PCL11-A,B

PCL-11 STAND-ALONE V-02

CZPLBA0

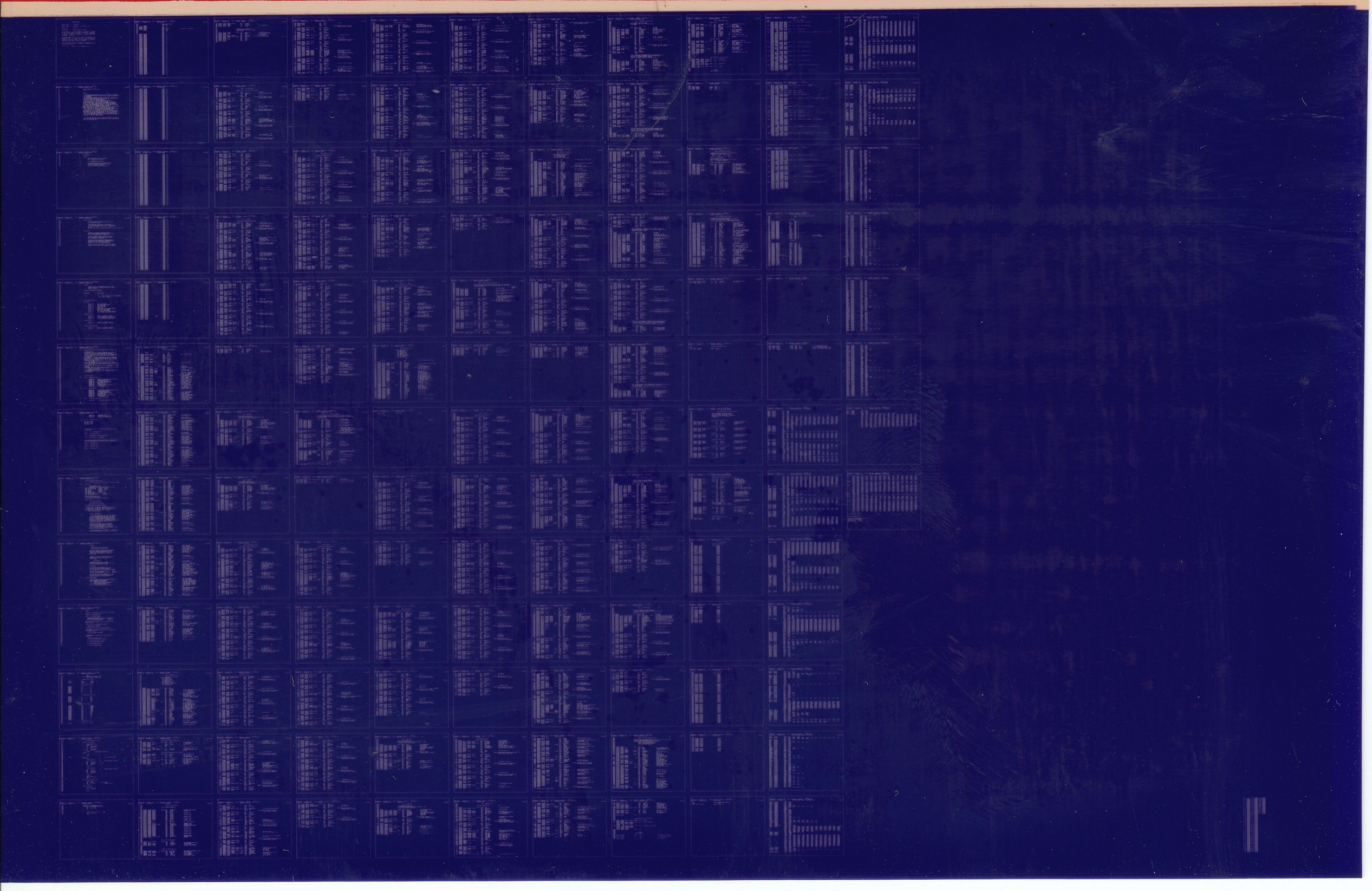
AH-E263A-MC

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.
                          :HE 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'S)
                                        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  CZPLBAD 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     #BG1,@TCR
                 IFF
                   .IF   IDN     <DEV>,<RCVR>
                        BIS     #BD1,@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
```

```
                                        SBTTL TRAP CATCHERS
                                      .ENABLE ABS
                                              =       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
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```
(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
```

