RH11,RH70

MASSBUS I/O & CONTROLLER

CZRHBD0

AH-9178D-MC

FICHE 1 OF 1

DEC 1978

digital

MADE IN USA

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IDENTIFICATION

PRODUCT CODE:	AC-9176D-MC
PRODUCT NAME:	CZRHBD0 MASSBUS I/O AND CONTROLLER DIAGNOSTIC
DATE CREATED:	1-MAY-78
MAINTAINER:	DIAGNOSTIC GROUP
AUTHOR	
REVISED BY:	BILL SCHLITZKUS

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1.0 ABSTRACT

THIS PROGRAM WAS CREATED TO TEST RH11 AND RH70 MASSBUS CONTROLLERS WITH AN RH11-TB (MASSBUS SIMULATOR) ATTACHED TO IT.

TO GET MAXIMUM RESULTS FROM THE TEST ALLOW PASS1 TO BE COMPLETED SO THAT ALL INFORMATION POSSIBLE HAS BEEN REPORTED ABOUT ANY ERROR, THEN LOOP ON DESIRED ERRORS.

IN THE EVENT OF AN ERROR,INORDER TO GIVE COMPLETE INFORMATION ALL ERROR BITS ARE CHECKED TO SEE THAT NO OTHER ERROR OCCURED. IF AN ERROR OCCURED IT WILL BE REPORTED BY 'WHYFO'' AND 'WWATBIT''
WHYFO TELLS WHAT REGISTER THE ERROR BIT WAS FOUND IN AND WATBIT TELLS WHAT THE NUMBER OF THE ERROR BITS WHERE.

EXAMPLE:

RHCS1 HAS AN ERROR BIT SET

THESE ARE THE NUMBER OF THE EXTRA BITS
15 14

RHCS2 HAS AN ERROR BIT SET

THESE ARE THE NUMBER OF THE EXTRA BITS
15

END EXAMPLE

THIS PRINTOUT SAYS THAT TRE AND SC IS SET IN RHCS1 AND THAT DATA LATE WAS SET IN RHCS2.

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                        THIS IS DONE TO GIVE ONLY VALID DATA(ERROR)
                        NOT A COMBINATION OF GOOD AND BAD DATA.
                2.0     REQUIREMENTS

                2.1     HARDWARE

                        THIS PROGRAM ASSUMES THE FOLLOWING IS IN PROPER WORKING
                        CONDITION:

                        1.  CPU
                        2.  16K OF CORE MEMORY
                        3.  RH11-TB MASSBUS SUMULATOR

                2.2     SOFTWARE

                        USING STARTING ADDRESS 200 ASSUMES A BASE ADDRESS OF
                        160100 AND A VECTOR OF 774.  THE PROGRAM WILL CHECK FOR
                        ADDITIONAL RH'S AT ADDRESSES 160200, 160300, AND 160400
                        RESPECTIVELY.  IF ANY OF THESE EXIST, THE PROGRAM
                        WILL DO MULTIPLE RH TESTING.  MULTIPLE RH TESTING (SEE
                        TEST 77) IS NOT POSSIBLE AT ADDRESSES OTHER THAN THE
                        FOUR ADDRESSES AT 160100 THRU 160400.

                        IF NO CHANGES IN ADDRESS ARE MADE AN ALTERNATE STARTING
                        ADDRESS OF 204 CAN BE USED BUT THE PROGRAM MUST HAVE BEEN
                        STARTED AT LEAST ONCE AT ADDRESS 200 OR 210.
                        STARTING ADDRESS 210 ALOWS YOU TO SPECIFY THE BASE
                        ADDRESS,VECTOR ADDRESS, AND HOW MANY REGISTERS YOU
                        ARE JUMPERED FOR.  THE NUMBER OF REGISTERS JUMPERED
                        REFERS TO THE NUMBER OF DEVICE REGISTERS (OCTAL)
                        BEGINNING WITH RHCS1 UP TO BUT NOT INCLUDING RHBAE.
                        ONLY ONE RH AT A TIME CAN BE TESTED USING STARTING
                        ADDRESS 210.


                3.0     PROGRAM DESCRIPTION

                        THIS PROGRAM WAS ASSEMBLED WITH MACY11 USING PDP-11 MAINDEC
                        SYSMAC PACKAGE (DZQAC-3).

                        IN TESTING ONE CONTROLLER, THE FIRST PASS TAKES ABOUT
                        5 SECONDS AND SUBSEQUENT PASSES TAKE ABOUT 10 MINUTES
                        IF ITERATIONS ARE NOT INHIBITED.

                3.1     SWITCH OPTIONS

                        SWITCH              USE
                        ------              ---

                          15            HALT ON ERROR
                          14            LOOP ON TEST
                          13            INHIBIT ERROR TYPEOUTS
                          11            INHIBIT ITERATIONS
                          10            BELL ON ERROR
                           9            LOOP ON ERROR
```

```
                        8           LOOP ON TEST IN SWR<7:0>
                        1           TO BE USED IF DUAL PORT  USED
                        0           INHIBITS THE PRINTING OF WATBIT
***** ***************************************************************
        13,8,AND 0      INHIBIT WATBIT PRINTOUT
*************************************************************************

3.2     SYSMAC ROUTINES (USED)

        EQUATE, CATCH, COMMON TAGS, SWRHI, SWRLO, SETUP SCOPE,
        TYPE, TRAP, READ, ERROR, TYPE OCTAL, TYPE DECIMAL, POWER,
        EOP, KT11, HEADER, ERROR TYPE, READ OCTAL, ACT11 HOOKS.

        THESE ARE THE SYSMAC ROUTINES INCORPORATED IN THIS PRO-
        GRAM.

4.0     TEST DESCRIPTIONS

        TEST 1 - THIS IS THE RH ADDRESS DECODE TEST.  THIS PROGRAM
                 WILL CHECK THAT AN RH IS ON THE BUS AND THAT A TESTER
                 IS CONNECTED TO IT. IF NO RH IS FOUND THE OPERATOR
                 WILL BE ALLOWED TO KEY IN THE ADDRESS FOR THE RH HE
                 HAS CONNECTED TO THE BUS.

        TEST 2 - CLEAR TEST.  THIS TEST CHECKS THAT ALL ERROR BITS
                 ARE CLEARED AFTER THE CLEAR BIT WAS LOADED INTO
                 RHCS2 REGISTER.  THIS TEST IS ALSO ENTERED AT THE
                 LABLE CLEER AT THE END OF ALL THE ERROR BIT TESTS
                 TO SEE THAT A CLEAR WILL CLEAR THE ERROR BIT SET.
                 THE TEST IS ENTERED HERE IF THE ERROR BIT BEING
                 FORCED SET DID NOT SET TO SEE IF ANY OTHER ERROR
                 BIT DID SET.

        TEST 3 - THIS TEST SEES IF THE TESTER IS CONNECTED.  THIS
                 TEST SEES IF THE DEVICE CODE IS A 40 TO SAY AN
                 RH SIMULATOR IS ATTACHED.

        TEST 4 - WC CLEAR TEST.  THIS TEST WILL SEE THAT WHEN A
                 CLEAR IS GIVEN THE WORD COUNT REGISTER REMAINS THE
                 SAME.

        TEST 5 - RHBA CLEAR TEST.  THIS TEST SEES THAT WHEN A CLEAR
                 IS GENERATED THE BUS ADDRESS REGISTER IS CLEARED.

        TEST 6 - RHBAE CLEAR TEST.  THIS TEST CHECKS THAT WHEN A
                 CLEAR IS GENERATED THE BUS ADDRESS EXTENSION REG-
                 ISTER IS CLEARED.

        TEST 7 - RHDB CLEAR TEST.  THIS TEST CHECKS THAT WHEN A
                 CLEAR IS GENERATED OUTPUT READY IS NEGATED.

        TEST 10 - PROM REGISTER DECODE TEST.  THIS TEST CHECKS
                  THAT THE PROM CAN ACCESS ALL REGISTERS.

