @KBD,R0
031352  042700  177600          BIC     #177600,R0              ;TRIM OFF PARITY BIT
031356  020027  000023          CMP     R0,#23                  ; S?
031362  001736                  BEQ     SWDMP                   ;YES, GET SWR AGAIN
031364  020027  000020          CMP     R0,#20                  ; P?
031370  001363                  BNE     CONTW1                  ;NO, KEEP LOOKING
031372  012700  000015          MOV     #15,R0                  ;RETURN LINE
031376  004767  001242          JSR     PC,TTO
031402  005000                  CLR     R0                      ;FILL CHARACTERS
031404  004767  001234          JSR     PC,TTO
031410  004767  001230          JSR     PC,TTO
031414  020027  000024  EX1:    CMP     R0,#24                  ;WAS A  T TYPED?
031420  001004                  BNE     EX2                     ;NO, EXIT
031422  012706  002000          MOV     #ISP,SP                 ;YES,  RENEW STACK
031426  000167  151500          JMP     BCONT                   ;BACK TO DISPATCHER
031432  020027  000004  EX2:    CMP     R0,#4                   ;CNTRL-D TYPED?
031436  001026                  BNE     EX3                     ;NO, KEEP LOOKING
031440          EX2A:   PNTM    DELYMG                          ;PRINT "DELAY CONSTANT = "
(1)     031440  012700  031544  MOV     #DELYMG,R0              ;PRINT MESSAGE
(1)     031444  004767  000412  JSR     PC,TYPOUT               ;POINTED TO BY DELYMG
031450  016767  000150  000720  MOV     DLCON,KBBUF             ;DEFAULT OLD VALUE
031456  016700  000142          MOV     DLCON,R0                ;GET CONSTANT
```

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 3006  031462  004767  000712                    JSR     PC,OCTPNT               ;PRINT IT
 3007  031466                                    PNTM    TWOSP                   ;SPACE AND PROMPT
  (1)  031466  012700  031614                    MOV     #TWOSP,R0               ;PRINT MESSAGE
  (1)  031472  004767  000364                    JSR     PC,TYPOUT               ;POINTED TO BY TWOSP
 3008  031476  004767  000422                    JSR     PC,INPKB                ;GET KBD INPUT
 3009  031502  016767  000670  000114  EX2B:     MOV     KBBUF,DLCON             ;LOAD NEW CONSTANT
 3010  031510  000167  177614                    JMP     CCRTN                   ;NOW WAIT FOR CNTRL-P
 3011
 3012  031514  020027  000003          EX3:     CMP     R0,#3                   ;WAS CNTRL-C TYPED?
 3013  031520  001004                            BNE     EX5                     ;NO, EXIT
 3014  031522  012706  002000                    MOV     #ISP,SP                 ;YES, REFRESH STACK
 3015  031526  000167  151164                    JMP     RESTRT                  ;AND RESTART
 3016
 3017  031532  000207          EX5:     RTS     PC
 3018
 3019
 3020
 3021                                    ;ASSOCIATED ASCII FOR THIS MODULE:
 3022
 3023  031534  051446  051127  036440  SWRMSG:  .ASCII  /&SWR = @/
       031542  040040
 3024  031544  042046  046105  054501  DELYMG:  .ASCII  /&DELAY CONSTANT = @/
       031552  041440  047117  052123
       031560  047101  020124  020075
       031566     100
 3025  031567     046  047103  051124  TYPCTP:  .ASCII  /&CNTRL-P TO CONTINUE@/
       031574  026514  020120  047524
       031602  041440  047117  044524
       031610  052516  040105
 3026  031614  020040  040072          TWOSP:   .ASCII  /  :@/
 3027
 3028
 3029                                            .EVEN
 3030                                    ;OTHER VARIABLES:
 3031
 3032  031620  000000                    SWREG:   .WORD   0                       ; SOFTWARE SWITCH REGISTER
 3033
 3034  031622  000000                    SR:      .WORD   0                       ; SWITCH REGISTER POINTER
 3035
 3036  031624  000006                    DLCON:   .WORD   6                       ;DELAY CONSTANT
```

```
                                        .SBTTL COMMON SUBROUTINES

                                ;ERROR ROUTINE

031626  011667  000220          ERR:    MOV     (SP),ERRAD              ;GET ADDRESS OF ERROR CALL
031632  162767  000022  000212          SUB     #22,ERRAD               ;OFFSET IT
031640                        ERR1:   PNTM    ERRM                    ;PRINT "**ERROR "
 (1)    031640  012700  031776          MOV     #ERRM,R0                ;PRINT MESSAGE
 (1)    031644  004767  000212          JSR     PC,TYPOUT               ;POINTED TO BY ERRM
031650  016700  000200                  MOV     ERRNUM,R0
031654  004767  000520                  JSR     PC,OCTPNT               ;PRINT ERROR NUMBER (P)
031660                                  PNTM    WDAT                    ;PRINT "AT LOCATION "
 (1)    031660  012700  032011          MOV     #WDAT,R0                ;PRINT MESSAGE
 (1)    031664  004767  000172          JSR     PC,TYPOUT               ;POINTED TO BY WDAT
031670  016700  000156                  MOV     ERRAD,R0
031674  004767  000500                  JSR     PC,OCTPNT               ;PRINT ADDRESS OF ERROR
031700  004767  177322                  JSR     PC,MONIT
031704  004767  000602                  JSR     PC,NULLS                ;PRINT NULLS IN CASE OF "RESET"
031710  000207                          RTS     PC                      ;RETURN

                                ;DATA ERROR ROUTINE

031712  011667  000134          DERR:   MOV     (SP),ERRAD              ;GET ADDRESS OF ERROR CALL
031716  162767  000022  000126          SUB     #22,ERRAD               ;OFFSET IT
031724  004767  177710                  JSR     PC,ERR1                 ;PRINT "**ERROR (P) AT LOCATION XXX
031730                                  PNTM    WDSDB                   ;PRINT "SHOULD BE "
 (1)    031730  012700  032027          MOV     #WDSDB,R0               ;PRINT MESSAGE
 (1)    031734  004767  000122          JSR     PC,TYPOUT               ;POINTED TO BY WDSDB
031740  016700  000114                  MOV     GOOD,R0
031744  004767  000430                  JSR     PC,OCTPNT               ;PRINT GOOD DATA
031750                                  PNTM    WDWAS                   ;PRINT ", WAS "
 (1)    031750  012700  032043          MOV     #WDWAS,R0               ;PRINT MESSAGE
 (1)    031754  004767  000102          JSR     PC,TYPOUT               ;POINTED TO BY WDWAS
031760  016700  000072                  MOV     BAD,R0
031764  004767  000410                  JSR     PC,OCTPNT               ;PRINT BAD DATA
031770  004767  000516                  JSR     PC,NULLS                ;PRINT NULLS IN CASE OF "RESET"
031774  000207                          RTS     PC


                                ;ASSOCIATED ASCII FOR THIS MODULE:

031776  023046  025052  051105  ERRM:   .ASCII  /&&**ERROR @/
032004  047522  020122     100
032011     040  052101  046040  WDAT:   .ASCII  / AT LOCATION @/
032016  041517  052101  047511
032024  020116     100
032027     046  044123  052517  WDSDB:  .ASCII  /&SHOULD BE @/
032034  042114  041040  020105
032042     100
032043     054  053440  051501  WDWAS:  .ASCII  /, WAS @/
032050  040040


                                        .EVEN
                                ;OTHER VARIABLES:
```

```
3080
3081  032052  000000                ERRAD:   .WORD   0
3082  032054  000000                ERRNUM:  .WORD   0
3083  032056  000000                BAD:     .WORD   0
3084  032060  000000                GOOD:    .WORD   0
```

```
                        .SBTTL  MESSAGE PRINT ROUTINE

                        ;MESSAGE TYPOUT ROUTINE (CALLED BY MACRO PNTM A)
                        ;MESSAGES ARE IN THE FORMAT:
                        ;    MESG:      .ASCII     /&MESSAGE&@/
                        ;
                        ;WHERE: & IS TRANSLATED INTO CR. AND LF.
                        ;
                        ;USES THE SUBROUTINE "TTO"
                        ;WHICH PRINTS CR. & LF. UPON SEEING A CR. CODE.
                        ;AND    @ IS MESSAGE TERMINATOR
                        ;
                        ;ENTER WITH ADDRESS OF MESSAGE IN R0

032062  010046          TYPOUT: MOV     R0,-(SP)            ;STACK ADDRESS OF MESSAGE
032064  117600  000000  TPOFCH: MOVB    @(SP),R0            ;FETCH ASCII BYTE
032070  022700  000100          CMP     #100,R0             ;IS IT @ (TERMINATOR)?