```
(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
```

```
(1)  000662  000000  .WORD   0
(1)  000664  000666   WORD    +2
(1)  000666  000000  .WORD   0
(1)  000670  000672  .WORD   .+2
(1)  000672  000000  .WORD   0
(1)  000674  000676  .WORD   .+2
(1)  000676  000000  .WORD   0
(1)  000700  000702  .WORD   .+2
(1)  000702  000000  .WORD   0
(1)  000704  000706  .WORD   .+2
(1)  000706  000000  .WORD   0
(1)  000710  000712   WORD   .+2
(1)  000712  000000  .WORD   0
(1)  000714  000716  .WORD    +2
(1)  000716  000000  .WORD   0
(1)  000720  000722  .WORD   .+2
(1)  000722  000000  .WORD   0
(1)  000724  000726  .WORD   .+2
(1)  000726  000000  .WORD   0
(1)  000730  000732  .WORD   .+2
(1)  000732  000000  .WORD   0
(1)  000734  000736  .WORD   .+2
(1)  000736  000000   WORD   0
(1)  000740  000742   WORD   .+2
(1)  000742  000000  .WORD   0
(1)  000744  000746  .WORD   .+2
(1)  000746  000000  .WORD   0
(1)  000750  000752   WORD    +2
(1)  000752  000000  .WORD   0
(1)  000754  000756  .WORD    +2
(1)  000756  000000  .WORD   0
(1)  000760  000762  .WORD    +2
(1)  000762  000000  .WORD   0
(1)  000764  000766  .WORD    +2
(1)  000766  000000  .WORD   0
(1)  000770  000772   WORD    +2
(1)  000772  000000   WORD   0
(1)  000774  000776   WORD    +2
(1)  000776  000000   WORD   0
```

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                                                 SBTTL TEST SUPERVISOR



             000200                      .        =       200

     000200  000167  001574                       JMP     BEGIN              ,TEST STARTS AT 200
     000204  012706  002000                       MOV     #ISP,SP
     000210                                       MTPS    #P7
(1)  000210  012737  000340  177776               MOV     #P7,@#PS
     000216  000005                               RESET
     000220  000167  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                PRMT6:  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
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  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
(1) 003522  012737  000340  177776      MOV     #P7,@#PS
749 003530  012767  000010  031440      MOV     #10,ITER                ;INITIAL ITERATION OF 10 PER PASS
750 003536  004767  025464              JSR     PC,MONIT                ;CHECK FOR KBD INPUT
751 003542  032777  002000  026052      BIT     #B10,@SR                        ;CHECK SW 10
752 003550  001424                      BEQ     LOOP                    ;IF 0, RUN SEQUENTIALLY
753 003552  017767  026044  031420      MOV     @SR,SWI         ;IF SET, GET TEST # FROM SWR
754 003560  042767  177760  031412      BIC     #-20,SWI                ,MASK LOW DIGIT
755 003566  026727  031406  000010      CMP     SWI,#10                 ;DON'T ALLOW SW = >10
756 003574  003012                      BGT     LOOP                    ;IF GREATER, START 1'ST TEST
757 003576  000241                      CLC                             ;CLEAR "C" BIT BEFORE ROTATE
758 003600  006167  031374              ROL     SWI
759 003604  006167  031370              ROL     SWI                     ;MULTIPLY BY 4
760 003610  062767  003622  031362      ADD     #LOOP,SWI               ;GENERATE OFFSET
761 003616  000177  031356              JMP     @SWI                    ;GO TO SELECTED TEST
762 003622  004767  000550          LOOP:   JSR     PC,XINIT                        ;DO INITIAL CLR TEST
763 003626  004767  001176              JSR     PC,TCRTST               ;DO TCR REG TEST
764 003632  004767  001760              JSR     PC,BCTST                ;DO BYTE COUNT REG TST
765 003636  004767  002130              JSR     PC,BATST                ;DO BYTE ADDR REG TEST
766 003642  004767  002300              JSR     PC,MSRTST               ;DO MASTER SECTION TEST
767 003646  004767  004312              JSR     PC,SILTST               ;DO DATA SILO TEST
768 003652  004767  005752              JSR     PC,TSRTST               ;DO TSR REG & ERRORS TEST
769 003656  004767  010010              JSR     PC,INTST                ;DO INTERRUPT TEST
770 003662  004767  010470              JSR     PC,CRCTST               ;DO CRC GENERATION TEST
771 003666  032777  004000  025726      BIT     #B11,@SR                ;CHECK SWITCH 11
772 003674  001003                      BNE     XEND                    ;PRINT END IF SET
773 003676  005367  031274              DEC     ITER                    ;OTHERWISE, REITERATE
774 003702  001347                      BNE     LOOP
775 003704  005767  031312          XEND:   TST     $4FLAG                  ;SHOULD WE PRINT END PASS?
776 003710  001020                      BNE     REPEAT                  ;NO, LEAVE
777 003712  005267  031270              INC     PSN01                   ;UPDATE PASS NUMBER
778 003716                              PNTM    PEND                    ;PRINT "END PASS # "
(1) 003716  012700  033557              MOV     #PEND,R0                ;PRINT MESSAGE
(1) 003722  004767  026134              JSR     PC,TYPOUT               ;POINTED TO BY PEND
779 003726  016700  031254              MOV     PSN01,R0
780 003732  004767  026516              JSR     PC,DECPNT               ;PRINT PASSNO.
781 003736  005000                      CLR     R0
782 003740  004767  026700              JSR     PC,TTO                  ;PRINT NULLS TO ALLOW TIME
783 003744  005000                      CLR     R0                      ;FOR PASS # TO BE PRINTED
784 003746  004767  026672              JSR     PC,TTO
785 003752  000207                  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
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```
                                        SBTTL UTILITY ROUTINES
                                ;DEVICE ADDRESS GENERATION
004050  016700  031250          DEVGEN: MOV     TXMADR,R0               ;GET BASIC XMTR ADDRESS
004054  010067  031170                  MOV     R0,TCR                  ;GENERATE TCR
004060  062700  000002                  ADD     #2,R0
004064  010067  031162                  MOV     R0,TSR                  ;GENERATE TSR
004070  062700  000002                  ADD     #2,R0
004074  010067  031154                  MOV     R0,TSDB                 ;GENERATE TSDB
004100  062700  000002                  ADD     #2,R0
004104  010067  031146                  MOV     R0,TSBC                 ;GENERATE TSBC
004110  062700  000002                  ADD     #2,R0
004114  010067  031140                  MOV     R0,TSBA                 ;GENERATE TSBA
004120  062700  000002                  ADD     #2,R0
004124  010067  031132                  MOV     R0,TMMR                 ;GENERATE TMMR
004130  005200                          INC     R0
004132  010067  031126                  MOV     R0,TMMRH                ;GEN.  TMMR HIGH BYTE
004136  005200                          INC     R0
004140  010067  031122                  MOV     R0,TSCRC                ;GENERATE TSCRC
004144  016767  031150  031066          MOV     TXMVEC,TXVEC            ;GENERATE TXVEC
004152  016700  031150                  MOV     RCVADR,R0               ;GET BASIC RCVR ADDRESS