        TEST 11 - RHCS3 TEST.  THIS TEST CHECKS THE READ/WRITE BITS
                  IN THE RHCS3 REGISTER CAN BE CLEARED AND SET.
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                TEST 12 - RHWC BIT TEST.  THIS TEST CHECKS THE WORD COUNT
                          REGISTER TO SEE IF ALL BITS CAN BE SET AND CLEARED
                          AND CHECKS THE REGISTER USING ALTERNATE BITS SET
                          (52525) AND USING (125252) TO MAKE SURE IT WORKS
                          WITH ALTERNATE PATTERN.

                TEST 13 - RHBAE BIT TEST.  THIS TEST TESTS THE RHBAE REG-
                          ISTER ONLY IF THE RH IS AN RH70.  RH11'S DO NOT
                          HAVE AN RHBAE REGISTER.

                TEST 14 - RHBA BIT TEST.  THIS TEST TESTS THE BUS ADDRESS
                          REGISTER BY FIRST ALTERNATLY SETTING AND CLEARING
                          BITS IN THE BA REGISTER AND THEN BY USING AN
                          ALTERNATE BIT PATTERN (52525) AND AN OPPOSITE
                          BIT PATTERN (125252).

                TEST 15 - RHDB BIT TEST.  THIS TEST TESTS THE RH DATA BUF-
                          FER REGISTER BY FIRST ALTERNATLY SETTING AND RE-
                          SETTING BITS IN THE RHDB REGISTER AND THEN BY USING
                          AN ALTERNATE BIT PATTERN (52525) AND AN OPPOSITE
                          ALTERNATE BIT PATTERN (125252).

                TEST 16 - RHWC OPERATIONAL TEST.  THIS TEST CHECKS THAT
                          WHEN THE WORD COUNT REGISTER IS INCREMENTED IT IS
                          CARRIED TO THE HIGHEST BIT AND IS RETURNED TO ZERO.

                TEST 17 - RHBA OPERATIONAL TEST.  THIS TEST CHECKS THAT
                          THE BUS ADDRESS REGISTER WILL CARRY THROUGH TO
                          THE HIGHEST BIT IN THE BUS ADDRESS EXTENSION REG-
                          ISTER OR BIT A17 IN THE RHCS1 REGISTER AFTER IT IS
                          INCREMENTED.

                TEST 20 - NEM, TRE, SC BIT TEST.  THIS TEST WILL CHECK
                          THAT NON-EXISTING MEMORY WILL SET THE TRE AND SC
                          BIT IN RHCS1 REGISTER.

                TEST 21 - WCE, TRE, SC BIT TEST.  THIS TEST WILL CHECK
                          THAT TRE AND SC SET WHEN A WRITE CHECK ERROR OCCURS
                          (WCE).

                TEST 22 - MDPE, TRE AND SC BIT TEST.  THIS TEST CHECKS
                          THAT MDPE CAN BE SET IN RHCS2, AND THAT MDPF SETS
                          TRE AND SC IN THE RHCS1 REGISTER.

                TEST 23 - UPE, TRE, SC ERROR TEST (RH11).  THIS TEST CHECKS
                          THE UPE BIT IN RHCS2 TO SEE IF IT SETS AND WHEN IT
                          IT SETS IS TRE AND SC BITS SET IN RHCS1.

                TEST 24 - UPE, TRE, SC ERROR TEST (RH70).  THIS TEST CHECKS
                          THE UPE BIT IN RHCS2 TO SEE IF IT SETS AND WHEN
                          IT SETS IS TRE AND SC BITS SET IN RHCS1.

                TEST 25 - NED BIT TEST.  THIS TEST WILL CHECK THAT NED
                          (NON-EXISTANT DRIVE) SETS TRE AND SC BITS IN RHCS1.
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                        TEST 26 - MXF, TRE AND SC BIT TEST.  THIS TEST WILL CHECK
                                  THAT MXF (MISSED TRANSFER ERROR) WILL SET TRE AND
                                  SC BITS.

                        TEST 27 - PGE ERROR BIT TEST.  THIS TEST FORCES PGE TO
                                  SET IN RHCS2 AND VERIFYS TRE AND SC IS SET IN
                                  RHCS1.

                        TEST 30 - MXF, TRE AND SC BIT TEST (RH11 ONLY).  THIS TEST
                                  SEES IF MXF CAN BE SET BY A MOVE INSTRUCTION AND
                                  THAT TRE AND SC ARE SET IN RHCS1.  MXF CAN BE SET
                                  THIS WAY IN AN RH11 BIT CAN NOT BE SET THIS WAY
                                  IN AN RH70.

                        TEST 31 - MCPE AND SC ERROR TEST.  THIS TEST CHECKS THAT
                                  MCPE CAN BE SET IN RHCS1 AND THAT MCPE SETS SC
                                  IN RHCS1.

                        TEST 32-52 - DOUBLE TESTS.  THESE TESTS
                                  CHECK DBL IN RHCS3 WITH READ FWD AND REV, WRITE
                                  FWD AND REV AND WITH BAI SET IN RHCS2. OPERATION
                                  BEING PERFORMED WILL BE PRINTED OUT IN ERROR
                                  MESSAGE.      RH70 ONLY.

                        TEST 53 - WCE EW ERROR TEST.  THIS TEST CHECKS THAT WCELO
                                  WILL SET IN RHCS3 AND THAT WCE SETS IN RHCS1.  IT
                                  ALSO CHECKS THAT WCEHI DOES NOT SET WITH WCELO
                                  IN RHCS3.....RH70 ONLY.

                        TEST 54 - WCE OW ERROR TEST (WCEHI).  THIS TEST CHECKS THAT
                                  WCEHI SETS IN RHCS3 AND THAT WCE SETS IN RHCS1, IT
                                  ALSO TESTS THAT WCELO DOES NOT SET WITH WCEHI.
                                  (RH70 ONLY)

                        TEST 55 - INTERRUPT ENABLE TEST.  THIS TEST VERIFYS THAT
                                  IE WILL SET IN RHCS1 AND IT WILL CAUSE AN INTERRUPT
                                  WHEN RDY IS SET.

                        TEST 56-75 - READ AND WRITE OPERATIONAL TESTS.  THESE TESTS
                                  VERIFY ALL READ AND WRITE CODES WHETHER IT BE A
                                  READ REV. OR FWD OR A WRITE REV. OR FWD.  DURING
                                  THESE TESTS THE TESTER TIMING IS MARGINED AND
                                  NO ERRORS SHOULD OCCUR.

                        TEST 76 - THIS IS THE LARGE TRANSFER TEST , IT TESTS
                                  THE RH 70 OR 11 DOING A 671 WORD TRANSFER FOR
                                  ERRORS .

                        TEST 77 - THIS IS NOT A TEST BUT IS THE ROUTINE THAT
                                  ALLOWS THE DIAGNOSTIC TO TEST 4 RH'S IF PRESENT.


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                    .TITLE  MASSBUS RH70 AND RH11 DIAGNOSTIC
                    ;*COPYRIGHT (C) 1976
                    ;*DIGITAL EQUIPMENT CORP.
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                        ;*MAYNARD, MASS. 01754
                        ;*
                        ;*PROGRAM BY WN D'ENTREMONT
                        ;*
                        ;*THIS PROGRAM WAS ASSEMBLED USING THE PDP-11 MAINDEC SYSMAC
                        ;*PACKAGE (MAINDEC-11-DZQAC-C3), JAN 19, 1977.
                        ;*
                        .SBTTL  OPERATIONAL SWITCH SETTINGS
                        ;*
                        ;*      SWITCH                  USE
                        ;*      ------          --------------------
                        ;*        15            HALT ON ERROR
                        ;*        14            LOOP ON TEST
                        ;*        13            INHIBIT ERROR TYPEOUTS
                        ;*        11            INHIBIT ITERATIONS
                        ;*        10            BELL ON ERROR
                        ;*         9            LOOP ON ERROR
                        ;*         8            LOOP ON TEST IN SWR<7:0>
                        .SBTTL  BASIC DEFINITIONS