032074  001411                  BEQ     TPOUTX              ;YES-EXIT
032076  022700  000046          CMP     #46,R0              ;IS IT CRLF FLAG?
032102  001002                  BNE     TPCONT              ;NO-TYPE CHARACTER
032104  012700  000015          MOV     #15,R0              ;YES, CHANGE DATA TO CR
032110  004767  000530  TPCONT: JSR     PC,TTO              ;TYPE IT
032114  005216                  INC     (SP)                ;MOVE POINTER TO NEXT BYTE
032116  000762                  BR      TPOFCH              ;FETCH NEXT CHARACTER
032120  005726          TPOUTX: TST     (SP)+               ;POP STACK TO REACH RETURN VECTOR
032122  000207                  RTS     PC
```

```
                                .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

032124  005067  000244          INPKB:  CLR     NOKEFL          ;CLEAR NO NUMBER FLAG
032130  010146                  MOV     R1,-(SP)        ;STACK OLD R1
032132  016746  000240          MOV     KBBUF,-(SP)     ;STACK "OLD CONTENTS"
032136  005067  000234          CLR     KBBUF           ;CLEAR INPUT BUFFER
032142  004767  000206          GETCHR: JSR     PC,KBRD         ;FETCH A CHARACTER IN R0
032146  004767  000472          JSR     PC,TTO          ;ECHO IT
032152  020027  000012          CMP     R0,#12          ;WAS IT A <CR> OR <LF>?
032156  001002                  BNE     1$              ;NO
032160  000167  000144          JMP     NRTRN           ;YES, RETURN WITH PROPER KBBUF
032164  010001                  1$:     MOV     R0,R1           ;SET UP TO CHECK FOR A NUMBER
032166  042701  177407          BIC     #177407,R1      ;MASK ALL BUT # CODE
032172  020127  000060          CMP     R1,#60          ;IS IT A # FROM 0-7?
032176  001435                  BEQ     3$              ;YES, PACK IT
032200  020027  000177          CMP     R0,#177         ;WAS IT A DELETE/RUBOUT?
032204  001024                  BNE     2$              ;NO, MUST BE GARBAGE
032206  012700  000057          MOV     #57,R0          ;YES, BUT PRINT " "
032212  004767  000426          JSR     PC,TTO
032216  000241                  CLC                     ;CLEAR THE C-BIT
032220  006067  000152          ROR     KBBUF           ;DELETE LAST DIGIT
032224  000241                  CLC
032226  006067  000144          ROR     KBBUF           ;  THAT WAS STUFFED
032232  000241                  CLC
032234  006067  000136          ROR     KBBUF           ;  INTO KBBUF
032240  005767  000132          TST     KBBUF           ;HAVE WE DELETED EVERYTHING?
032244  001002                  BNE     11$             ;NO
032246  005067  000122          CLR     NOKEFL          ;YES, BACK TO NO NUMBER INPUT
032252  000167  177664          11$:    JMP     GETCHR          ;GO FOR MORE INPUT
032256  012700  000077          2$:     MOV     #77,R0          ;ECHO "?" FOR ERRONEOUS INPUT
032262  004767  000356          JSR     PC,TTO
032266  000167  177650          JMP     GETCHR          ;AND GET ANOTHER CHARACTER
032272  012767  177777  000074  3$:     MOV     #-1,NOKEFL      ;GOT A DIGIT.  SET FLAG
032300  042700  177770          BIC     #177770,R0      ;GET THE DIGIT PART OF THE CHARACTER
032304  006367  000066          ASL     KBBUF           ;SHIFT KBBUF BUFFER
032310  006367  000062          ASL     KBBUF           ;  TO ACCEPT THE
032314  006367  000056          ASL     KBBUF           ;  NEW DIGIT.
032320  050067  000052          BIS     R0,KBBUF        ;ADD THE NEW DIGIT
032324  000167  177612          JMP     GETCHR          ;GO FOR MORE INPUT

032330  005767  000040          NRTRN:  TST     NOKEFL          ;WAS THERE NEW DATA?
032334  001004                  BNE     NEK             ;YES, GO BACK WITH IT
032336  012667  000034          MOV     (SP)+,KBBUF     ;NO, RETRIEVE OLD DATA
032342  012601                  MOV     (SP)+,R1        ;RESTORE R1
032344  000207                  RTS     PC              ;AND RETURN
032346  005726                  NEK:    TST     (SP)+           ;DUMP OLD DATA
032350  012601                  MOV     (SP)+,R1        ;RESTORE R1
032352  000207                  RTS     PC              ;AND RETURN

032354  105777  002724          KBRD:   TSTB    @KBS            ;WAIT FOR INPUT FROM CONSOLE
032360  100375                  BPL     KBRD
```

```
 3170  032362  017700  002720          MOV     @KBD,R0                 ;PUT THE CHAR INTO R0
 3171  032366  042700  177600  KBRET:  BIC     #177600,R0              ;TRIM PARITY
 3172  032372  000207                  RTS     PC
```

```
                                ;ASSOCIATED VARIABLE STORAGE:

                                NOKEFL: .WORD   0
                                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:

032400  005067  000270        OCTPNT: CLR     RJFLG                   ;CLEAR RIGHT JUSTIFY FLAG
032404  012701  000010                MOV     #10,R1                  ;SET RADIX FOR OCTAL
032410  004767  000122                JSR     PC,NUMPNT               ;CONVERT & PRINT
032414  000207                        RTS     PC                      ;RETURN

                                ;BIN-OCTAL JUSTIFIED:

032416  012767  177777  000250  OCTJSP: MOV     #-1,RJFLG               ;SET RIGHT JUSTIFY FLAG
032424  012701  000010                MOV     #10,R1                  ;SET RADIX FOR OCTAL
032430  004767  000102                JSR     PC,NUMPNT               ;CONVERT & PRINT
032434  000207                        RTS     PC

                                ;BIN-BIN

032436  005067  000232        BINPNT: CLR     RJFLG                   ;CLEAR RIGHT JUSTIFY FLAG
032442  012701  000002                MOV     #2,R1                   ;SET RADIX FOR BINARY
032446  004767  000064                JSR     PC,NUMPNT               ;CONVERT & PRINT
032452  000207                        RTS     PC

                                ;BIN-DECIMAL UNJUSTIFIED:

032454  005067  000214        DECPNT: CLR     RJFLG                   ;CLEAR RIGHT JUSTIFY FLAG
032460  012701  000012                MOV     #12,R1                  ;SET RADIX FOR DECIMAL
032464  004767  000046                JSR     PC,NUMPNT               ;CONVERT & PRINT
032470  000207                        RTS     PC

                                ;BIN-DECIMAL JUSTIFIED (6 PLACES)

032472  012767  177777  000174  DECJSP: MOV     #-1,RJFLG               ;SET RIGHT JUSTIFY FLAG
032500  012701  000012                MOV     #12,R1                  ;SET RADIX FOR DECIMAL
032504  004767  000026                JSR     PC,NUMPNT               ;CONVERT & PRINT
032510  000207                        RTS     PC


032512  032777  040000  177102  NULLS:  BIT     #B14,@SR                ;O.K. TO PRINT?
032520  001005                        BNE     NULOUT                  ;NO, FORGET IT
032522  005000                NULL1:  CLR     R0
032524  004767  000114                JSR     PC,TTO
032530  004767  000110                JSR     PC,TTO
032534  000207                NULOUT: RTS     PC
```

```
                                ;UNSIGNED CONVERT-PRINT ROUTINE (BIN - ASCII)

032536  010167  000134          NUMPNT: MOV     R1,RADIX        ;SAVE RADIX
032542  005002                          CLR     R2              ;CLEAR TAB COUNTER
032544  005001                  DIVSET: CLR     R1              ;CLEAR WORK REGISTER
032546  020067  000124          DIVID:  CMP     R0,RADIX        ;IS NUMBER BELOW RADIX?
032552  103404                          BLO     GETDG           ;IF YES, STORE DIGIT
032554  166700  000116                  SUB     RADIX,R0        ;ELSE, KEEP SUBTRACTING
032560  005201                          INC     R1              ;AND KEEP COUNT
032562  000771                          BR      DIVID
032564  010046                  GETDG:  MOV     R0,-(SP)        ;STACK REMAINDER
032566  010100                          MOV     R1,R0
032570  001403                          BEQ     PNTEXT          ;PRINT IF HIGHEST ORDER STACKED
032572  005202                          INC     R2              ;ELSE COUNT DIGITS FOR R. JUSTIFY
032574  004767  177744                  JSR     PC,DIVSET

032600  012703  000006          PNTEXT: MOV     #6,R3           ;GET DIGIT COUNT CONSTANT
032604  160203                          SUB     R2,R3           ;HAVE WE PRODUCED 6 DIGITS?