004156  010067  031106                  MOV     R0,RCR                  ;GENERATE RCR
004162  062700  000002                  ADD     #2,R0
004166  010067  031100                  MOV     R0,RSR                  ;GENERATE RSR
004172  062700  000002                  ADD     #2,R0
004176  010067  031072                  MOV     R0,RDDB                 ;GENERATE RDDB
004202  062700  000002                  ADD     #2,R0
004206  010067  031064                  MOV     R0,RDBC                 ;GENERATE RDBC
004212  062700  000002                  ADD     #2,R0
004216  010067  031056                  MOV     R0,RDBA                 ;GENERATE RDBA
004222  062700  000004                  ADD     #4,R0
004226  010067  031050                  MOV     R0,RDCRC                ;GENERATE RDCRC
004232  016767  031064  031002          MOV     RCVVEC,RCVEC            ;GENERATE RCVEC
004240  000207                          RTS     PC                      ;RETURN.


                                ;DEVICE TEST TRAP HANDLER

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


                                ;ROUTINE TO CATCH TRAPS TO 4

004262  011667  030730          ERRTRP  MOV     (SP),TEMP               ;SAVE STACK FOR ADDRESS OF TRAP
004266  012737  000340  177776          MOV     #P7,@#PS                ;RAISE PRIORITY
004274  012706  002000                  MOV     #ISP,SP                 ;FIX THE STACK
004300                                  PNTM    TRAP4                   ;PRINT "TRAPPED TO 4 " MSG
(1) 004300  012700  034517              MOV     #TRAP4,R0               ;PRINT MESSAGE
(1) 004304  004767  025552              JSR     PC,TYPOUT                ;POINTED TO BY TRAP4
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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,&R1B
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
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  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
```

```
  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
```

```
1027                                        SBTTL  TSBA TEST
1028
1029                                    ;BYTE ADDRESS REGISTER TEST
1030                                    ;SLIDE A ZERO THROUGH THE REGISTER AND READ IT BACK
1031                                    ;AS A DATA TEST OF THE REGISTER
1032
1033  005772                            BATST   BDINIT  XMTR                    ;INIT XMTR MODULE
1034  006000  012767  177777  027176            MOV     #-1,PAT               ;SET PATTERN
1035  006006  012767  000001  027166            MOV     #B00,MASK             ;SET BIT MASK
1036  006014  016767  027164  024036    XC1     MOV     PAT,GOOD              ;LOAD  "GOOD" WITH PATTERN
1037  006022  016777  024032  027230            MOV     GOOD,@TSBA            ;LOAD BUS ADDR WITH PATTERN
1038  006030  017767  027224  024020            MOV     @TSBA,BAD             ;READ IT BACK IMMEDIATELY
1039  006036  026767  024016  024012            CMP     GOOD,BAD
1040  006044  001414                            BEQ     XC2
1041  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
1042  006070                                    SCOPE   XC1
 (1)  006070  004567  175716                    JSR     R5,SCPRTN
 (1)  006074  006014                            XC1
1043  006076  032767  100000  027100    XC2     BIT     #B15,PAT              ;DONE WHOLE REGISTER?
1044  006104  001407                            BEQ     XC3                   ;YES, EXIT
1045  006106  046767  027070  027070            BIC     MASK,PAT              ;NO, PREPARE FOR NEXT BIT
1046  006114  006367  027062                    ASL     MASK
1047  006120  000167  177670                    JMP     XC1                   ;GO DO NEXT BIT
1048  006124  004767  023076            XC3     JSR     PC,MONIT
1049  006130  032777  010000  023464            BIT     #B12,@SR              ;IF SO, CONSIDER LEAVING
1050  006136  001402                            BEQ     XCRT                  ;EXIT IF SW 12 = 0
1051  006140  000167  177626                    JMP     BATST                 ;STAY HERE 'F SW 12 = 1
1052  006144  000207                    XCRT    RTS     PC
```

```
1054                                    .SBTTL  MASTER SECTION TEST
1055
1056                                    ;TEST MASTER CONTROL AND ADDRESS SILO
1057
1058  006146                            MSRTST  BDINIT  XMTR                    ;INIT BOADR
1059  006154  112777  000001  027102            MOVB    #1,@TMMRH               ;SET MASTER FLOP
1060  006162  132777  000001  027074            BITB    #1,@TMMRH               ;IS MASTER SET?
1061  006170  001014                            BNE     XE1
1062  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
1063  006214                                    SCOPE   MSRTST
 (1)  006214  004567  175572                    JSR     R5,SCPRTN
 (1)  006220  006146                            MSRTST
1064  006222  004767  023000            XE1     JSR     PC,MONIT
1065  006226  032777  001000  023366            BIT     #B09,@SR                ;CHECK SW 09
1066  006234  001024                            BNE     XE3                     ;IF ON, SKIP SCOPE LOOP
1067  006236  012767  177777  026730            MOV     #-1,PNTFLG              ;SET PRINT ALLOW FLAG
1068  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
1069  006254  005067  026714                    CLR     PNTFLG                  ;CLEAR PRINT ALLOW FLAG
1070  006260  005767  026706                    TST     SWRFLG                  ;REAL SW REG?
1071  006264  001402                            BEQ     XE2                     ;YES, SKIP
1072  006266  004767  022766                    JSR     PC,SWDMP
1073  006272  004767  022730            XE2     JSR     PC,MONIT
1074  006276  032777  001000  023316            BIT     #B09,@SR                ;KEEP AN EYE ON SW 09
1075  006304  001772                            BEQ     XE2                     ;STAY HERE 'TILL IT GETS SET
1076  006306  142777  000001  026750  XE3       BICB    #1,@TMMRH               ;CLR MASTER FLOP
1077  006314  132777  000001  026742            BITB    #1,@TMMRH               ;IS MASTER CLEAR?
1078  006322  001414                            BEQ     XE3A
1079  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
1080  006346                                    SCOPE   XE3
 (1)  006346  004567  175440                    JSR     R5,SCPRTN
 (1)  006352  006306                            XE3
1081  006354  152777  000004  026702  XE3A    BISB    #4,@TMMRH               ;SET "NOW MASTER" FLOP
1082  006362  132777  000004  026674            BITB    #4,@TMMRH               ;IS IT SET?
1083  006370  001014                            BNE     XE3B                    ;YES, GO TO CLEAR IT
1084  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
1085  006414                                    SCOPE   XE3A
```

```
  (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
```

```
  (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
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  (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
```