                        ;*INITIAL ADDRESS OF THE STACK POINTER *** 750 ***
000750                  STACK=  750
                        .EQUIV  EMT,ERROR       ;;BASIC DEFINITION OF ERROR CALL
                        .EQUIV  IOT,SCOPE       ;;BASIC DEFINITION OF SCOPE CALL

                        ;*MISCELLANEOUS DEFINITIONS
000011                  HT=     11              ;;CODE FOR HORIZONTAL TAB
000012                  LF=     12              ;;CODE FOR LINE FEED
000015                  CR=     15              ;;CODE FOR CARRIAGE RETURN
000200                  CRLF=   200             ;;CODE FOR CARRIAGE RETURN-LINE FEED
177776                  PS=     177776          ;;PROCESSOR STATUS WORD
                        .EQUIV  PS,PSW
177774                  STKLMT= 177774          ;;STACK LIMIT REGISTER
177772                  PIRQ=   177772          ;;PROGRAM INTERRUPT REQUEST REGISTER
177570                  DSWR=   177570          ;;HARDWARE SWITCH REGISTER
177570                  DDISP=  177570          ;;HARDWARE DISPLAY REGISTER

                        ;*GENERAL PURPOSE REGISTER DEFINITIONS
000000                  R0=     %0              ;;GENERAL REGISTER
000001                  R1=     %1              ;;GENERAL REGISTER
000002                  R2=     %2              ;;GENERAL REGISTER
000003                  R3=     %3              ;;GENERAL REGISTER
000004                  R4=     %4              ;;GENERAL REGISTER
000005                  R5=     %5              ;;GENERAL REGISTER
000006                  R6=     %6              ;;GENERAL REGISTER
000007                  R7=     %7              ;;GENERAL REGISTER
000006                  SP=     %6              ;;STACK POINTER
000007                  PC=     %7              ;;PROGRAM COUNTER

                        ;*PRIORITY LEVEL DEFINITIONS
000000                  PR0=    0               ;;PRIORITY LEVEL 0
000040                  PR1=    40              ;;PRIORITY LEVEL 1
000100                  PR2=    100             ;;PRIORITY LEVEL 2
000140                  PR3=    140             ;;PRIORITY LEVEL 3
000200                  PR4=    200             ;;PRIORITY LEVEL 4
000240                  PR5=    240             ;;PRIORITY LEVEL 5
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                                PR6=    300             ;;PRIORITY LEVEL 6
                                PR7=    340             ;;PRIORITY LEVEL 7

                                ;*''SWITCH REGISTER'' SWITCH DEFINITIONS
                                SW15=   100000
                                SW14=   40000
                                SW13=   20000
                                SW12=   10000
                                SW11=   4000
                                SW10=   2000
                                SW09=   1000
                                SW08=   400
                                SW07=   200
                                SW06=   100
                                SW05=   40
                                SW04=   20
                                SW03=   10
                                SW02=   4
                                SW01=   2
                                SW00=   1
                                .EQUIV  SW09,SW9
                                .EQUIV  SW08,SW8
                                .EQUIV  SW07,SW7
                                .EQUIV  SW06,SW6
                                .EQUIV  SW05,SW5
                                .EQUIV  SW04,SW4
                                .EQUIV  SW03,SW3
                                .EQUIV  SW02,SW2
                                .EQUIV  SW01,SW1
                                .EQUIV  SW00,SW0

                                ;*DATA BIT DEFINITIONS (BIT00 TO BIT15)
                                BIT15=  100000
                                BIT14=  40000
                                BIT13=  20000
                                BIT12=  10000
                                BIT11=  4000
                                BIT10=  2000
                                BIT09=  1000
                                BIT08=  400
                                BIT07=  200
                                BIT06=  100
                                BIT05=  40
                                BIT04=  20
                                BIT03=  10
                                BIT02=  4
                                BIT01=  2
                                BIT00=  1
                                .EQUIV  BIT09,BIT9
                                .EQUIV  BIT08,BIT8
                                .EQUIV  BIT07,BIT7
                                .EQUIV  BIT06,BIT6
                                .EQUIV  BIT05,BIT5
                                .EQUIV  BIT04,BIT4
                                .EQUIV  BIT03,BIT3
                                .EQUIV  BIT02,BIT2
```

```
                                .EQUIV  BIT01,BIT1
                                .EQUIV  BIT00,BIT0

                                ;*BASIC ''CPU'' TRAP VECTOR ADDRESSES
000004                          ERRVEC= 4               ;;TIME OUT AND OTHER ERRORS
000010                          RESVEC= 10              ;;RESERVED AND ILLEGAL INSTRUCTIONS
000014                          TBITVEC=14              ;;''T'' BIT
000014                          TRTVEC= 14              ;;TRACE TRAP
C00C14                          BPTVEC= 14              ;;BREAKPOINT TRAP (BPT)
0000c0                          IOTVEC= 20              ;;INPUT/OUTPUT TRAP (IOT) **SCOPE**
000024                          PWRVEC= 24              ;;POWER FAIL
000030                          EMTVEC= 30              ;;EMULATOR TRAP (EMT) **ERROR**
000034                          TRAPVEC=34              ;;''TRAP'' TRAP
000060                          TKVEC=  60              ;;TTY KEYBOARD VECTOR
000064                          TPVEC=  64              ;;TTY PRINTER VECTOR
000240                          PIRQVEC=240             ;;PROGRAM INTERRUPT REQUEST VECTOR
                                .SBTTL  TRAP CATCHER

000000                                  .=0
                                ;*ALL UNUSED LOCATIONS FROM 4 - 776 CONTAIN A ''.+2,HALT''
                                ;*SEQUENCE TO CATCH ILLEGAL TRAPS AND INTERRUPTS
                                ;*LOCATION 0 CONTAINS 0 TO CATCH IMPROPERLY LOADED VECTORS
000174                                  .=174
000174  000000        DISPREG:  .WORD  0              ;;SOFTWARE DISPLAY REGISTER
000176  000000        SWREG:    .WORD  0              ;;SOFTWARE SWITCH REGISTER
                                .SBTTL  STARTING ADDRESS(ES)
000200  000137  004176                JMP     @#BEGIN1        ;;JUMP TO STARTING ADDRESS OF PROGRAM
000204                                  .=204
000204  000137  004144                JMP     @#BEGIN
000210                                  .=210
000210  000137  004152                JMP     @#BEGIN3
                                ;;*****************************************************************
                                .SBTTL  MEMORY MANAGEMENT DEFINITIONS

                                ;*KT11 VECTOR ADDRESS

000250                          MMVEC=  250

                                ;*KT11 STATUS REGISTER ADDRESSES

177572                          SR0=    177572
177574                          SR1=    177574
177576                          SR2=    177576
172516                          SR3=    172516

                                ;*KERNEL ''I'' PAGE DESCRIPTOR REGISTERS

172300                          KIPDR0= 172300
172302                          KIPDR1= 172302
172304                          KIPDR2= 172304
172306                          KIPDR3= 172306
172310                          KIPDR4= 172310
172312                          KIPDR5= 172312
172314                          KIPDR6= 172314
172316                          KIPDR7= 172316
```

```
                                ;*KERNEL "I" PAGE ADDRESS REGISTERS

                    172340      KIPAR0= 172340
                    172342      KIPAR1= 172342
                    172344      KIPAR2= 172344
                    172346      KIPAR3= 172346
                    172350      KIPAR4= 172350
                    172352      KIPAR5= 172352
                    172354      KIPAR6= 172354
                    172356      KIPAR7= 172356

                                ;;*****************************************************************
                                .SBTTL  ACT11 HOOKS

                                ;;*****************************************************************
                                ;HOOKS REQUIRED BY ACT11
                    000214              $SVPC=.                 ;SAVE PC
                    000046              .=46
000046              046334              $ENDAD                  ;;1)SET LOC.46 TO ADDRESS OF $ENDAD IN .$EOP
                    000052              .=52
000052              000000              .WORD   0               ;;2)SET LOC.52 TO ZERO
                    000214              .=$SVPC                 ;; RESTORE PC
```