032606  003413                          BLE     PNT             ;YES, JUSTIFICATION UNNECESSARY
032610  005767  000060                  TST     RJFLG           ;IS THE JUSTIFY FLAG SET?
032614  001410                          BEQ     PNT             ;NO-DON'T JUSTIFY
032616  012700  000040          JUST:   MOV     #40,R0          ;YES, PRINT LEADING SPACES
032622  004767  000016                  JSR     PC,TTO
032626  005303                          DEC     R3
032630  001372                          BNE     JUST
032632  005067  000036                  CLR     RJFLG           ;CLEAR JUSTIFY FLG WHEN DONE
032636  012600                  PNT:    MOV     (SP)+,R0        ;GET REST OF DIGITS OFF STACK
032640  052700  000060                  BIS     #'0,R0          ;MAKE THEM ASCII
                                ;TYPE OUT ROUTINE
                                ;PRINTS A CHARACTER WHICH IS IN R0
                                ;IF THE CHARACTER IS "CR.", ALSO PRINT A "LF.".

032644  010077  002442          TTO:    MOV     R0,@TTB         ;PRINT CONTENTS OF R0
032650  105777  002434          TTOLP:  TSTB    @TTS            ;WAIT TILL PRINT DONE
032654  100375                          BPL     TTOLP
032656  022700  000015                  CMP     #15,R0          ;WAS IT A <CR>?
032662  001401                          BEQ     TTOLF           ;YES, ECHO A LF AS WELL
032664  000207                          RTS     PC              ;NO, JUST RETURN
032666  012700  000012          TTOLF:  MOV     #12,R0
032672  000764                          BR      TTO

                                ;ASSOCIATED VARIABLE STORAGE:

032674  000000                  RJFLG:  .WORD   0
032676  000000                  RADIX:  .WORD   0
```

```
3279                                    .SBTTL TEST BUFFERS
3280
3281                                    ;DATA SILO  DATA-BUFFER
3282
3283  032700  125252                    SILDAT:  125252
3284  032702  052525                             052525
3285  032704  125252                             125252
3286  032706  052525                             052525
3287  032710  125252                             125252
3288  032712  052525                             052525
3289  032714  125252                             125252
3290  032716  052525                             052525
3291  032720  125252                             125252
3292  032722  052525                             052525
3293
3294  032724  177400                             177400
3295  032726  000377                             000377
3296  032730  177400                             177400
3297  032732  000377                             000377
3298  032734  177400                             177400
3299  032736  000377                             000377
3300  032740  177400                             177400
3301  032742  000377                             000377
3302  032744  177400                             177400
3303  032746  000377                             000377
3304
3305  032750  000000                             000000
3306  032752  177777                             177777
3307  032754  000000                             000000
3308  032756  177777                             177777
3309  032760  000000                             000000
3310  032762  177777                             177777
3311  032764  000000                             000000
3312  032766  177777                             177777
3313  032770  000000                             000000
3314  032772  177777                             177777
3315
3316  032774  010421                             010421
3317  032776  021042                             021042
3318  033000  031463                             031463
3319  033002  042104                             042104
3320  033004  052525                             052525
3321  033006  063146                             063146
3322  033010  076567                             076567
3323  033012  104210                             104210
3324  033014  114631                             114631
3325  033016  125252                             125252
3326
3327  033020  000001                             000001
3328  033022  177776                             177776
3329  033024  000002                             000002
3330  033026  177775                             177775
3331  033030  000003                             000003
3332  033032  177774                             177774
3333  033034  000004                             000004
3334  033036  177773                             177773
```

```
 3335  033040  000005                    000005
 3336  033042  177772                    177772
 3337
 3338  033044  000000                    000000
 3339  033046  000000                    000000
 3340  033050  000000                    000000
 3341  033052  000000                    000000
 3342  033054  000000                    000000
 3343  033056  111111                    111111
 3344  033060  111111                    111111
 3345  033062  111111                    111111
 3346  033064  111111                    111111
 3347  033066  111111                    111111
 3348
 3349  033070  125252                    125252
 3350  033072  052525                    052525
 3351  033074  177777                    177777
 3352  033076  000000                    000000
```

```
3354                                    ;CRC TEST BUFFER
3355
3356  033100  125252                    SILCRC:  125252
3357  033102  050521                             050521
3358  033104  124200                             124200
3359  033106  000665                             000665
3360  033110  141436                             141436
3361  033112  164003                             164003
3362  033114  075106                             075106
3363  033116  027371                             027371
3364  033120  002562                             002562
3365  033122  135105                             135105
3366
3367  033124  002640                             002640
3368  033126  045405                             045405
3369  033130  060152                             060152
3370  033132  013403                             013403
3371  033134  153756                             153756
3372  033136  072577                             072577
3373  033140  164176                             164176
3374  033142  025435                             025435
3375  033144  111272                             111272
3376  033146  052673                             052673
3377
3378  033150  157140                             157140
3379  033152  102461                             102461
3380  033154  066234                             066234
3381  033156  016141                             016141
3382  033160  175726                             175726
3383  033162  121477                             121477
3384  033164  036420                             036420
3385  033166  122203                             122203
3386  033170  045272                             045272
3387  033172  016435                             016435
3388
3389  033174  010703                             010703
3390  033176  103142                             103142
3391  033200  177121                             177121
3392  033202  016654                             016654
3393  033204  033047                             033047
3394  033206  042734                             042734
3395  033210  046205                             046205
3396  033212  014300                             014300
3397  033214  024677                             024677
3398  033216  103302                             103302
3399
3400  033220  106245                             106245
3401  033222  124160                             124160
3402  033224  132304                             132304
3403  033226  015025                             015025
3404  033230  017305                             017305
3405  033232  044754                             044754
3406  033234  044406                             044406
3407  033236  061203                             061203
3408  033240  140621                             140621
3409  033242  054620                             054620
```

```
 3410
 3411  033244  110312                    110312
 3412  033246  130174                    130174
 3413  033250  116116                    116116
 3414  033252  120462                    120462
 3415  033254  021446                    021446
 3416  033256  114411                    114411
 3417  033260  133325                    133325
 3418  033262  050737                    050737
 3419  033264  106501                    106501
 3420  033266  007625                    007625
 3421
 3422  033270  117626                    117626
 3423  033272  041245                    041245
 3424  033274  031477                    031477
 3425  033276  014726                    014726
```

```
  3427                                  ;RECEIVER DATA COMPARE BUFFER
  3428                                          .EVEN
  3429  033300  000100                  CMPBUF: .BLKW   64.