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  (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
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  (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?
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 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          XF13    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
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```
                                        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
```

```
1385                                        .SBTTL  TSRTST
1386
1387                                        ;STATUS REGISTER AND ERRORS TEST
1388
1389  011630                                TSRTST  BDINIT  XMTR                    ;CLR BOARD
1390  011636  052777  000200  023406                BIS     #B07,@TSR               ;SET SUCC XFER
1391  011644  032777  000200  023400                BIT     #B07,@TSR               ;IS IT SET?
1392  011652  001014                               BNE     XH1
1393  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
1394  011676                                       SCOPE   TSRTST
 (1)  011676  004567  172110                        JSR     R5,SCPRTN
 (1)  011702  011630                               TSRTST
1395  011704  042777  000200  023340  XH1           BIC     #B07,@TSR               ;CLR SUCC XFER
1396  011712  032777  000200  023332                BIT     #B07,@TSR               ;IS IT CLR?
1397  011720  001414                               BEQ     XH2
1398  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
1399  011744                                       SCOPE   XH1
 (1)  011744  004567  172042                        JSR     R5,SCPRTN
 (1)  011750  011704                               XH1
1400  011752                              XH2      BDINIT  XMTR                    ;CLEAR BOARD
1401  011760  012777  177777  023266                MOV     #-1,@TSDB               ;LOAD WORD INTO SILO
1402  011766  032777  000010  023254                BIT     #B03,@TCR               ;OUTPUT READY?
1403  011774  001774                               BEQ     .-6                     ;WAIT FOR WORD TO HIT BOTTOM
1404  011776  152777  000001  023260                BISB    #1,@TMMRH               ;SET MASTER FOR TIME SLICES
1405  012004  012777  120000  023236                MOV     #120000,@TCR            ;SET RIB AND SND WD
1406  012012  016704  017606                        MOV     DLCON,R4
1407  012016  012703  177763              XH2B:    MOV     #177763,R3              ;SET UP FOR 100 U S.  ALARM
1408  012022  032777  000020  023222      XH2A:    BIT     #B04,@TSR               ;TDM BUS BSY SET?
1409  012030  001020                               BNE     XH3
1410  012032  005203                               INC     R3                      ;WAIT 100 US.
1411  012034  001372                               BNE     XH2A
1412  012036  005304                               DEC     R4
1413  012040  001366                               BNE     XH2B
1414  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
1415  012064                                       SCOPE   XH2
 (1)  012064  004567  171722                        JSR     R5,SCPRTN
 (1)  012070  011752                               XH2
1416  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)
  (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)
  (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)
  (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)
  (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
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```
 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
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```
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
```

```
 1557                                          .SBTTL  INTERRUPT TEST
 1558
 1559                                         ;TRANSMITTER INTERRUPT TEST
 1560
 1561  013672                                 INTST   MTPS    #P7                     ;DIS-ALLOW INTERRUPT
  (1)  013672  012737  000340  177776                 MOV     #P7,@#PS
 1562  013700                                         BDINIT  XMTR                    ;CLR THE BOARD
 1563  013706  016700  021326                         MOV     TXVEC,R0
 1564  013712  012760  000340  000002                 MOV     #340,2(R0)              ;SET NEW PS = P7
 1565  013720  012777  013750  021312                 MOV     #ERRINT,@TXVEC          ;SET-UP FOR ERROR INTERRUPT
 1566  013726  052777  000100  021314                 BIS     #B06,@TCR               ;SET INTERRUPT ENABLE
 1567  013734                                         MTPS    #0                      ;ALLOW INTERRUPT
  (1)  013734  012737  000000  177776                 MOV     #0,@#PS
 1568  013742  000240                                 NOP
 1569  013744  000167  000046                         JMP     XJ0                     ;SKIP ERROR IF NO INTERRUPT
 1570  013750                                 ERRINT. MTPS    #P7                     ;INTERRUPT OFF
  (1)  013750  012737  000340  177776                 MOV     #P7,@#PS
 1571  013756  022626                                 CMP     (SP)+,(SP)+             ;CORRECT STACK
 1572  013760  042777  000100  021262                 BIC     #B06,@TCR               ;CLR INTERRUPT ENABLE
 1573  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
 1574  014010                                         SCOPE   INTST
  (1)  014010  004567  167776                         JSR     R5,SCPRTN
  (1)  014014  013672                                 INTST
 1575  014016  005067  021212                 XJ0:    CLR     TMPRIO                  ;START WITH C.P  AT PRIORITY 0
 1576  014022  012777  014276  021210                 MOV     #INTA,@TXVEC            ;SET VECTOR FOR GOOD INTERRUPT
 1577  014030                                 XJ1:    MTPS    #P7                     ;INTERRUPT OFF
  (1)  014030  012737  000340  177776                 MOV     #P7,@#PS
 1578  014036  052777  000100  021204                 BIS     #B06,@TCR               ;ENABLE XMTR INTERRUPT
 1579  014044  052777  000200  021200                 BIS     #B07,@TSR               ;FORCE INTR WITH SUCC XFER
 1580  014052                                         MTPS    TMPRIO                  ;ALLOW INTERRUPT
  (1)  014052  016737  021156  177776                 MOV     TMPRIO,@#PS
 1581  014060  000240                                 NOP
 1582  014062  000240                                 NOP                             ;WAIT FOR IT
 1583  014064  005767  021144                         TST     TMPRIO                  ;IS PSW = 0?
 1584  014070  001014                                 BNE     XJ2
 1585  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
 1586  014114                                         SCOPE   INTST
  (1)  014114  004567  167672                         JSR     R5,SCPRTN
  (1)  014120  013672                                 INTST
 1587  014122  026767  021116  021104         XJ2     CMP     XPRIO,TMPRIO            ;HAVE WE REACHED EXPECTED PRIORITY?
 1588  014130  001414                                 BEQ     XJ3
 1589  014132                                         ERROR    N             ;ERROR DEVICE NOT JUMPERED TO EXPECTED PRIORITY
  (1)                                                                                ;******* ERROR 116 *******
  (1)  014132  032777  040000  015462                 BIT     #B14,@SR
```

```
 (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,TMPR10           ,IS PSW = 7?
1592  014170  001426                        BEQ     XJ4
1593  014172                              BDINIT  XMTR
1594  014200  062767  000040  021026        ADD     #40,TMPR10
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    TMPR10                ,SET CP TO NEXT PRIORITY
 (1)  014230  016737  021000  177776        MOV     TMPR10,@#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,TMPR10            ;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
```