```
                        .SBTTL  COMMON TAGS

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

                001100          .=1100
001100                  $CMTAG:                         ;;START OF COMMON TAGS
001100  000000          $PASS:  .WORD   0               ;;CONTAINS PASS COUNT
001102     000          $TSTNM: .BYTE   0               ;;CONTAINS THE TEST NUMBER
001103     000          $ERFLG: .BYTE   0               ;;CONTAINS ERROR FLAG
001104  000000          $ICNT:  .WORD   0               ;;CONTAINS SUBTEST ITERATION COUNT
001106  000000          $LPADR: .WORD   0               ;;CONTAINS SCOPE LOOP ADDRESS
001110  000000          $LPERR: .WORD   0               ;;CONTAINS SCOPE RETURN FOR ERRORS
001112  000000          $ERTTL: .WORD   0               ;;CONTAINS TOTAL ERRORS DETECTED
001114     000          $ITEMB: .BYTE   0               ;;CONTAINS ITEM CONTROL BYTE
001115     001          $ERMAX: .BYTE   1               ;;CONTAINS MAX. ERRORS PER TEST
001116  000000          $ERRPC: .WORD   0               ;;CONTAINS PC OF LAST ERROR INSTRUCTION
001120  000000          $GDADR: .WORD   0               ;;CONTAINS ADDRESS OF 'GOOD' DATA
001122  000000          $BDADR: .WORD   0               ;;CONTAINS ADDRESS OF 'BAD' DATA
001124  000000          $GDDAT: .WORD   0               ;;CONTAINS 'GOOD' DATA
001126  000000          $BDDAT: .WORD   0               ;;CONTAINS 'BAD' DATA
001130  000000                  .WORD   0               ;;RESERVED--NOT TO BE USED
001132  000000                  .WORD   0
001134     000          $AUTOB: .BYTE   0               ;;AUTOMATIC MODE INDICATOR
001135     000          $INTAG: .BYTE   0               ;;INTERRUPT MODE INDICATOR
001136  000000                  .WORD   0
001140  177570          SWR:    .WORD   DSWR            ;;ADDRESS OF SWITCH REGISTER
001142  177570          DISPLAY: .WORD  DDISP           ;;ADDRESS OF DISPLAY REGISTER
001144  177560          $TKS:   177560                  ;;TTY KBD STATUS
001146  177562          $TKB:   177562                  ;;TTY KBD BUFFER
001150  177564          $TPS:   177564                  ;;TTY PRINTER STATUS REG. ADDRESS
001152  177566          $TPB:   177566                  ;;TTY PRINTER BUFFER REG. ADDRESS
001154     000          $NULL:  .BYTE   0               ;;CONTAINS NULL CHARACTER FOR FILLS
001155     002          $FILLS: .BYTE   2               ;;CONTAINS # OF FILLER CHARACTERS REQUIRED
001156     012          $FILLC: .BYTE   12              ;;INSERT FILL CHARS. AFTER A 'LINE FEED''
001157     000          $TPFLG: .BYTE   0               ;;'TERMINAL AVAILABLE'' FLAG (BIT<07>=0=YES)
001160  000000          $REGAD: .WORD   0               ;;CONTAINS THE ADDRESS FROM
                                                        ;;WHICH  ($REG0) WAS OBTAINED
001162  000000          $REG0:  .WORD   0               ;;CONTAINS (($REGAD)+0)
001164  000000          $REG1:  .WORD   0               ;;CONTAINS (($REGAD)+2)
001166  000000          $REG2:  .WORD   0               ;;CONTAINS (($REGAD)+4)
001170  000000          $REG3:  .WORD   0               ;;CONTAINS (($REGAD)+6)
001172  000000          $REG4:  .WORD   0               ;;CONTAINS (($REGAD)+10)
001174  000000          $REG5:  .WORD   0               ;;CONTAINS (($REGAD)+12)
001176  000000          $TMP0:  .WORD   0               ;;USER DEFINED
001200  000000          $TMP1:  .WORD   0               ;;USER DEFINED
001202  000000          $TMP2:  .WORD   0               ;;USER DEFINED
001204  000000          $TMP3:  .WORD   0               ;;USER DEFINED
001206  000000          $TMP4:  .WORD   0               ;;USER DEFINED
001210  000000          $TMP5:  .WORD   0               ;;USER DEFINED
001212  000000          $TIMES: 0                       ;;MAX. NUMBER OF ITERATIONS
001214  000000          $ESCAPE:0                       ;;ESCAPE ON ERROR ADDRESS
001216  177607  000377    $BELL:  .ASCIZ  <207><377><377> ;;CODE FOR BELL
001222     077          $QUES:  .ASCII  /?/             ;;QUESTION MARK
001223     015          $CRLF:  .ASCII  <15>            ;;CARRIAGE RETURN
```

```
   573  001224  000012                $LF:    .ASCIZ  <12>            ;;LINE FEED
   574                                ;;********************* ********************************************
```

```
                        .SBTTL  ERROR POINTER TABLE

                        ;*THIS TABLE CONTAINS THE INFORMATION FOR EACH ERROR THAT CAN OCCUR.
                        ;*THE INFORMATION IS OBTAINED BY USING THE INDEX NUMBER FOUND IN
                        ;*LOCATION $ITEMB. THIS NUMBER INDICATES WHICH ITEM IN THE TABLE IS PERTINENT.
                        ;*NOTE1:        IF $ITEMB IS 0 THE ONLY PERTINENT DATA IS ($ERRPC).
                        ;*NOTE2:        EACH ITEM IN THE TABLE CONTAINS 4 POINTERS EXPLAINED AS FOLLOWS:

                        ;*      EM              ;;POINTS TO THE ERROR MESSAGE
                        ;*      DH              ;;POINTS TO THE DATA HEADER
                        ;*      DT              ;;POINTS TO THE DATA
                        ;*      DF              ;;POINTS TO THE DATA FORMAT


001226                  $ERRTB:

                        ;ITEM 1
001226  055032                  EM1                             ;CORRECT BIT DID NOT SET
                                                                ;IN RH WORD COUNT REGISTER
001230  067574                  DH1
001232  071742                  DT1
001234  072306                  DF1
                        ;ITEM 2
001236  055072                  EM2                             ;CORRECT BIT DID NOT SET
                                                                ;IN BUS ADDRESS EXTENTION
                                                                ;REGISTER
001240  067714                  DH2
001242  071754                  DT2
001244  072312                  DF2
                        ;ITEM 3
001246  055132                  EM3                             ;CORRECT BIT DID NOT SET
                                                                ;IN BUS ADDRESS REGISTER
001250  070035                  DH3
001252  071766                  DT3
001254  072316                  DF3
                        ;ITEM 4
001256  055206                  EM4                             ;CORRECT BIT DID NOT SET
                                                                ;IN RHDB REGISTER
001260  070155                  DH4
001262  072000                  DT4
001264  072322                  DF4
                        ;ITEM   5
001266  055246                  EM5                             ;NED DID NOT SET IN
                                                                ;RHCS2 REGISTER
001270  070275                  DH5
001272  072012                  DT5
001274  072326                  DF5
                        ;ITEM 6
001276  055317                  EM6                             ;NEM LOGIC TO SET TRE
                                                                ;AND SC BITS IN RHCS1
                                                                ;IS NOT WORKING
001300  070275                  DH5
001302  072012                  DT5
001304  072326                  DF5
                        ;ITEM 7
001306  055533                  EM7                             ;NEM BIT DOES NOT READ AS SET
```