```

```
                                                .SBTTL ASCII STORAGE

3433  033500  023046  044523  047514  SLOWD:  .ASCII  /&&SILO OUTPUT WORD WAS @/
      033506  047440  052125  052520
      033514  020124  047527  042122
      033522  053440  051501  040040
3434  033530  023046  044523  047514  SLIWD:  .ASCII  /&&SILO INPUT WORD WAS @/
      033536  044440  050116  052125
      033544  053440  051117  020104
      033552  040527  020123     100
3435  033557     046  047105  020104  PEND:   .ASCII  /&END PASS #@/
      033564  040520  051523  021440
      033572     100
3436  033573     046  041523  050117  SCSEC:  .ASCII  /&SCOPE SECTION FOR SLICE TIMING&SET SW 09 TO EXIT THIS LOOP.@/
      033600  020105  042523  052103
      033606  047511  020116  047506
      033614  020122  046123  041511
      033622  020105  044524  044515
      033630  043516  051446  052105
      033636  051440  020127  034460
      033644  052040  020117  054105
      033652  052111  052040  044510
      033660  020123  047514  050117
      033666  040056
3437  033670  052046  040522  051516  TXSTAT: .ASCII  /&TRANSMITTER STATUS REG = @/
      033676  044515  052124  051105
      033704  051440  040524  052524
      033712  020123  042522  020107
      033720  020075     100
3438  033723     046  042522  042503  RCSTAT: .ASCII  /&RECEIVER STATUS REG = @/
      033730  053111  051105  051440
      033736  040524  052524  020123
      033744  042522  020107  020075
      033752     100
3439  033753     046  047516  020056  RCBTCN: .ASCII  /&NO. OF WORDS RECEIVED = @/
      033760  043117  053440  051117
      033766  051504  051040  041505
      033774  044505  042526  020104
      034002  020075     100
3440  034005     046  041520  030514  TXHDR:  .ASCII  /&PCL11 TRANSMITTER TEST &  @/
      034012  020061  051124  047101
      034020  046523  052111  042524
      034026  020122  042524  052123
      034034  023040  020040     100
3441  034041     046  041520  030514  RCHDR:  .ASCII  /&PCL11 RECEIVER TEST&   @/
      034046  020061  042522  042503
      034054  053111  051105  052040
      034062  051505  023124  020040
      034070  040040
3442  034072  052046  040522  051516  XRHDR:  .ASCII  /&TRANSMITTER - RECEIVER LOOP TESTS&   @/
      034100  044515  052124  051105
      034106  026440  051040  041505
      034114  044505  042526  020122
      034122  047514  050117  052040
      034130  051505  051524  020046
      034136  020040     100
```

```
 3443  034141     046  041520  030514  ALTHDR: .ASCII  /&PCL11 TESTS 1 - 3 SEQUENCE&   @/
       034146  020061  042524  052123
       034154  020123  020061  020055
       034162  020063  042523  052521
       034170  047105  042503  020046
       034176  020040     100
 3444  034201     046  046530  051124  TMTR:   .ASCII  /&XMTR @/
       034206  040040
 3445  034210  051046  053103  020122  RECVR:  .ASCII  /&RCVR @/
       034216     100
 3446  034217     061  052123  052440  FRAD:   .ASCII  /1ST UNIBUS ADDR...@/
       034224  044516  052502  020123
       034232  042101  051104  027056
       034240  040056
 3447  034242  052046  040510  020124  TOOLOW: .ASCII  /&THAT WAS TOO LOW! I'LL GIVE YOU ANOTHER CHANCE...&@/
       034250  040527  020123  047524
       034256  020117  047514  020527
       034264  044440  046047  020114
       034272  044507  042526  054440
       034300  052517  040440  047516
       034306  044124  051105  041440
       034314  040510  041516  027105
       034322  027056  040046
 3448  034326  052046  040510  020124  AGAIN:  .ASCII  /&THAT WON'T DO.  TRY AGAIN!&@/
       034334  047527  023516  020124
       034342  047504  020056  051124
       034350  020131  043501  044501
       034356  020516  040046
 3449  034362  042526  052103  051117  VCTR:   .ASCII  /VECTOR...@/
       034370  027056  040056
 3450  034374  051120  047511  044522  PRIOTY: .ASCII  /PRIORITY  (4-7)..@/
       034402  054524  020040  032050
       034410  033455  027051  040056
 3451  034416  042124  020115  052502  TDMAD:  .ASCII  /TDM BUS ADDR (1-37)..@/
       034424  020123  042101  051104
       034432  024040  026461  033463
       034440  027051  040056
 3452  034444  044446  053116  046101  INVLAD: .ASCII  /&INVALID DEVICE ADDRESS...(IT'S NOT THERE)@/
       034452  042111  042040  053105
       034460  041511  020105  042101
       034466  051104  051505  027123
       034474  027056  044450  023524
       034502  020123  047516  020124
       034510  044124  051105  024505
       034516     100
 3453  034517     046  051124  050101  TRAP4:  .ASCII  /&TRAPPED TO LOCATION 4 FROM LOCATION @/
       034524  042520  020104  047524
       034532  046040  041517  052101
       034540  047511  020116  020064
       034546  051106  046517  046040
       034554  041517  052101  047511
       034562  020116     100
 3454  034565     046  050046  046103  TSTHDR: .ASCII  /&&PCL11 STANDALONE TESTS  V-02    CZPLBA0    MAR-78&@/
       034572  030461  051440  040524
       034600  042116  046101  047117
       034606  020105  042524  052123
```

```
                034614  020123  053040  030055
                034622  020062  020040  041440
                034630  050132  041114  030101
                034636  020040  020040  040515
                034644  026522  034067  040046
 3455           034652  051446  046105  041505  TSTSEL: .ASCII  /&SELECT TEST (<CR> = HELP)..@/
                034660  020124  042524  052123
                034666  024040  041474  037122
                034674  036440  044040  046105
                034702  024520  027056     100
 3456           034707     046  051046  051505  HLPMSG: .ASCII  /&&RESPOND WITH ONE OF THE FOLLOWING:/
                034714  047520  042116  053440
                034722  052111  020110  047117
                034730  020105  043117  052040
                034736  042510  043040  046117
                034744  047514  044527  043516
                034752     072
 3457           034753     046  020040  020040          .ASCII  /&     1 = RUN TRANSMITTER TEST/
                034760  030440  036440  051040
                034766  047125  052040  040522
                034774  051516  044515  052124
                035002  051105  052040  051505
                035010     124
 3458           035011     046  020040  020040          .ASCII  /&     2 = RUN RECEIVER TEST/
                035016  031040  036440  051040
                035024  047125  051040  041505
                035032  044505  042526  020122
                035040  042524  052123
 3459           035044  020046  020040  020040          .ASCII  /&     3 = RUN XMTR-RCVR LOOP TEST/
                035052  020063  020075  052522
                035060  020116  046530  051124
                035066  051055  053103  020122
                035074  047514  050117  052040
                035102  051505     124
 3460           035105     046  020040  020040          .ASCII  /&     4 = RUN TEST 1, THEN TEST 2, THEN TEST 3&@/
                035112  032040  036440  051040
                035120  047125  052040  051505
                035126  020124  026061  052040
                035134  042510  020116  042524
                035142  052123  031040  020054
                035150  044124  047105  052040
                035156  051505  020124  023063
                035164     100
```

```
                                .SBTTL CONSTANTS AND VARIABLE STORAGE
035166                          .EVEN


                                ;VARIABLES

035166  000000                  DILLY:  .WORD   0
035170  000000                  DLY:    .WORD   0
035172  000000                  SWRFLG: .WORD   0
035174  000000                  PNTFLG: .WORD   0
035176  000000                  ITER:   .WORD   0
035200  000000                  SWI:    .WORD   0
035202  000000                  MASK:   .WORD   0
035204  000000                  PAT:    .WORD   0
035206  000000                  PSN01:  .WORD   0
035210  000000                  PSN02:  .WORD   0
035212  000000                  PSN03:  .WORD   0
035214  000000                  PSN04:  .WORD   0
035216  000000                  TEMP:   .WORD   0
035220  000000                  TESTNO: .WORD   0
035222  000000                  $4FLAG: .WORD   0
035224  000000                  RCAD:   .WORD   0                ;RECEIVER ADDRESS
035226  000000                  TRAD:   .WORD   0                ;TRANSMITTER ADDRESS
035230  000000                  COUNT:  .WORD   0
035232  000000                  DATWD:  .WORD   0
035234  000000                  TMPRIO: .WORD   0

                                ;CONSTANTS:


035236  000005                  FKPRIO: .WORD   5
035240  000170                  TXVEC:  .WORD   170
035242  000174                  RCVEC:  .WORD   174
035244  000240                  XPRIO:  .WORD   240
035246  000240                  RPRIO:  .WORD   240
035250  164200                  TCR:    .WORD   164200