```
                                        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
```

```
1658                                    SBTTL RECEIVER TESTS
1659
1660                                    ;TEST 2  RECEIVER TESTS
1661                                    ;  (00) RESET TEST
1662                                    ;  (01) RCR REG TEST
1663                                    ;  (02) RDBC REG TEST
1664                                    ;  (03) RDBA REG TEST
1665                                    ;  (04) DATA SILO TESTS
1666                                    ;  (05) RSR & ERRORS TESTS
1667                                    ;  (06) INTERRUPT TEST
1668                                    ;  (07) C.R C  TEST
1669
1670
1671            000200                  N       =       200                     ;RECEIVER ERRORS START AT 200
1672
1673  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 D!GIT
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     PSN02                   ;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     PSN02,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
```

```
                                                                H  5
  1711  015070  000207                  REPEET  RTS     PC                    ,RETURN
```

```
                                                                    1  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
```

```
  (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

015432  005077  017632        RCRTST: CLR     @RCR                    ,CLEAR RCR REGISTER
015436  012767  160375  014414  RD1     MOV     #160375,GOOD            ,SET ALL SETTABLE BITS IN RCR
015444  016777  014410  017616          MOV     GOOD,@RCR
015452  017767  017612  014376          MOV     @RCR,E  )               ,AND READ THEM BACK
015460  026767  014374  014370          CMP     GOOD,BAD                ,ALL BITS SET?
015466  001414                          BEQ     RD2
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
015512                                  SCOPE   RD1
(1)     015512  004567  166274                JSR     R5,SCPRTN
(1)     015516  015436                  RD1
015520  005067  014334        RD2     CLR     GOOD                    ,NOW CLR BITS AFTER SETTING THEM
015524  005077  017540                  CLR     @RCR
015530  017767  017534  014320          MOV     @RCR,BAD                ,READ THEM BACK
015536  042767  017412  014312          BIC     #17412,BAD              ;IGNORE R/O BITS
015544  026767  014310  014304          CMP     GOOD,BAD                ,ALL CLR?
015552  001414                          BEQ     RD3
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
015576                                  SCOPE   RD2
(1)     015576  004567  166210                JSR     R5,SCPRTN
(1)     015602  015520                  RD2
015604  012777  160375  017456  RD3     MOV     #160375,@RCR            ,SET ALL SETTABLE BITS IN RCR
015612  012777  177777  017456          MOV     #-1,@RDBC               ,AND IN RDBC
015620  012777  177777  017452          MOV     #-1,@RDBA               ,AND IN RDBA
015626  012777  037200  017436          MOV     #37200,@RSR             ;AND IN RSR
015634  052777  000002  017426          BIS     #B01,@RCR               ;B O A R D  I N I T
015642  017767  017422  014206          MOV     @RCR,BAD                ,CHECK RCR
015650  012767  000010  014202          MOV     #10,GOOD                ;SEE IF RCR = 10
015656  026767  014176  014172          CMP     GOOD,BAD
015664  001414                          BEQ     RD4
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
015710                                  SCOPE   RD3
(1)     015710  004567  166076                JSR     R5,SCPRTN
(1)     015714  015604                  RD3
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
                                                                ;******* ERROR 213 *******
 (1)
 (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     #BIT0,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     #BIT14,@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     #BIT15,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     #BIT12,@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
                                                                               ;******* ERROR 215 *******
(1)
(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
                                                                               ;******* ERROR 216 *******
(1)
(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
                                                                               ;******* ERROR 217 *******
(1)
(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
                                                                               ;******* ERROR 220 *******
(1)
(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
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 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              ,EPROR 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
```

```
                                        .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
 (1)                                                                    ;******* ERROR 230 *******
 (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
020032  032777  000100  015232                BIT     #B06,@RSR               ;IS BUSY SET?
020040  001014                                BNE     RF1
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
020064                                        SCOPE   RSRTST
(1)     020064  004567  163722                JSR     R5,SCPRTN
(1)     020070  020016                        RSRTST
020072  052777  000200  015172        RF1     BIS     #B07,@RSR               ;SET SUC XFR
020100  032777  000200  015164                BIT     #B07,@RSR               ;IS SUC XFR SET?
020106  001014                                BNE     RF2
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
020132                                        SCOPE   RF1
(1)     020132  004567  163654                JSR     R5,SCPRTN
(1)     020136  020072                        RF1
020140  032777  020000  015122        RF2     BIT     #B13,@RCR               ;IS RCV WD CLR?
020146  001414                                BEQ     RF3
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
020172                                        SCOPE   RSRTST
(1)     020172  004567  163614                JSR     R5,SCPRTN
(1)     020176  020016                        RSRTST
020200  042777  000200  015064        RF3     BIC     #B07,@RSR               ;CLR SUC XFR
020206  032777  000200  015056                BIT     #B07,@RSR               ;SEE IF IT CLR'D
020214  001414                                BEQ     RF4
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
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
```

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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
```