```
  631  001310  070275                    DH5
  632  001312  072012                    DT5
  633  001314  072326                    DF5
  634                          ;ITEM 10
  635  001316  055601                    EM10                ;TRE BIT SET BUT NEM
  636                                                         ;AND SC ARE NOT?
  637  001320  070275                    DH5
  638  001322  072012                    DT5
  639  001324  072326                    DF5
  640                          ;ITEM   11
  641  001326  055635                    EM11          ;SC BIT SET BY ATTN OR MCPE
  642                                                 ;ERROR OR SC IS SHORTED
  643                                                 ;SHOULD HAVE BEEN SET BY NEM AND TRE
  644  001330  070402                    DH11
  645  001332  072024                    DT11
  646  001334  072332                    DF11
  647                          ;ITEM   12
  648  001336  055676                    EM12          ;TRE BIT SET BY NEM BUT SC
  649                                                 ;DID NOT SET, LOGIC BETWEEN
  650                                                 ;TRE AND SC NOT WORKING
  651  001340  070275                    DH5
  652  001342  072012                    DT5
  653  001344  072326                    DF5
  654
  655                          ;ITEM   13
  656  001346  055716                    EM13          ;TRE BIT IS SET BUT SC
  657                                                 ;READS AS CLEARED. SC
  658                                                 ;LOGIC ASSOCIATED WITH TRE
  659                                                 ;BIT IS NOT WORKING OR SC
  660                                                 ;HAS AN OPEN GOING TO THE BUS
  661  001350  070275                    DH5
  662  001352  072012                    DT5
  663  001354  072326                    DF5
  664
  665                          ;ITEM   14
  666  001356  055765                    EM14          ;WCE BIT DID NOT SET, BIT 14 IN
  667                                                 ;RHCS2
  668
  669  001360  070275                    DH5
  670  001362  072012                    DT5
  671  001364  072326                    DF5
  672
  673                          ;ITEM   15
  674  001366  056011                    EM15          ;WCE BIT DID NOT SET BUT
  675                                                 ;TRE AND SC IN RHCS1 ARE
  676                                                 ;SET.
  677
  678  001370  070275                    DH5
  679  001372  072012                    DT5
  680  001374  072326                    DF5
  681
  682                          ;ITEM   16
  683  001376  056035                    EM16          ;WCE AND SC ERROR BITS ARE
  684                                                 ;SET TRE ERROR BIT SHOULD ALSO
  685                                                 ;BE SET BUT IT READS AS CLEARED
  686                                                 ;THERE MIGHT BE AN OPEN BETWEEN
```

```
                                                        ;TRE AND THE BUS

001400  070275                      DH5
001402  072012                      DT5
001404  072326                      DF5
                            ;ITEM   17
001406  056055                      EM17                ;WCE AND TRE ARE SET BUT
                                                        ;SC BIT READS AS CLEARED
                                                        ;LOGIC BETWEEN TRE AND SC
                                                        ;DOES NOT SEEM TO BE WORKING
                                                        ;BUT IT WORKED OK ON THE
                                                        ;NON-EXISTENT MEMORY TEST
                                                        ;WHICH PRECEDED THIS TEST

001410  070275                      DH5
001412  072012                      DT5
001414  072326                      DF5

                            ;ITEM   20
001416  056124                      EM20                ;UPE DID NOT SET IN RHCS2

001420  070275                      DH5
001422  072012                      DT5
001424  072326                      DF5

                            ;ITEM   21
001426  056155                      EM21                ;TRE AND SC BITS ARE SET
                                                        ;EITHER UPE HAS AN OPEN GOING
                                                        ;TO BUS OR TRE AND SC WAS
                                                        ;SET BY ANOTHER ERROR

001430  070275                      DH5
001432  072012                      DT5
001434  072326                      DF5

                            ;ITEM   22
001436  056204                      EM22                ;TRE BIT IS SET, UPE AND SC
                                                        ;SHOULD ALSO BE SET BUT THEY
                                                        ;READ AS CLEARED

001440  070275                      DH5
001442  072012                      DT5
001444  072326                      DF5

                            ;ITEM   23
001446  056237                      EM23                ;UPE AND TRE ARE SET BUT
                                                        ;SC DID NOT SET, LOGIC TO
                                                        ;SET SC DOES NOT SEEM TO
                                                        ;BE WORKING

001450  070275                      DH5
001452  072012                      DT5
001454  072326                      DF5

                            ;ITEM   24
001456  056256                      EM24                ;NED DID NOT SET IN RHCS2
```

```
001460  070275                  DH5
001462  072012                  DT5
001464  072326                  DF5

                        ;ITEM   25
001466  056307                  EM25            ;TRE AND SC ARE SET
                                                ;BUT THEY SHOULD HAVE BEEN
                                                ;SET BY NED WHICH READS
                                                ;AS CLEARED

001470  070275                  DH5
001472  072012                  DT5
001474  072326                  DF5

                        ;ITEM   26
001476  056341                  EM26            ;TRE BIT SET BUT NED
                                                ;AND SC BITS READ AS
                                                ;CLEARED. NED SHOULD
                                                ;HAVE SET CAUSING TRE
                                                ;TO SET WHICH IN TURN
                                                ;SET SC.  LOGIC NOT WORK
                                                ;ING CORRECTLY

001500  070275                  DH5
001502  072012                  DT5
001504  072326                  DF5

                        ;ITEM   27
001506  056367                  EM27            ;TRE BIT WAS NOT SET
                                                ;BY NED. TRE SET LOGIC
001510  070275                  DH5             ;NOT WORKING
001512  072012                  DT5
001514  072326                  DF5

                        ;ITEM   30
001516  056422                  EM30            ;MXF BIT DID NOT SET
                                                ;IN RHCS2

001520  070275                  DH5
001522  072012                  DT5
001524  072326                  DF5

                        ;ITEM   31
001526  056457                  EM31            ;MXF BIT SHOULD BE SET
                                                ;IN RHCS2 BUT IT READS AS
                                                ;CLEARED. TRE AND SC ARE SET
                                                ;IN RHCS1.

001530  070275                  DH5
001532  072012                  DT5
001534  072326                  DF5

                        ;ITEM   32
001536  056516                  EM32            ;TRE BIT IS SET BUT MXF
                                                ;AND SC READ AS CLEARED
```

```
799                                                     ;MXF AND SC BITS ARE INCORRECT
800  001540  070275                    DH5
801  001542  072012                    DT5
802  001544  072326                    DF5
803
804                             ;ITEM   33
805  001546  056545                    EM33            ;TRE LOGIC ASSOCIATED WITH
806                                                     ;MXF IS NOT WORKING
807                                                     ;TRE READS AS CLEARED
808                                                     ;OR TRE HAS AN OPEN GOING
809                                                     ;TO THE BUS
810
811  001550  070275                    DH5
812  001552  072012                    DT5
813  001554  072326                    DF5
814
815                             ;ITEM   34
816  001556  056615                    EM34            ;TESTER IS NOT CONNECT
817                                                     ;TO THE MASSBUS DEVICE
818                                                     ;CODE SHOULD BE A 40
819  001560  070470                    DH34            ;PC TEST NO. DEVICE CODE
820
821  001562  072034                    DT34            ;$ERRPC,$TSTNM,DT,0
822
823  001564  072335                    DF34            ;0,0,0
824
825                             ;ITEM   35
826  001566  056665                    EM35            ;BIT IN RHCS3 WILL NOT ET
827
828
829  001570  071623                    DH171
830  001572  072264                    DT171
831  001574  072332                    DF11
832
833                             ;ITEM   36
834  001576  056717                    EM36
835
836  001600  070550                    DH36            ;PC TEST NO. FAILING ADDRESS
837
838  001602  072050                    DT36            ;$ERRPC,$TSTNM,RHCS1,0
839
840  001604  072341                    DF36            ;0,0,0
841
842                             ;ITEM   37
843  001606  056755                    EM37            ;DLT DID NOT SET IN RHCS2
844
845  001610  070545                    DH35
846
847  001612  072044                    DT35
848
849  001614  072340                    DF35
850
851                             ;ITEM   40
852  001616  057006                    EM40            ;DLT IS NOT SET IN RHCS2 BUT
853                                                     ;TRE AND SC READ AS SET.TRE
854                                                     ;AND SC MUST HAVE BEEN SET BY A DIFFERENT ERROR
```

```

001620  070545                  DH35
001622  072044                  DT35
001624  072340                  DF35

                        ;ITEM   41
001626  057146                  EM41                    ;OUTPUT READY IN RHCS2
                                                        ;DID NOT SET

001630  070631                  DH41                    ;PC TEST NO.