035252  164202                  TSR:    .WORD   164202
035254  164204                  TSDB:   .WORD   164204
035256  164206                  TSBC:   .WORD   164206
035260  164210                  TSBA:   .WORD   164210
035262  164212                  TMMR:   .WORD   164212
035264  164213                  TMMRH:  .WORD   164213
035266  164214                  TSCRC:  .WORD   164214
035270  164220                  RCR:    .WORD   164220
035272  164222                  RSR:    .WORD   164222
035274  164224                  RDDB:   .WORD   164224
035276  164226                  RDBC:   .WORD   164226
035300  164230                  RDBA:   .WORD   164230
035302  164234                  RDCRC:  .WORD   164234
035304  177560                  KBS:    .WORD   177560
035306  177562                  KBD:    .WORD   177562
035310  177564                  TTS:    .WORD   177564
035312  177566                  TTB:    .WORD   177566
035314  035314                  MEM:    .WORD   MEM
035316  177777                  TSTWRD: .WORD   177777
```

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  3518
```

```
 3520  035320  000170                TXMVEC: .WORD   170             ;170 IS XMTR DEFAULT VECTOR
 3521  035322  000174                RCVVEC: .WORD   174             ;174 IS RCVR DEFAULT VECTOR
 3522  035324  164200                TXMADR: .WORD   164200          ;164200 IS XMTR DEFAULT BASIC ADDR
 3523  035326  164220                RCVADR: .WORD   164220          ;164220 IS RCVR DEFAULT BASIC ADDR
 3524          000001                        .END
```

```
ADGD    003016          660    663#
ADOK    002772          656    659#
ADRGD   003124          673    676#
ADROK   003100          669    672#
AGAIN   034326          603    612     620     624     638     642     657     661     670     674    3448#
ALTHDR  034141          717   3443#
BAD     032056          893*    895     899*    901     905*    906*    908     910     914*    916     920*    922     926*
                        928     945*    946     952*    953*    954     962*    963     972*    974     978*    979     983*
                        984     988*    990    1011*   1012    1038*   1039    1144*   1146*   1148    1172*   1204*   1205*
                       1207    1250*   1252    1271*   1273    1307*   1309    1324*   1325    1379*   1637*   1640    1718*
                       1720    1724*   1726    1730*   1732    1736*   1738    1742*   1744    1761*   1762    1768*   1769*
                       1770    1779*   1781    1785*   1787    1791*   1793    1797*   1799    1820*   1821    1847*   1848
                       1888*   1890    1908*   1910    1946*   1947    2059*   2060    2233*   2234    2328*   2373*   2375
                       2424*   2425    2430*   2431*   2432    2473*   2474    2523*   2524    2566*   2567    2659*   2660*
                       2661    2666*   2667*   2668    2713*   2714*   2715    2757*   2758*   2759    2763*   2764*   2765
                       2805*   2806*   2807    2845*   2846*   2847    3063    3083#
BATST   005772          765    1033#   1051
BCONT   003132          561     677#    686     869    3000
BCTST   005616          764    1006#   1024
BEGIN   002000          468     554     565#
BHLPMG  003176          681     683     685#
BINPNT  032436         3204#
B00  =  000001          464#   1008    1035    1817    1844    2647    2748    2749    2796    2797    2876    2890    2925
                       2926
B01  =  000002          463#   1006    1033    1058    1231    1248    1255    1276    1278    1317    1328    1337    1353
                       1389    1400    1445    1494    1512    1523    1538    1550    1562    1593    1602    1609    1623
                       1654    1778    1815    1842    1867    1886    1893    1913    1916    1964    1979    2020    2040
                       2076    2124    2147    2159    2194    2203    2210    2216    2225    2249    2301    2302    2331
                       2332    2386    2387    2436    2437    2479    2480    2533    2534    2614    2615    2641    2642
                       2682    2683    2728    2729    2783    2784    2821    2822    2868    2869    2902    2903    2918
                       2919
B02  =  000004          462#   2049
B03  =  000010          461#   1234    1245    1259    1269    1300    1349    1402    1874    1899    1923    1975    2692
                       2829
B04  =  000020          460#   1408    2700
B05  =  000040          459#   2882    2898    2905    2940    2948
B06  =  000100          458#   1416    1426    1566    1572    1578    1596    2022    2163    2169    2175    2197
B07  =  000200          457#   1143    1171    1203    1210    1217    1257    1267    1304    1312    1314    1377    1382
                       1390    1391    1395    1396    1579    1597    1633    1878    1880    1903    1905    1917    1927
                       1994    1999    2026    2027    2035    2036    2125    2129    2176    2178    2198    2226    2360
                       2372    2646    2651    2740    2742    2743    2745    2746    2747    2785    2792
B08  =  000400          456#   1238    1263    1296    1516    1870    1883    1895    1906    1953    2054    2127    2179
                       2399    2448    2543    2877
B09  =  001000          455#   1065    1074    1432    1433    1447    1519    2064    2927
B10  =  002000          454#    751    1452    1453    1528    1676    2078    2079    2265    2625    2837
B11  =  004000          453#    771    1462    1463    1546    1693    2092    2093    2280
B12  =  010000          452#    933     995    1022    1049    1222    1356    1472    1473    1552    1604    1651    1749
                       1804    1831    1858    1981    2102    2103    2149    2205    2246    2355    2602    2672    2705
                       2719    2769    2773    2811    2851    2856    2953
B13  =  020000          451#    808    1422    1441    1482    1483    2021    2031    2072    2077    2087    2112    2113
                       2392    2394    2442    2443    2620    2621    2647    2688    2689    2736    2737    2796    2797
                       2827    2828    2875    2876    2904    2906    2925    2926
B14  =  040000          450#    897     903     912     918     924     930     948     956     965     976     981     986
                        992    1014    1041    1062    1079    1084    1089    1095    1100    1105    1113    1117    1123
                       1131    1135    1139    1150    1158    1162    1170    1177    1191    1198    1209    1216    1236
                       1240    1247    1254    1261    1265    1275    1281    1282    1284    1294    1298    1302    1311
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                         1327   1351   1365   1393   1398   1414   1418   1424   1428   1435   1439   1443   1449
                         1455   1459   1465   1469   1475   1479   1485   1489   1502   1504   1506   1510   1521
                         1536   1548   1573   1585   1589   1615   1626   1629   1631   1645   1722   1728   1734
                         1740   1746   1764   1772   1783   1789   1795   1801   1823   1850   1872   1876   1885
                         1892   1897   1901   1912   1925   1930   1939   1941   1949   1955   1977   2006   2024
                         2029   2033   2038   2051   2056   2062   2066   2070   2074   2081   2085   2089   2095
                         2099   2105   2109   2115   2119   2137   2139   2141   2145   2170   2186   2190   2217
                         2239   2319   2323   2329   2348   2352   2405   2409   2416   2427   2434   2454   2458
                         2465   2476   2503   2512   2526   2549   2569   2585   2594   2633   2663   2670   2674
                         2698   2702   2717   2721   2761   2767   2771   2775   2809   2813   2849   2853   2888
                         2892   2896   2900   2908   2925   2926   2938   2942   2946   2950   3224
B15     = 100000          449#  1016   1043   1420   1437   1457   1467   1477   1487   1508   1825   1852   2068
                         2083   2097   2107   2117   2143   2879   2894   2929
CCRTN   031330           2983#  3010
CHXDAT  023470           2321   2350   2370#
CLRCBF  017674           1915   1985#  2478
CMPBUF  033300           1929   1943   1986   2005   2050   2058   2482   2521   2923   3429#
CONTW1  031340           2984#  2985   2991
COUNT   035230           1634*  1648*  3485#
CRCTST  014356            770   1623#  1632   1646   1653
DATLPS  023550           2277   2386#  2406   2413   2422   2428   2435   2604
DATWD   035232           2230*  2231   2237   3486#
DECJSP  032472           3218#
DECPNT  032454            724    780   1702   2289   3211#
DELAY   004332            876#  1166   1194   1200   1212   1232   1243   1541   1544   1868   1881   2363   2648