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 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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2122                                        ;ERROR GENERATION TESTS
2123
2124  021336                                RF20:   BDINIT  RCVR                    ;CLEAR THE BOARD
2125  021344  052777  000200  013716                BIS     #B07,@RCR               ;SET LD SILO BIT
2126  021352  012777  177777  013714                MOV     #-1,@RDDB               ;LOAD A WORD INTO SILO
2127  021360  032777  000400  013704  RF21.        BIT     #B08,@RSR               ;SILO OUTPUT RDY?
2128  021366  001774                                BEQ     RF21                    ;WAIT FOR IT
2129  021370  042777  000200  013672                BIC     #B07,@RCR               ;CLEAR LD SILO BIT
2130  021376  012777  177774  013672                MOV     #-4,@RDBC               ;SET BYTE COUNT FOR 1 WD XFER
2131  021404  012777  164176  013666                MOV     #164176,@RDBA           ;PUT NON-EXST LOC IN RDBA
2132  021412  052777  040060  013650                BIS     #40060,@RCR             ;START NPR AND SET EXT ADD BITS
2133  021420  000240                                NOP
2134  021422  000240                                NOP
2135  021424  005777  013646                       TST     @RDBC                   ;IS BYTE COUNT 0?
2136  021430  001014                                BNE     RF22
2137  021432                                        ERROR    N              ;ERROR REPLACE #764176 (ABOVE) WITH NON-EXST LOC
 (1)                                                                             ;******* ERROR 253 *******
 (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
2138  021454                                        SCOPE   RF20
 (1)  021454  004567  162332                        JSR     R5,SCPRTN
 (1)  021460  021336                                RF20
2139  021462  032777  040000  013602  RF22        BIT     #B14,@RSR               ;IS NON EXST LOC SET?
2140  021470  001014                                BNE     RF23
2141  021472                                        ERROR    N              ;ERROR NPR TO NXM DIDN'T SET NON-EXST LOC
 (1)                                                                             ;******* ERROR 254 *******
 (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
2142  021514                                        SCOPE   RF20
 (1)  021514  004567  162272                        JSR     R5,SCPRTN
 (1)  021520  021336                                RF20
2143  021522  032777  100000  013542  RF23.       BIT     #B15,@RSR               ;IS ERROR BIT SET?
2144  021530  001014                                BNE     RF24
2145  021532                                        ERROR    N              ;ERROR NON-EXST LOC DIDN'T SET RSR BIT 15
 (1)                                                                             ;******* ERROR 255 *******
 (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
2146  021554                                        SCOPE   RF20
 (1)  021554  004567  162232                        JSR     R5,SCPRTN
 (1)  021560  021336                                RF20
2147  021562                                RF24    BDINIT  RCVR                    ;CLR BOARD BEFORE LEAVING
2148  021570  004767  007432                        JSR     PC,MONIT
2149  021574  032777  010000  010020                BIT     #B12,@SR                ;IS SW 12 SET?
2150  021602  001402                                BEQ     RFRT
2151  021604  000167  176206                        JMP     RSRTST                  ;YES,REPEAT THIS TEST
2152  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?
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 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,TMPR10            ;IS PSW = 7?
 2193  022134  001426                          BEQ     RH4
 2194  022136                                  BDINIT  RCVR
 2195  022144  062767  000040  013062          ADD     #40,TMPR10
 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    TMPR10                 ;SET CP TO NEXT PRIORITY
  (1)  022174  016737  013034  177776          MOV     TMPR10,@#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,TMPR10             ;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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 2252                                           .SBTTL XMTR-RCVR LOOP TESTS
 2253
 2254                                           ;TEST 3 - XMTR - RCVR LOOP TESTS
 2255                                           ;  (00) NPR TESTS SILO TO SILO
 2256                                           ,  (01) DATA LOOPS TESTS
 2257                                           ,  (02) TXM ERRORS TESTS
 2258                                           ,  (03) REJECT & TRUNCATE TESTS
 2259
 2260          000300                           N       =       300                     ,LOOP TEST ERRORS START AT 300
 2261
 2262  022530                                   TEST3:  MTPS    #P7
  (1)  022530  012737  000340  177776                   MOV     #P7,@#PS
 2263  022536  012767  000010  012432                   MOV     #10,ITER                ;INITIAL ITERATION OF 10 PER PASS
 2264  022544  004767  006456                           JSR     PC,MONIT
 2265  022550  032777  002000  007044                   BIT     #B10,@SR                ;CHECK SW 10
 2266  022556  001424                                   BEQ     LOOPL                   ;IF CLR, RUN ALL TESTS
 2267  022560  017767  007036  012412                   MOV     @SR,SWI         ,IF SET, START AT TEST # IN SW'S <1 0>
 2268  022566  042767  177770  012404                   BIC     #-10,SWI
 2269  022574  026727  012400  000003                   CMP     SWI,#3                  ,DON'T ALLOW SWI > 3
 2270  022602  003012                                   BGT     LOOPL
 2271  022604  000241                                   CLC                             ,CLR C-BIT BEFORE ROTATE
 2272  022606  006167  012366                           ROL     SWI
 2273  022612  006167  012362                           ROL     SWI
 2274  022616  062767  022630  012354                   ADD     #LOOPL,SWI              ;GENERATE CORRECT OFFSET
 2275  022624  000177  012350                           JMP     @SWI                    ;GO TO SELECTED TEST
 2276  022630  004767  000120                   LOOPL:  JSR     PC,NPRTST               ;CHECK NPR ..SILO TO SILO
 2277  022634  004767  000710                           JSR     PC,DATLPS               ;DO DATA LOOPS TEST