001632  072060                  DT41                    ;$ERRPC,$TSTNM,0

001634  072344                  DF41                    ;

                        ;ITEM   42

001636  057251                  EM42                    ;ALL BITS DID NOT LOAD INTO RHWC
                                                        ; (177777)

001640  000000                  0
001642  000000                  0
001644  000000                  0

                        ;ITEM   43
001646  057322                  EM43                    ;RHWC DID NOT LOAD ANY BITS (177777)
001650  000000                  0
001652  000000                  0
001654  000000                  0

                        ;ITEM   44                      ;RHWC
001656  057366                  EM44                    ;SOME BITS CLEARED AFTER CLEAR
                                                        ;WAS LOADED INTO RHCS2

001660  000000                  0
001662  000000                  0
001664  000000                  0

                        ;ITEM   45
001666  057460                  EM45                    ;NON-EXISTANT MEMORY BIT
                                                        ;SET IN RHCS2
001670  000000                  0
001672  000000                  0
001674  000000                  0

                        ;ITEM   46
001676  057533                  EM46                    ;RHBA DID NOT CLEAR AFTER CLR
                                                        ;WAS LOADED INTO RHCS2
001700  000000                  0
001702  000000                  0
001704  000000                  0

                        ;ITEM   47
001706  057614                  EM47                    ;ALL BITS DID NOT LOAD INTO
                                                        ;RHBA REGISTER (1/7776)
001710  000000                  0
```

```
911  001712  000000                    0
912  001714  000000                    0
913
914                              ;ITEM   50
915  001716  057665                    EM50                ;LOADING TRE AFER ITS SET DOES NOT
916                                                         ;CLEAR ERRORS
917  001720  000000                    0
918  001722  000000                    0
919  001724  000000                    0
920
921                              ;ITEM   51
922  001726  057744                    EM51                ;PGE DID NOT SET IN RHCS2
923  001730  000000                    0
924  001732  000000                    0
925  001734  000000                    0
926
927                              ;ITEM   52
928  001736  057775                    EM52                ;THE PROM WHILE ACCESSING A
929                                                         ;REGISTER WHICH YOUR TESTER
930                                                         ;CANNOT SUPPLY INFORMATION FOR
931                                                         ;SAYS INFORMATION IS PRESENT
932
933  001740  070655                    DH52                ;PC TEST NO. ADDRESS CONT
934
935  001742  072066                    DT52                ;$ERRPC,$TSTNM,BAE,$REGO
936
937  001744  072346                    DF52                ;
938
939                              ;ITEM   53
940  001746  060150                    EM53                ;RHCS1
941  001750  000000                    0
942  001752  000000                    0
943  001754  000000                    0
944
945                              ;ITEM   54
946  001756  060156                    EM54                ;RHWC
947  001760  000000                    0
948  001762  000000                    0
949  001764  000000                    0
950
951                              ;ITEM   55
952  001766  060163                    EM55                ;RHBA
953  001770  000000                    0
954  001772  000000                    0
955  001774  000000                    0
956
957                              ;ITEM   56
958  001776  060170                    EM56                ;RHMR2
959  002000  000000                    0
960  002002  000000                    0
961  002004  000000                    0
962
963                              ;ITEM   57
964  002006  060176                    EM57                ;RHCS2
965  002010  000000                    0
966  002012  000000                    0
```

```
002014  000000                  0

                        ;ITEM   60
002016  060204                  EM60                    ;RHST
002020  000000                  0
002022  000000                  0
002024  000000                  0

                        ;ITEM   61
002026  060211                  EM61                    ;RHER
002030  000000                  0
002032  000000                  0
002034  000000                  0

                        ;ITEM   62
002036  060216                  EM62                    ;RHAS
002040  000000                  0
002042  000000                  0
002044  000000                  0

                        ;ITEM   63
002046  060223                  EM63                    ;RHTDB
002050  000000                  0
002052  000000                  0
002054  000000                  0

                        ;ITEM   64
002056  060231                  EM64                    ;RHDB
002060  000000                  0
002062  000000                  0
002064  000000                  0

                        ;ITEM   65
002066  060236                  EM65                    ;RHMR1
002070  000000                  0
002072  000000                  0
002074  000000                  0

                        ;ITEM   66
002076  060244                  EM66                    ;RHDT
002100  000000                  0
002102  000000                  0
002104  000000                  0

                        ;ITEM   67
002106  060251                  EM67                    ;RHBAE
002110  000000                  0
002112  000000                  0
002114  000000                  0

                        ;ITEM   70
002116  060257                  EM70                    ;RHCS3
002120  000000                  0
002122  000000                  0
002124  000000                  0

```

```
1023                                    ;ITEM   71
1024  002126  060265                            EM71                    ;DEVICE NO DOES NOT EQUAL
1025                                                                    ;A 7 IN RHMR2 AFTER A CLEAR
1026
1027  002130  071651                            DH172
1028
1029  002132  072274                            DT172
1030
1031  002134  072400                            DF172
1032
1033                                    ;ITEM   72
1034  002136  060354                            EM72                    ;RHCS1 HAS AN ERROR BIT
1035                                                                    ;SET AFTER CLEAR OPERATION
1036
1037  002140  071033                            DH72                    ;PC TEST NO. CONTENTS OF REGISTER
1038
1039  002142  072102                            DT71
1040
1041  002144  072353                            DF71
1042
1043                                    ;ITEM   73
1044  002146  060411                            EM73                    ;ERROR BIT SET IN RHCS2
1045                                                                    ;AFTER A CLEAR OPERATION
1046
1047  002150  071033                            DH72
1048
1049  002152  072102                            DT71
1050  002154  072353                            DF71
1051
1052                                    ;ITEM   74
1053  002156  060440                            EM74                    ;ERROR BIT SET IN RHER,
1054                                                                    ;TESTER ERROR REGISTER,AFTER
1055                                                                    ;A CLEAR OPERATION
1056  002160  071033                            DH72
1057  002162  072102                            DT71
1058  002164  072353                            DF71
1059
1060                                    ;ITEM   75
1061  002166  060466                            EM75                    ;ERROR BIT SET IN RHST
1062                                                                    ;AFTER A CLEAR OPERATION
1063
1064  002170  071033                            DH72
1065  002172  072102                            DT71
1066  002174  072353                            DF71
1067                                    ;ITEM   76
1068  002176  060516                            EM76                    ;RHBA INCREMENTED BUT DID NOT CARRY
1069                                                                    ;OVER TO THE RHBAE REGISTER
1070  002200  071122                            DH76
1071  002202  072112                            DT76
1072  002204  072356                            DF76
1073                                    ;ITEM   77
1074  002206  060623                            EM77                    ;READY DID NOT SET AND RHWC
1075                                                                    ;DID NOT INCREMENTM DOING A WRITE OPERATION
1076  002210  067574                            DH1
1077  002212  071742                            DT1
1078  002214  072306                            DF1
```