DELYMG  031544           3003   3024#
DERR    031712            897    903    912    918    924    930    948    956    965    976    981    986    992
                         1014   1041   1150   1209   1254   1275   1311   1327   1645   1722   1728   1734   1740
                         1746   1764   1772   1783   1789   1795   1801   1823   1850   1892   1912   1949   2062
                         2239   2323   2329   2352   2427   2434   2476   2526   2569   2663   2670   2717   2761
                         2767   2809   2849   3056#
DEVGEN  004050            650    819#
DILLY   035166            876*   883*  3468#
DIVID   032546           3236#  3240
DIVSET  032544           3235#  3245
DLCON   031624            877    879*   880   1183   1286   1366   1406   1525   1931   2007   2308   2337   2395
                         2444   2488   2541   2577   2622   2652   2690   2706   2750   2798   2831   2838   2880
                         2930   3004   3005   3009*  3036#
DLWT    004352            878    880#   884
DLWT1   004360            881#   882
DLY     035170            880*   881*  3469#
DTLPS1  023642           2396#  2404
DVATST  004242            583    854#
EROINT  021670           2162   2167#
ERR     031626           1062   1079   1084   1089   1095   1100   1105   1113   1117   1123   1131   1135   1139
                         1158   1162   1170   1177   1191   1198   1216   1236   1240   1247   1261   1265   1284
                         1294   1298   1302   1351   1393   1398   1414   1418   1424   1428   1435   1439   1443
                         1449   1455   1459   1465   1469   1475   1479   1485   1489   1502   1506   1510   1521
                         1536   1548   1573   1585   1589   1615   1631   1872   1876   1885   1897   1901   1925
                         1939   1955   1977   2024   2029   2033   2038   2056   2066   2070   2074   2081   2085
                         2089   2095   2099   2105   2109   2115   2119   2137   2141   2145   2170   2186   2190
                         2217   2319   2348   2405   2409   2416   2454   2458   2465   2503   2512   2549   2585
                         2594   2633   2674   2698   2702   2721   2771   2775   2813   2853   2888   2892   2896
                         2900   2908   2938   2942   2946   2950   3042#
ERRAD   032052           3042*  3043*  3048   3056*  3057*  3081#
ERRINT  013750           1565   1570#
```

```
ERRM    031776  3044  3072#
ERRNUM  032054   897*  903*  912*  918*  924*  930*  948*  956*  965*  976*  981*  986*  992*
                1014* 1041* 1062* 1079* 1084* 1089* 1095* 1100* 1105* 1113* 1117* 1123* 1131*
                1135* 1139* 1150* 1158* 1162* 1170* 1177* 1191* 1198* 1209* 1216* 1236* 1240*
                1247* 1254* 1261* 1265* 1275* 1284* 1294* 1298* 1302* 1311* 1327* 1351* 1393*
                1398* 1414* 1418* 1424* 1428* 1435* 1439* 1443* 1449* 1455* 1459* 1465* 1469*
                1475* 1479* 1485* 1489* 1502* 1506* 1510* 1521* 1536* 1548* 1573* 1585* 1589*
                1615* 1631* 1645* 1722* 1728* 1734* 1740* 1746* 1764* 1772* 1783* 1789* 1795*
                1801* 1823* 1850* 1872* 1876* 1885* 1892* 1897* 1901* 1912* 1925* 1939* 1949*
                1955* 1977* 2024* 2029* 2033* 2038* 2056* 2062* 2066* 2070* 2074* 2081* 2085*
                2089* 2095* 2099* 2105* 2109* 2115* 2119* 2137* 2141* 2145* 2170* 2186* 2190*
                2217* 2239* 2319* 2323* 2329* 2348* 2352* 2405* 2409* 2416* 2427* 2434* 2454*
                2458* 2465* 2476* 2503* 2512* 2526* 2549* 2569* 2585* 2594* 2633* 2663* 2670*
                2674* 2698* 2702* 2717* 2721* 2761* 2767* 2771* 2775* 2809* 2813* 2849* 2853*
                2888* 2892* 2896* 2900* 2908* 2938* 2942* 2946* 2950* 3045  3082#
ERRTRP  004262   542   595   862#
ERR1    031640  3044# 3058
EX1     031414  2975  2997#
EX2     031432  2998  3001#
EX2A    031440  3003#
EX2B    031502  3009#
EX3     031514  3002  3012#
EX5     031532  2971  3013  3017#
FILRCV  023426  2304  2333  2359#
FKPRIO  035236   616   634  3492#
FRAD    034217   575   586  3446#
GETCHR  032142  3125# 3147  3150  3157
GETDG   032564  3237  3241#
GOOD    032060   894*  900*  907*  908   915*  916   921*  927*  943*  944   946   950*  954
                 960*  961   963   973*  974   979   984   989*  990  1009* 1010  1012  1036*
                1037  1039  1147* 1148  1206* 1207  1251* 1252  1272* 1273  1308* 1309  1320*
                1325  1639* 1640  1719* 1725* 1731* 1732  1737* 1743* 1759* 1760  1762  1766*
                1770  1780* 1781  1786* 1787  1792* 1793  1798* 1799  1818* 1819  1821  1845*
                1846  1848  1889* 1890  1909* 1910  1945* 1947  2058* 2060  2232* 2234  2327*
                2374* 2375  2423* 2425  2429* 2432  2472* 2474  2522* 2524  2565* 2567  2658*
                2661  2665* 2668  2712* 2715  2756* 2759  2765  2804* 2807  2844* 2847  3060
                3084#
HLPMSG  034707   685  3456#
HWSWR = 177570   423#  571
INPKB   032124   577   588   599   608   617   635   654   667   679  2981  3008  3121#
INTA    014276  1576  1609#
INTB    014320  1595  1614#
INTRA   022242  2173  2210#
INTRB   022264  2196  2215#
INTST   013672   769  1561# 1574  1586  1590  1606
INVLAD  034444   855  3452#
ISP   = 002000   468#  555   559   566   854   864  2999  3014
ITER    035176   749*  773* 1674* 1695* 2263* 2282* 3472#
JUST    032616  3252# 3255
KBBUF   032376   576*  578   587*  589   598*  600   601   607*  609   610   616*  618   622
                 626*  627*  628*  629*  630*  631   634*  636   640   644*  645*  646*  647*
                 648*  649   653*  655   659   663   666*  668   672   676   678*  680   682
                 688  2980* 2982  3004* 3009  3123  3124* 3139* 3141* 3143* 3144  3153* 3154*
                3155* 3156* 3161* 3177#
KBD     035306  2972  2986  3170  3512#
KBRD    032354  3125  3168# 3169
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KBRET   032366  3171#
KBS     035304  2969  2984  3168  3511#
LDLP    023444  2362#  2366
LOOP    003622  752  756  760  762#  774
LOOPL   022630  2266  2270  2274  2276#  2283
LOOPR   014724  1677  1683  1685#  1696
MASK    035202  1008*  1018  1019*  1035*  1045  1046*  1817*  1827  1828*  1844*  1854  1855*  3474#
MEM     035314  3515#
MONCH   031246  2973#
MONIC   031242  2970  2972#
MONIT   031226  750  802  932  994  1021  1048  1064  1073  1221  1355  1551  1603  1650
                1675  1748  1803  1830  1857  1980  2148  2204  2245  2264  2354  2601  2855
                2952  2968#  3050
MSRTST  006146  766  1058#  1063  1224
N     = 000356  488#  897#  903#  912#  918#  924#  930#  948#  956#  965#  976#  981#  986#
                992#  1014#  1041#  1062#  1079#  1084#  1089#  1095#  1100#  1105#  1113#  1117#  1123#
                1131#  1135#  1139#  1150#  1158#  1162#  1170#  1177#  1191#  1198#  1209#  1216#  1236#
                1240#  1247#  1254#  1261#  1265#  1275#  1284#  1294#  1298#  1302#  1311#  1327#  1351#
                1393#  1398#  1414#  1418#  1424#  1428#  1435#  1439#  1443#  1449#  1455#  1459#  1465#
                1469#  1475#  1479#  1485#  1489#  1502#  1506#  1510#  1521#  1536#  1548#  1573#  1585#
                1589#  1615#  1631#  1645#  1671#  1722#  1728#  1734#  1740#  1746#  1764#  1772#  1783#
                1789#  1795#  1801#  1823#  1850#  1872#  1876#  1885#  1892#  1897#  1901#  1912#  1925#
                1939#  1949#  1955#  1977#  2024#  2029#  2033#  2038#  2056#  2062#  2066#  2070#  2074#
                2081#  2085#  2089#  2095#  2099#  2105#  2109#  2115#  2119#  2137#  2141#  2145#  2170#
                2186#  2190#  2217#  2239#  2260#  2319#  2323#  2329#  2348#  2352#  2405#  2409#  2416#
                2427#  2434#  2454#  2458#  2465#  2476#  2503#  2512#  2526#  2549#  2569#  2585#  2594#
                2633#  2663#  2670#  2674#  2698#  2702#  2717#  2721#  2761#  2767#  2771#  2775#  2809#
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NEK     032346  3160  3164#
NOKEFL  032374  3121*  3146*  3151*  3159  3176#
NPRTST  022754  2276  2301#  2320  2324  2330  2357
NPTST1  023030  2309#  2318
NRTRN   032330  3129  3159#
NULLS   032512  3051  3065  3224#
NULL1   032522  3226#
NULOUT  032534  3225  3229#
NUMPNT  032536  3192  3199  3206  3213  3220  3233#
OCTJSP  032416  3197#
OCTPNT  032400  868  1644  2238  2412  2421  2461  2470  2508  2517  2554  2559  2563  2573
                2590  2599  2978  3006  3046  3049  3061  3064  3190#
PAT     035204  1007*  1009  1016  1018*  1034*  1036  1043  1045*  1816*  1818  1825  1827*  1843*
                1845  1852  1854*  3475#
PEND    033557  722  778  1700  2287  3435#
PNT     032636  3249  3251  3257#
PNTEXT  032600  3243  3247#
PNTFLG  035174  1067*  1069*  3471#
PRIOTY  034374  615  633  3450#
PRMT1   002142  580  583#
PRMT10  003024  664#  671  675
PRMT2   002154  585#  593
PRMT3   002240  591  594#
PRMT4   002252  596#  604