 2278  022640  004767  003116                           JSR     PC,TXMERS               ;CHECK TXM ERRORS
 2279  022644  004767  005400                           JSR     PC,XRC20                ;DO REJECT AND TRUNCATE TEST
 2280  022650  032777  004000  006744                   BIT     #B11,@SR                ;CHECK SW 11
 2281  022656  001003                                   BNE     TREND                   ;PRINT END IF SET
 2282  022660  005367  012312                           DEC     ITER                    ;OTHERWISE, RE-ITERATE
 2283  022664  001361                                   BNE     LOOPL
 2284  022666  005767  012330                   TREND.  TST     $4FLAG                  ;TEST END PASS INHIBIT FLAG
 2285  022672  001027                                   BNE     REPETL                  ;CAN'T PRINT, EXIT.
 2286  022674  005267  012312                           INC     PSN03                   ;UPDATE PASS NO.
 2287  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
 2288  022710  016700  012276                           MOV     PSN03,R0
 2289  022714  004767  007534                           JSR     PC,DECPNT               ;PRINT PASS NO.
 2290  022720  012700  000040                           MOV     #40,R0
 2291  022724  004767  007714                           JSR     PC,TTO                  ;PRINT A SPACE
 2292  022730  012700  000102                           MOV     #'B,R0
 2293  022734  004767  007704                           JSR     PC,TTO                  ;PRINT "B" (TO INDICATE "LOOP TEST)
 2294  022740  005000                                   CLR     R0
 2295  022742  004767  007676                           JSR     PC,TTO                  ;PRINT NULLS TO ALLOW PRINT
 2296  022746  004767  007672                           JSR     PC,TTO                  ,OF PASS NO.  IN CASE RESET FOLLOWS
 2297  022752  000207                   REPETL: RTS     PC                              ;RETURN
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 2299                                                   SBTTL  NPR TESTS
 2300
 2301  022754                                  NPRTST   BDINIT  RCVR                    ,CLEAR RECEIVER
 2302  022762                                           BDINIT  XMTR                    ,CLEAR XMTR
 2303  022770  012777  010400  012264                   MOV     #10400,@TMMR            ,SET MASTER AND AUTO ADDR
 2304  022776  004767  000424                           JSR     PC,FILRCV               ,FILL RCVR SILO
 2305  023002  012777  177600  012266                   MOV     #-128.,@RDBC            ,SET UP RCVR TO INITIATE
 2306  023010  016777  012240  012262                   MOV     TSTB,@RDBA              ,NPR TO XMTR SILO
 2307  023016  012777  040064  012244                   MOV     #40064,@RCR             ,START NPR, INHIB ADDR INCR
 2308  023024  016702  006574                           MOV     DLCON,R2
 2309  023030  005003                           NPTST1:  CLR     R3
 2310  023032  012704  177777                           MOV     #-1,R4                  ,SET UP FOR  DELAY
 2311  023036  022777  000200  012212           XRA1:    CMP     #128.,@TSBC             ,TRANSFERRED 64 WORDS?
 2312  023044  001422                                   BEQ     XRA2                    ,NO, KEEP LOOKING FOR A SECOND
 2313  023046  005203                                   INC     R3
 2314  023050  001372                                   BNE     XRA1
 2315  023052  005204                                   INC     R4
 2316  023054  001370                                   BNE     XRA1
 2317  023056  005302                                   DEC     R2
 2318  023060  001363                                   BNE     NPTST1
 2319  023062                                           ERROR    N              ,ERROR RCVR NPR NOT COMPLETE IN TIME
  (1)                                                                            ,******* ERROR 300 *******
  (1)  023062  032777  040000  006532                   BIT     #B14,@SR
  (1)  023070  001005                                   BNE     .+14
  (1)  023072  012767  000300  006754                   MOV     #300,ERRNUM
  (1)  023100  004767  006522                           JSR     PC,ERR
  (1)          000301                           N       =       N+1
 2320  023104                                           SCOPE   NPRTST
  (1)  023104  004567  160702                           JSR     R5,SCPRTN
  (1)  023110  022754                                   NPRTST
 2321  023112  004767  000352           XRA2.    JSR     PC,CHXDAT               ;CHECK DATA IN XMTR SILO
 2322  023116  000414                           BR      XRA2A                   ;DATA O.K. , CONTINUE
 2323  023120                                           DATERR   N             ;ERROR: BAD DATA NPR'D TO XMTR SILO
  (1)                                                                            ;******* ERROR 301 *******
  (1)  023120  032777  040000  006474                   BIT     #B14,@SR
  (1)  023126  001005                                   BNE      +14
  (1)  023130  012767  000301  006716                   MOV     #301,ERRNUM
  (1)  023136  004767  006550                           JSR     PC,DERR
  (1)          000302                           N       =       N+1
 2324  023142                                           SCOPE   NPRTST
  (1)  023142  004567  160644                           JSR     R5,SCPRTN
  (1)  023146  022754                                   NPRTST
 2325  023150  005777  012122           XRA2A.   TST     @RDBC                   ,CHECK THAT RDBC = 0
 2326  023154  001421                                   BEQ     XRA3
 2327  023156  005067  006676                           CLR     GOOD
 2328  023162  017767  012110  006666                   MOV     @RDBC,BAD
 2329  023170                                           DATERR   N             ,ERROR RCV BYTE COUNT SHD BE 0 AT END OF NPR
  (1)                                                                            ,******* ERROR 302 *******
  (1)  023170  032777  040000  006424                   BIT     #B14,@SR
  (1)  023176  001005                                   BNE     .+14
  (1)  023200  012767  000302  006646                   MOV     #302,ERRNUM
  (1)  023206  004767  006500                           JSR     PC,DERR
  (1)          000303                           N       =       N+1
 2330  023212                                           SCOPE   NPRTST
  (1)  023212  004567  160574                           JSR     R5,SCPRTN
  (1)  023216  022754                                   NPRTST
```