```
1079                                    ;ITEM   100
1080  002216  060735                            EM100           ;RHBA DID NOT CLEAR AFTER CLR
1081                                                            ;WAS LOADED INTO RHCS2
1082  002220  067714                            DH2
1083  002222  071754                            DT2
1084  002224  072312                            DF2
1085                                    ;ITEM   101
1086  002226  061022                            EM101
1087  002230  067714                            DH2
1088  002232  071754                            DT2
1089  002234  072312                            DF2
1090                                    ;ITEM   102
1091  002236  061067                            EM102           ;READY DID NOT SET IN RHCS1
1092  002240  000000                            0
1093  002242  000000                            0
1094  002244  000000                            0
1095                                    ;ITEM   103
1096  002246  061120                            EM103           ;DOING A WRITE OPERATION RDY
1097                                                            ;DID NOT SET AND WC DID NOT INCREMENT
1098                                                            ;BUT INFO WAS WRITTEN TO TESTER
1099  002250  067574                            DH1
1100  002252  071742                            DT1
1101  002254  072306                            DF1
1102                                    ;ITEM   104
1103  002256  061276                            EM104           ;DOING A WRITE OPERATION RDY
1104                                                            ;DID NOT SET AND WC WAS NOT INCREMENTED
1105                                                            ;AND INFO WAS NOT WRITTEN TO TESTER
1106                                                            ;(WRITE OPERATION DID NOT WORK)
1107  002260  000000                            0
1108  002262  000000                            0
1109  002264  000000                            0
1110                                    ;ITEM   105
1111  002266  061467                            EM105           ;RHBAE IS MESSED UP IT SHOULD
1112                                                            ;EQUAL 40,IT DOES NOT = 37(OLD)
1113                                                            ;AND IT DOES NOT = 0
1114  002270  071160                            DH105
1115  002272  072124                            DT105
1116  002274  072362                            DF105
1117                                    ;ITEM   106
1118  002276  061534                            EM106           ;RHBAE DID NOT GET INCREMENTED
1119  002300  071160                            DH105
1120  002302  072124                            DT105
1121  002304  072362                            DF105
1122                                    ;ITEM   107
1123  002306  061562                            EM107           ;READ REV. OPERATIONS DID NOT
1124  002310  000000                            0               ;READ FROM TESTER TO STORAGE LOCATION
1125  002312  000000                            0               ;(RBUS)
1126  002314  000000                            0
1127                                    ;ITEM   110
1128  002316  061671                            EM110           ;RHBAE = 0 IT SHOULD = 40
1129                                                            ;AFTER A ONE WORD WRITE
1130  002320  000000                            0
1131  002322  000000                            0
1132  002324  000000                            0
1133                                    ;ITEM   111
1134  002326  061763                            EM111           ;A17 DID NOT SET AFTER BA WAS INCREMENTED
```

```
1135  002330  071225                DH111
1136  002332  072140                DT111
1137  002334  072362                DF105
1138                        ;ITEM   112
1139  002336  062036                EM112           ;BA DID NOT INCREMENT
1140  002340  071225                DH111
1141  002342  072140                DT111
1142  002344  072362                DF105
1143                        ;ITEM   113
1144  002346  062063                EM113           ;RHBA INCREMENTED BUT IT DID
1145                                                ;NOT CARRY TO A16 + A17 IN RHCS1
1146  002350  071225                DH111
1147  002352  072140                DT111
1148  002354  072362                DF105
1149                        ;ITEM   114
1150  002356  062160                EM114           ;OUTPUT READY WAS NOT NEGATED
1151                                                ;AFTER CLR WAS LOADED INTO RHCS2
1152  002360  000000                0
1153  002362  000000                0
1154  002364  000000                0
1155                        ;ITEM   115
1156  002366  062256                EM115           ;ALL BITS DID NOT READ TO STORAGE
1157  002370  000000                0               ;LOCATION (RBUF) DURING A READ REV. OPERATION
1158  002372  000000                0
1159  002374  000000                0
1160                        ;ITEM   116
1161  002376  062370                EM116           ;MDPE DID NOT SET IN RHCS2
1162  002400  000000                0
1163  002402  000000                0
1164  002404  000000                0
1165                        ;ITEM   117
1166  002406  062422                EM117           ;INFO DID NOT WITE TO TESTER
1167                                                ;DOING A WRITE REV. OPERATION
1168  002410  071537                DH147
1169  002412  072242                DT147
1170  002414  072356                DF76
1171                        ;ITEM   120
1172  002416  062520                EM120           ;TRE AND SC DO NOT SEEM TO HAVE
1173                                                ;BEEN SET BY MDPE
1174  002420  070402                DH11
1175  002422  072024                DT11
1176  002424  072332                DF11
1177                        ;ITEM   121
1178  002426  062561                EM121           ;TRE IS ONLY BIT SET ,MDPE AND
1179                                                ;SC SHOULD ALSO BE SET
1180  002430  071272                DH121
1181  002432  072154                DT121
1182  002434  072356                DF76
1183                        ;ITEM   122
1184  002436  062644                EM122           ;SC NOT SET AFTER MDPE AND TRE SET
1185  002440  071272                DH121
1186  002442  072154                DT121
1187  002444  072356                DF76
1188                        ;ITEM   123
1189  002446  062676                EM123           ;TRE AND SC WERE SET EITHER BY
1190                                                ;AN ERROR OTHER THAN PGE,OR PGE
```

```
1191                                                    ;HAS AN OPEN GOING TO THE BUS
1192  002450  000000                    0
1193  002452  000000                    0
1194  002454  000000                    0
1195                            ;ITEM   124
1196  002456  062751                    EM124           ;DBL NOT SET AFTER A 4 WORD WRITE
1197                                                    ;FROM AN EVEN ADDRESS
1198  002460  000000                    0
1199  002462  000000                    0
1200  002464  000000                    0
1201                            ;ITEM   125
1202  002466  063044                    EM125           ;DBL SET AFTER DOING A 1 WORD WRITE
1203                                                    ;FROM AN EVEN ADDRESS
1204  002470  000000                    0
1205  002472  000000                    0
1206  002474  000000                    0
1207                            ;ITEM   126
1208  002476  063140                    EM126           ;DBL SET ON A 3 WORD WRITE
1209                                                    ;FROM AN EVEN ADDRESS
1210  002500  000000                    0
1211  002502  000000                    0
1212  002504  000000                    0
1213                            ;ITEM   127
1214  002506  063231                    EM127           ;DBL DID NOT SET AFTER A 2 WORD
1215                                                    ;WRITE FROM AN EVEN ADDRESS
1216  002510  000000                    0
1217  002512  000000                    0
1218  002514  000000                    0
1219                            ;ITEM   130
1220  002516  063327                    EM130           ;MCPE SET BUT SC READS AS CLEARED
1221  002520  071330                    DH130
1222  002522  072166                    DT130
1223  002524  072341                    DF36
1224                            ;ITEM   131
1225  002526  063401                    EM131           ;MCPE DID NOT SET
1226  002530  071330                    DH130
1227  002532  072166                    DT130
1228  002534  070550                    DH36
1229                            ;ITEM   132
1230  002536  063433                    EM132           ;WCE LO (EW) DID NOT SET IN RHCS3
1231  002540  071356                    DH132
1232  002542  072176                    DT132
1233  002544  072367                    DF132
1234                            ;ITEM   133
1235  002546  063467                    EM133           ;WCE HI (OW) SET ALONG WITH
1236                                                    ;WCE LO IN RHCS3
1237  002550  071356                    DH132
1238  002552  072176                    DT132
1239  002554  072367                    DF132
1240                            ;ITEM   134
1241  002556  063570                    EM134           ;WCE LO IS SET IN RHCS3 BUT
1242                                                    ;WCE IS NOT SET IN RHCS2
1243  002560  071356                    DH132
1244  002562  072176                    DT132
1245  002564  072367                    DF132
1246                            ;ITEM   135
```

```
1247  002566  063651                    EM135                   ;WCE HI DID NOT SET IN RHCS3
1248  002570  071356                    DH132
1249  002572  072176                    DT132
1250  002574  072367                    DF132
1251                              ;ITEM   136
1252  002576  063705                    EM136                   ;WCE HI SET BUT WCE DID NOT SET IN RHCS2
1253  002600  071356                    DH132
1254  002602  072176                    DT132
1255  002604  072367                    DF132
1256                              ;ITEM   137
1257  002606  063766                    EM137                   ;WCE LO SET WITH WCE HI IN RHCS3
1258  002610  071356                    DH132
1259  002612  072176                    DT132
1260  002614  072367                    DF132
1261                              ;ITEM   140
```