PRMT5   002336  602  605#  613
PRMT6   002422  611  614#  621  625
PRMT7   002500  619  622#
PRMT8   002524  623  626#
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PRMT9    002556            632#   639    643
PROMT    002056            574#   582    856
PS     = 177776            422#   556*   560*   567*   748*   863*  1561*  1567*  1570*  1577*  1580*  1598*  1673*
                          2158*  2164*  2167*  2174*  2181*  2199*  2262*
PSN01    035206            692*   777*   779   3476#
PSN02    035210            693*  1699*  1701   3477#
PSN03    035212            694*  2286*  2288   3478#
PSN04    035214            695*   721*   723   3479#
P1     = 000040            445#
P2     = 000100            444#
P3     = 000140            443#
P4     = 000200            442#
P5     = 000240            441#
P6     = 000300            440#
P7     = 000340            439#   556    560    567    570    748    863   1561   1570   1577   1673   2158   2167
                          2174   2262
RADIX    032676           3233*  3236   3238   3277#
RART     015430           1750   1752#
RA1      015144           1721   1724#
RA2      015214           1727   1730#
RA3      015270           1733   1736#
RA4      015340           1739   1742#
RA5      015410           1745   1748#
RBATST   016312           1688   1842#  1860
RBCTST   016136           1687   1815#  1833
RBRT     016310           1832   1834#
RB1      016160           1818#  1824   1829
RB2      016242           1822   1825#
RB3      016270           1826   1830#
RCAD     035224            676*  2391   2441   2485   2537   2619   2644   2686   2735   2791   2826   2874   2924
                          3483#
RCBTCN   033753           2560   2570   3439#
RCHDR    034041            705   3441#
RCR      035270            837*  1730   1758*  1760*  1761   1767*  1768   1774*  1778*  1779   1815*  1842*  1867*
                          1874   1878*  1880*  1886*  1893*  1899   1903*  1905*  1913*  1916*  1917*  1923   1927*
                          1930*  1941*  1964*  1975   1979*  1994*  1999*  2006*  2011*  2020*  2021*  2031   2040*
                          2041*  2049*  2051*  2072   2076*  2077*  2087   2124*  2125*  2129*  2132*  2147*  2159*
                          2163*  2169*  2175*  2176*  2178*  2194*  2197*  2203*  2210*  2216*  2225*  2226*  2249*
                          2301*  2307*  2332*  2360*  2367*  2387*  2392*  2430   2437*  2442*  2480*  2486*  2534*
                          2538*  2615*  2620*  2642*  2647*  2683*  2688*  2729*  2736*  2743*  2745*  2748*  2784*
                          2785*  2792*  2796*  2822*  2827*  2869*  2875*  2879*  2894   2902*  2904*  2906   2919*
                          2925*  2929*  3505#
RCRCTS   022330           1692   2225#  2240   2248
RCRT     016464           1859   1861#
RCRTST   015432           1686   1758#  1806
RCSTAT   033723           2410   2459   2515   2557   2597   3438#
RCVADR   035326            587    589*   590    594    836   3523#
RCVEC    035242            848*  2160   2162*  2173*  2196*  3494#
RCVVEC   035322            607    609*   848   3521#
RC1      016334           1845#  1851   1856
RC2      016416           1849   1852#
RC3      016444           1853   1857#
RDBA     035300            845*  1724   1776*  1797   1846*  1847   1929*  2005*  2050*  2059   2131*  2306*  2482*
                          2923*  3509#
RDBC     035276            843*  1718   1775*  1791   1819*  1820   1928*  1933   2004*  2048*  2052   2130*  2135
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RDCRC   035302   847* 1736  2233  3510#
RDDB    035274   841* 1879* 1888  1904* 1908  1920* 1996* 2043* 2126* 2177* 2231* 2335  2362*
                 2424 2473  2566  2744* 2788* 3507#
RDRT    016134   1805 1807#
RD1     015436   1759# 1765
RD2     015520   1763 1766# 1773
RD3     015604   1771 1774# 1784  1790  1796  1802
RD4     015716   1782 1785#
RD5     015770   1788 1791#
RD6     016042   1794 1797#
RD7     016114   1800 1803#
RECB    017704   1987# 1989
RECVR   034210   585  605  632   664   3445#
REEMT   017746   1967 1970 2004#
REEMT1  017774   2008# 2013
REMTW   020000   2009# 2010
REND    015002   1694 1697#
REPEAT  003752   776  785#
REPEET  015070   1698 1711#
REPETL  022752   2285 2297#
RERT    017672   1982 1984#
RESR    017714   1966 1969  1972  1994#
RESRW   017724   1996# 1998
RESTRT  002716   558  651#  658   662   3015
RE1     016542   1871 1874#
RE10    017272   1924 1927#
RE10A   017326   1932# 1938
RE11    017332   1933# 1936
RE12    017400   1934 1941#
RE13    017422   1945# 1952
RE14    017472   1948 1951#
RE15    017536   1954 1964#  1978
RE16    017644   1976 1979#
RE2     016602   1875 1878#  1887  1894
RE3     016700   1884 1888#  1898
RE4     016762   1891 1895#
RE5     017022   1896 1899#  1902
RE6     017062   1900 1903#  1914
RE7     017102   1906# 1907
RE7A    017172   1911 1915#
RE8     017176   1916# 1926  1940  1950  1956
RE9     017222   1920# 1922
RFRT    021610   2150 2152#
RF1     020072   2023 2026#  2030
RF10    020556   2069 2072#
RF11    020616   2073 2076#  2082  2086  2090
RF12    020700   2080 2083#
RF13    020740   2084 2087#
RF14    021000   2088 2091#  2096  2100
RF15    021052   2094 2097#
RF16    021112   2098 2101#  2106  2110
RF17    021164   2104 2107#
RF18    021224   2108 2111#  2116  2120
RF19    021276   2114 2117#
RF2     020140   2028 2031#
RF20    021336   2118 2124#  2138  2142  2146
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RF21    021360          2127#   2128
RF22    021462          2136    2139#
RF23    021522          2140    2143#
RF24    021562          2144    2147#
RF3     020200          2032    2035#   2039
RF4     020246          2037    2040#   2057    2063    2067    2071    2075
RF5     020266          2043#   2047
RF6     020304          2048#
RF7     020334          2052#   2053
RF8     020402          2055    2058#
RF9     020456          2061    2064#
RF9A    020516          2065    2068#
RHRT    022240          2206    2208#
RH0     021736          2166    2172#
RH1     021750          2174#   2213
RH1A    022006          2179#   2180
RH2     022066          2185    2188#
RH3     022126          2189    2192#   2202    2219
RH3S    022152          2196#   2218
RH4     022212          2193    2203#
RINIT   015072          1685    1717#   1723    1729    1735    1741    1747    1751
RINTST  021612          1691    2158#   2171    2187    2191    2207
RJFLG   032674          3190*   3197*   3204*   3211*   3218*   3250    3256*   3276#
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RJ1     022360          2230#   2244
RJ2     022464          2235    2241#
RPR10   035246           649*   2188    3496#
RSR     035272           839*   1742    1777*   1785    1870    1883    1895    1906    1953    2022    2026*   2027    2035*
                        2036    2054    2064    2068    2078*   2079    2083    2091*   2092*   2093    2097    2101*   2102*
                        2103    2107    2111*   2112*   2113    2117    2127    2139    2143    2179    2198*   2397    2399
                        2407    2411    2446    2448    2456    2460    2495    2510    2513    2516    2543    2555    2558
                        2592    2595    2598    2625    2659    2672    2700    2713    2719    2747*   2757    2773    2837*
                        2877    2882    2905*   2927    2944    2948    3506#
RSRTST  020016          1690    2020#   2025    2034    2151
SBAK    004030           804     807#
SCONT   004046           809     812#
SCPRTN  004012           802#    898     904     913     919     925     931     949     957     966     977     982     987
                         993    1015    1042    1063    1080    1085    1090    1096    1101    1106    1114    1118    1124
                        1132    1136    1140    1151    1159    1163    1173    1178    1192    1199    1211    1218    1237
                        1241    1249    1256    1262    1266    1277    1285    1295    1299    1303    1313    1329    1352
                        1394    1399    1415    1419    1425    1429    1436    1440    1444    1450    1456    1460    1466
                        1470    1476    1480    1486    1490    1503    1507    1511    1522    1537    1549    1574    1586
                        1590    1616    1632    1646    1723    1729    1735    1741    1747    1765    1773    1784    1790
                        1796    1802    1824    1851    1873    1877    1887    1894    1898    1902    1914    1926    1940
                        1950    1956    1978    2025    2030    2034    2039    2057    2063    2067    2071    2075    2082
                        2086    2090    2096    2100    2106    2110    2116    2120    2138    2142    2146    2171    2187
                        2191    2218    2240    2320    2324    2330    2349    2353    2406    2413    2422    2428    2435