```
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
```

```
 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
                                 DATLPS   BDINIT  XMTR                    ,CLR XMTR
                                          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                  2$      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
 (1)                                                            ,******* ERROR 305 *******
 (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
 (1)                                                            ,******* ERROR 306 *******
 (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
 (1)                                                            ,******* ERROR 307 *******
 (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
```

```
  (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
```

```
 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
  (1)                                                                            ;******* ERROR 325 *******
  (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  ).RC6   BITB    #B03,@TMMRH             ;CHECK FOR CHANNEL OPEN
 2693  026544  001020                  XRC6    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
```

```
 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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                                                                    1  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  XM1R                    ;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
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                        .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     @CONT                   ;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
```

```
 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
                                
032374  000000                  NOKEFL  WORD  0
032376  000000                  KBBUF   WORD  0
```

```
                                        SBTTL BINARY TO ASCII CONVERSION ROUTINES

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


                                ;REGILAR BIN-OCTAL UNJUSTIFIED

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
```

```
 3231                                   ;UNSIGNED CONVERT-PRINT ROUTINE (BIN - ASCII)
 3232
 3233  032536  010167  000134          NUMPNT  MOV     R1,RADIX                ;SAVE RADIX
 3234  032542  005002                          CLR     R2                      ;CLEAR TAB COUNTER
 3235  032544  005001                  DIVSET  CLR     R1                      ;CLEAR WORK REGISTER
 3236  032546  020067  000124          DIVID   CMP     R0,RADIX                ;IS NUMBER BELOW RADIX?
 3237  032552  103404                          BLO     GETDG                   ;IF YES, STORE DIGIT
 3238  032554  166700  000116                  SUB     RADIX,R0                ;ELSE, KEEP SUBTRACTING
 3239  032560  005201                          INC     R1                      ;AND KEEP COUNT
 3240  032562  000771                          BR      DIVID
 3241  032564  010046                  GETDG.  MOV     R0,-(SP)                ;STACK REMAINDER
 3242  032566  010100                          MOV     R1,R0
 3243  032570  001403                          BEQ     PNTEXT                  ;PRINT IF HIGHEST ORDER STACKED
 3244  032572  005202                          INC     R2                      ;ELSE COUNT DIGITS FOR R  JUSTIFY
 3245  032574  004767  177744                  JSR     PC,DIVSET
 3246
 3247  032600  012703  000006          PNTEXT  MOV     #6,R3                   ;GET DIGIT COUNT CONSTANT
 3248  032604  160203                          SUB     R2,R3                   ;HAVE WE PRODUCED 6 DIGITS?
 3249  032606  003413                          BLE     PNT                     ;YES, JUSTIFICATION UNNECESSARY
 3250  032610  005767  000060                  TST     RJFLG                   ;IS THE JUSTIFY FLAG SET?
 3251  032614  001410                          BEQ     PNT                     ;NO-DON'T JUSTIFY
 3252  032616  012700  000040          JUST    MOV     #40,R0                  ;YES, PRINT LEADING SPACES
 3253  032622  004767  000016                  JSR     PC,TTO
 3254  032626  005303                          DEC     R3
 3255  032630  001372                          BNE     JUST
 3256  032632  005067  000036                  CLR     RJFLG                   ;CLEAR JUSTIFY FLG WHEN DONE
 3257  032636  012600                  PNT     MOV     (SP)+,R0                ;GET REST OF DIGITS OFF STACK
 3258  032640  052700  000060                  BIS     #'0,R0                  ;MAKE THEM ASCII
 3259                                   ;TYPE OUT ROUTINE
 3260                                   ;PRINTS A CHARACTER WHICH IS IN R0
 3261                                   ;IF THE CHARACTER IS "CR.", ALSO PRINT A "LF "
 3262
 3263
 3264  032644  010077  002442          TTO     MOV     R0,@TTB                 ;PRINT CONTENTS OF R0
 3265  032650  105777  002434          TTOLP   TSTB    @TTS                    ;WAIT TILL PRINT DONE
 3266  032654  100375                          BPL     TTOLP
 3267  032656  022700  000015                  CMP     #15,R0                  ;WAS IT A <CR>?
 3268  032662  001401                          BEQ     TTOLF                   ;YES, ECHO A LF AS WELL
 3269  032664  000207                          RTS     PC                      ;NO, JUST RETURN
 3270  032666  012700  000012          TTOLF   MOV     #12,R0
 3271  032672  000764                          BR      TTO
 3272
 3273
 3274                                   ;ASSOCIATED VARIABLE STORAGE
 3275
 3276  032674  000000                  RJFLG:  .WORD   0
 3277  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
```

```
                                ;RECEIVER DATA COMPARE BUFFER
                                        EVEN
033300  000100                  CMPBUF  BLKW    64
```

```
                                        SBTTL ASCII STORAGE

033500 023046 044523 047514  SLOWD   ASCII  /&&SILO OUTPUT WORD WAS @/
033506 047440 052125 052520
033514 020124 047527 042122
033522 053440 051501 040040
033530 023046 044523 047514  SLIWD.  ASCII  /&&SILO INPUT WORD WAS @/
033536 044440 050116 052125
033544 053440 051117 020104
033552 040527 020123    100
033557    046 047105 020104  PEND:   ASCII  /&END PASS #@/
033564 040520 051523 021440
033572    100
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
033670 052046 040522 051516  TXSTAT  .ASCII  /&TRANSMITTER STATUS REG = @/
033676 044515 052124 051105
033704 051440 040524 052524
033712 020123 042522 020107
033720 020075    100
033723    046 042522 042503  RCSTAT.  ASCII  /&RECEIVER STATUS REG = @/
033730 053111 051105 051440
033736 040524 052524 020123
033744 042522 020107 020075
033752    100
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
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
034041    046 041520 030514  RCHDR    ASCII  /&PCL11 RECEIVER TEST&   @/
034046 020061 042522 042503
034054 053111 051105 052040
034062 051505 023124 020040
034070 040040
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    CZPLBAO    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
```

```
  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
```

		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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KBS     035304  2969   2984   3168   3511#
LDLP    023444  2362#  2366
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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#
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                2427#  2434#  2454#  2458#  2465#  2476#  2503#  2512#  2526#  2549#  2569#  2585#  2594#
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                2813#  2849#  2853#  2888#  2892#  2896#  2900#  2908#  2938#  2942#  2946#  2950#
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
                          2305*   2325    2328    2390*   2440*   2484*   2733*   2873*   2921*   3508#
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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#											
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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								

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										
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RH2	022066	2185	2188#										
RH3	022126	2189	2192#	2202	2219								
RH3S	022152	2196#	2218										
RH4	022212	2193	2203#										
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RINTST	021612	1691	2158#	2171	2187	2191	2207						
RJFLG	032674	3190*	3197*	3204*	3211*	3218*	3250	3256*	3276#				
RJRT	022520	2247	2249#										
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#						
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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
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		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	2084
		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
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SILCRC	033100	1635	2227	3356#										
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SILTST	010164	767	1231#	1237	1241	1358								
SLIWD	033530	2236	3434#											

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                1131  1135  1139  1150  1158  1162  1170  1177  1191  1198  1209  1216  1222
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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
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                2526  2549  2569  2585  2594  2602  2633  2663  2670  2674  2698  2702  2717
                2721  2761  2767  2771  2775  2809  2813  2849  2853  2856  2888  2892  2896
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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
                2267*  2268*  2269  2272*  2273*  2274*  2275  3473#
SWREG   031620   424   3032#
SWRFLG  035172   568*   689   789   797*  1070  3470#
SWRMSG  031534  2976  3023#
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                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*
                1402  1405*  1420*  1422  1431*  1441  1445*  1494*  1497*  1512*  1523*  1524*  1538*
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                2826*  2828*  2868*  2874*  2876*  2890  2903*  2918*  2924*  2926*  3497#
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#
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ABS 035330 000

ERRORS DETECTED 0

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RUN-TIME RATIO 387/22=17 4
CORE USED 12K (23 PAGES)