                        2455    2462    2471    2477    2509    2518    2529    2564    2574    2591    2600    2634    2664
                        2671    2675    2699    2703    2718    2722    2762    2768    2772    2776    2810    2814    2850
                        2854    2889    2893    2897    2901    2909    2939    2943    2947    2951
SCSEC   033573          1068    3436#
SILCRC  033100          1635    2227    3356#
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SILTST  010164           767    1231#   1237    1241    1358
SLIWD   033530          2236    3434#
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                 930   933   948   956   965   976   981   986   992   995  1014  1022  1041
                1049  1062  1065  1074  1079  1084  1089  1095  1100  1105  1113  1117  1123
                1131  1135  1139  1150  1158  1162  1170  1177  1191  1198  1209  1216  1222
                1236  1240  1247  1254  1261  1265  1275  1284  1294  1298  1302  1311  1327
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                1459  1465  1469  1475  1479  1485  1489  1502  1506  1510  1521  1536  1548
                1552  1573  1585  1589  1604  1615  1631  1645  1651  1676  1678  1693  1722
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                1831  1850  1858  1872  1876  1885  1892  1897  1901  1912  1925  1939  1949
                1955  1977  1981  2024  2029  2033  2038  2056  2062  2066  2070  2074  2081
                2085  2089  2095  2099  2105  2109  2115  2119  2137  2141  2145  2149  2170
                2186  2190  2205  2217  2239  2246  2265  2267  2280  2319  2323  2329  2348
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                2900  2908  2938  2942  2946  2950  2953  2977  2980  2982* 3034# 3224
SRTST   003774   569  796#
SSWR  = 031620   424# 796
SWDMP   031260   691  791  1072  2976# 2989
SWHLT   003754   789# 805
SWI     035200   753*  754*  755   758*  759*  760*  761  1678* 1679* 1681* 1682* 1683* 1684
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SWRFLG  035172   568*  689  789   797*  1070  3470#
SWRMSG  031534  2976  3023#
TCR     035250   820*  920  942*  944*  945  951*  952  958*  961*  962  967*  971*  972
                1006* 1033* 1058* 1143* 1145* 1171* 1203* 1210* 1217* 1220* 1231* 1234  1245
                1248* 1255* 1257* 1259  1267* 1269  1276* 1278* 1281* 1282  1300  1304* 1312*
                1314* 1317* 1321* 1328* 1337* 1349  1353* 1365* 1372* 1377* 1382* 1389* 1400*
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                1633* 1654* 2302* 2331* 2336* 2372* 2379* 2386* 2391* 2394* 2436* 2441* 2443*
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TCRTST  005030   763  942#  997
TDMAD   034416   652  665  3451#
TEMP    035216   862*  866*  867  3480#
TESTGO  003212   684  688#
TESTNO  035220   688*  696  702  708  714  3481#
TEST1   003522   700  718  748#
TEST2   014634   706  719  1673#
TEST3   022530   712  720  2262#
TMMR    035262   830*  905  1125*  1144  1165*  1172  1179*  1204  2303*  2389*  2616*  3502#
TMMRH   035264   832*  1059*  1060  1076*  1077  1081*  1082  1086*  1087  1091*  1092  1094*  1097
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                1174*  1175  1180  1182*  1185  1193*  1196  1202*  1214  1219*  1354*  1404*  1539*
                2692  2829  3503#
TMPRIO  035234  1575*  1580  1583  1587  1591  1594*  1598  1610*  2172*  2181  2184  2188  2192
                2195*  2199  2211*  3487#
TMTR    034201   574  596  614  651  3444#
TOOLOW  034242   581  592  3447#
TPCONT  032110  3105  3107#
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TPOUTX  032120  3103  3110#
TRAD    035226   663* 2429  3484#
TRAP4   034517   865  3453#
TREND   022666  2281  2284#
TSBA    035260   828*  899   969*  983  1037* 1038  1280* 1319* 1324  1364* 1496* 1625* 2335*
                2481* 2535* 2922* 3501#
TSBC    035256   826*  893   968*  978  1010* 1011  1279* 1288 1318* 1322  1363* 1495* 1500
                1624* 1627  2311  2334* 2340  2393* 2439* 2483* 2536* 2617* 2643* 2684* 2730*
                2794* 2824* 2871* 2920* 3500#
TSCRC   035266   834*  926  1637  3504#
TSDB    035254   824* 1242* 1250  1258  1268* 1271  1307 1379 1401* 1446* 1513* 1518* 1540*
                1638  2306  2373  2388* 2438* 2618* 2645* 2650 2685* 2687* 2731* 2732* 2734*
                2741  2793* 2795* 2823* 2825* 2870* 2872* 3499#
TSR     035252   822*  914   959*  970*  988  1164* 1238 1263 1296 1390* 1391  1395* 1396
                1408  1416  1426  1430* 1432* 1433  1437 1447 1451* 1452* 1453  1457  1461*
                1462* 1463  1467  1471* 1472* 1473  1477 1481* 1482* 1483  1487  1504  1508
                1516  1519  1528  1546  1579* 1597* 2414 2417 2420  2463  2466  2469  2491
                2493  2504  2507  2550  2553  2581  2586 2589 2666  2705* 2738  2746* 2763
                2769  2805  2811  2845  2851  2898  2932 2940 3498#
TSRTST  011630   768  1389# 1394  1554
TSTHDR  034565   573  3454#
TSTSEL  034652   677  3455#
TSTWRD  035316  2535  2565  3516#
TTB     035312  3264* 3514#
TTO     032644   726   728   730   731   782   784  1704 1706 1708 1710 2291 2293 2295
                2296  2993  2995  2996  3107  3126 3137 3149 3227 3228 3253 3264# 3271
TTOLF   032666  3268  3270#
TTOLP   032650  3265# 3266
TTS     035310  3265  3513#
TWOSP   031614  2979  3007  3026#
TXHDR   034005   699  3440#
TXMADR  035324   576   578*  579   584   819  3522#
TXMERS  025762  2278  2614# 2634  2858
TXMR1   026046  2623# 2632
TXMVEC  035320   598   600*  835  3520#
TXSTAT  033670  2419  2468  2506  2552  2588 3437#
TXVEC   035240   835* 1563  1565* 1576* 1595* 3493#
TYPCTP  031567  2983  3025#
TYPOUT  032062   573   574   575   581   585  586  592  596  597  603  605  606  612
                614   615   620   624   632  633  638  642  651  652  657  661  664
                665   670   674   677   685  699  705  711  717  722  778  855  865
                1068  1642  1700  2236  2287 2410 2419 2459 2468 2506 2515 2552 2557
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                3100#
VCTR    034362   597   606  3449#
WDAT    032011  3047  3073#
WDSDB   032027  3059  3074#
WDWAS   032043  3062  3075#
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XA2     004520   902   905#
XA3     004612   909   911   914#
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XCRT	006144	1050	1052#								
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XC3	006124	1044	1048#								
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XERT	010162	1223	1225#								
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XE10	007046	1129#									
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XE13	007206	1138	1141#								
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XE15	007246	1148#									
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                1746   1764   1772   1783   1789   1795   1801   1823   1850   1872   1876   1885   1892
                1897   1901   1912   1925   1939   1949   1955   1977   2024   2029   2033   2038   2056
                2062   2066   2070   2074   2081   2085   2089   2095   2099   2105   2109   2115   2119
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                2569   2585   2594   2633   2663   2670   2674   2698   2702   2717   2721   2761   2767
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        2903  2918  2919
DATERR   500#   897   903   912   918   924   930   948   956   965   976   981   986   992  1014
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        2938  2942  2946  2950
HLT      509#   805
MTPS     533#   556   560   567   748  1561  1567  1570  1577  1580  1598  1673  2158  2164  2167
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PNTM     515#   573   574   575   581   585   586   592   596   597   603   605   606   612   614
         615   620   624   632   633   638   642   651   652   657   661   664   665   670   674
         677   685   699   705   711   717   722   778   855   865  1068  1642  1700  2236  2287
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        3003  3007  3044  3047  3059  3062
SCOPE    522#   898   904   913   919   925   931   949   957   966   977   982   987   993  1015
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        1790  1796  1802  1824  1851  1873  1877  1887  1894  1898  1902  1914  1926  1940  1950
        1956  1978  2025  2030  2034  2039  2057  2063  2067  2071  2075  2082  2086  2090  2096
        2100  2106  2110  2116  2120  2138  2142  2146  2171  2187  2191  2218  2240  2320  2324
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. ABS.   035330      000

ERRORS DETECTED:  0

PCLTST,PCLTST/CR/NL:TTM/LI:ME<PCLTST
RUN-TIME:  6 13 2 SECONDS
RUN-TIME RATIO:  387/22=17.4
CORE USED:  12K  (23 PAGES)
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