```
1262  002616  064067                  EM140                   ;WRITE OPERATION DID NOT INC WC
1263  002620  000000                  0
1264  002622  000000                  0
1265  002624  000000                  0
1266                          ;ITEM   141
1267  002626  064144                  EM141                   ;BA WAS NOT INC AF'ER A WRITE
1268  002630  000000                  0
1269  002632  000000                  0
1270  002634  000000                  0
1271                          ;ITEM   142
1272  002636  064220                  EM142                   ;INFO WAS NOT WRITTEN TO TESTER
1273  002640  071434                  DH142
1274  002642  072214                  DT142
1275  002644  072356                  DF76
1276                          ;ITEM   143
1277  002646  064272                  EM143                   ;READ OPERATION DID NOT INC WC
1278  002650  000000                  0
1279  002652  000000                  0
1280  002654  000000                  0
1281                          ;ITEM   144
1282  002656  064346                  EM144                   ;BA WAS NOT INC AFTER A READ
1283  002660  000000                  0
1284  002662  000000                  0
1285  002664  000000                  0
1286                          ;ITEM   145
1287  002666  064434                  EM145                   ;INFO DID NOT READ FROM TESTER
1288  002670  071434                  DH142
1289  002672  072214                  DT142
1290  002674  072356                  DF76
1291                          ;ITEM   146
1292  002676  064501                  EM146                   ;THIS IS FOR PRINTED CONTENTS
1293                                                          ;OF THE RH REGISTERS
1294  002700  071472                  DH146
1295  002702  072226                  DT146
1296  002704  072362                  DF105
1297                          ;ITEM   147
1298  002706  064552                  EM147                   ;ALL BITS DID NOT GET TRANSFERED
1299                                                          ;DURING A READ OPERATION
1300  002710  071537                  DH147
1301  002712  072242                  DT147
1302  002714  072356                  DF76
1303                          ;ITEM   150
1304  002716  064643                  EM150                   ;READ OPERATION DID NOT SEEM TO WORK
1305  002720  071537                  DH147
1306  002722  072242                  DT147
1307  002724  072356                  DF76
1308                          ;ITEM   151
1309  002726  064775                  EM151                   ;ALL BITS DID NOT WRITE TO TESTER
1310  002730  071537                  DH147
1311  002732  072242                  DT147
1312  002734  072356                  DF76
1313                          ;ITEM   152
1314  002736  065077                  EM152                   ;WRITE OPERATION DID NOT WRITE
1315                                                          ;TO TESTER
1316  002740  071537                  DH147
1317  002742  072242                  DT147
```

```
1318  002744  072356                    DF76
1319                            ;ITEM   153
1320  002746  065147                    EM153           ;DBL SET ON A 2 WORD TRANSFER
1321                                                    ;WITH BAI SET
1322  002750  000000                    0
1323  002752  000000                    0
1324  002754  000000                    0
1325                            ;ITEM   154
1326  002756  065233                    EM154           ;DBL SET ON A 1 WORD READ FROM
1327                                                    ;AN EVEN ADDRESS
1328  002760  000000                    0
1329  002762  000000                    0
1330  002764  000000                    0
1331                            ;ITEM   155
1332  002766  065324                    EM155           ;DBL SET ON A 2 WORD WRITE REV
1333                                                    ;WITH BAI SET
1334  002770  000000                    0
1335  002772  000000                    0
1336  002774  000000                    0
1337                            ;ITEM   156
1338  002776  065412                    EM156           ;DBL SET ON A 2 WORD WRITE FROM
1339                                                    ;FROM AN ODD ADDRESS
1340  003000  000000                    0
1341  003002  000000                    0
1342  003004  000000                    0
1343                            ;ITEM   157
1344  003006  065503                    EM157           ;DBL DID NOT SET ON A 2 WORD
1345                                                    ;WRITE REV FROM AN EVEN ADDRESS
1346  003010  000000                    0
1347  003012  000000                    0
1348  003014  000000                    0
1349                            ;ITEM   160
1350  003016  065577                    EM160           ;DBL SET ON A 2 WORD WRITE REV
1351                                                    ;FROM AN ODD ADDRESS
1352  003020  000000                    0
1353  003022  000000                    0
1354  003024  000000                    0
1355                            ;ITEM   161
1356  003026  065666                    EM161           ;DBL SET ON A 3 WORD WRITE REV
1357                                                    ;FROM AN ODD ADDRESS
1358  003030  000000                    0
1359  003032  000000                    0
1360  003034  000000                    0
1361                            ;ITEM   162
1362  003036  065755                    EM162           ;DBL DID NOT SET ON A 2 WORD
1363  003040  000000                    0
1364  003042  000000                    0
1365  003044  000000                    0
1366                            ;ITEM   163
1367  003046  066044                    EM163           ;DBL SET ON A 2 WORD READ
1368                                                    ;FROM AN ODD ADDRESS
1369  003050  000000                    0
1370  003052  000000                    0
1371  003054  000000                    0
1372                            ;ITEM   164
1373  003056  066122                    EM164           ;DBL SET ON A 2 WORD READ REV
```

```
1374                                                    ;FROM AN ODD ADDRESS
1375  003060  000000                    0
1376  003062  000000                    0
1377  003064  000000                    0
1378                            ;ITEM   165
1379  003066  066211                    EM165           ;DBL DID NOT SET ON A 2 WORD
1380                                                    ;READ REV FROM AN EVEN ADDRESS
1381  003070  000000                    0
1382  003072  000000                    0
1383  003074  000000                    0
1384                            ;ITEM   166
1385  003076  066307                    EM166           ;DBL SET ON A 3 WORD READ FROM
1386                                                    ;AN EVEN ADDRESS
1387  003100  000000                    0
1388  003102  000000                    0
1389  003104  000000                    0
1390                            ;ITEM   167
1391  003106  066366                    EM167           ;DBL DID NOT SET ON A 3 WORD
1392                                                    ;READ REV FROM AN EVEN ADDRESS
1393  003110  000000                    0
1394  003112  000000                    0
1395  003114  000000                    0
1396                            ;ITEM   170
1397  003116  000000                    0
1398  003120  071575                    DH170
1399  003122  072254                    DT170
1400  003124  072375                    DF170
1401                            ;ITEM   171
1402  003126  066465                    EM171           ;TRE READS AS SET,PGE AND SC
1403                                                    ;READ AS CLEARED.PGE AND SC
1404                                                    ;SHOULD ALSO BE SET
1405  003130  000000                    0
1406  003132  000000                    0
1407  003134  000000                    0
1408                            ;ITEM   172
1409  003136  066537                    EM172           ;PGE AND TRE READ AS SET SC
1410                                                    ;READS AS CLEARED
1411  003140  000000                    0
1412  003142  000000                    0
1413  003144  000000                    0
1414                            ;ITEM   173
1415  003146  066560                    EM173           ;READY DID NOT CAUSE AN INTRUPT
1416                                                    ;WITH IE SET IN RHCS1
1417  003150  000000                    0
1418  003152  000000                    0
1419  003154  000000                    0
1420                            ;ITEM   174
1421  003156  066644                    EM174           ;IE WILL NOT SET IN RHCS1
1422  003160  000000                    0
1423  003162  000000                    0
1424  003164  000000                    0
1425                            ;ITEM   175
1426  003166  066675                    EM175           ;IE HAS AN OPEN GOING TO THE BUS
1427  003170  000000                    0
1428  003172  000000                    0
1429  003174  000000                    0
```

```
1430
1431  003176  066735          ;ITEM   176
1432  003200  071272                  EM176                   ;TRE IS SET DLT AND SC SHOULD ALSO BE SET
1433  003202  072154                  DH121
1434  003204  072356                  DT121
1435                                   DF76
1436  003206  066770          ;ITEM   177
1437  003210  071272                  EM177                   ;DLT AND TRE ARE SET ,SC READS AS CLEARED
1438  003212  072154                  DH121
1439  003214  072356                  DT121
1440                                   DF76
1441  003216  067035          ;ITEM   200
1442  003220  070631                  EM200                   ;HIBITE LOBYTE GATE FOR WC NG
1443  003222  072060                  DH41
1444  003224  072344                  DT41
1445                                   DF41
1446  003226  067117          ;ITEM   201
1447  003230  070631                  EM201                   ;HIBYTE LOBYTE GATE FOR DB NG
1448  003232  072060                  DH41
1449  003234  072344                  DT41
1450                                   DF41
1451  003236  067201          ;ITEM   202
1452  003240  070631                  EM202                   ;HIBYTE LOBYTE GATE FOR BA IS NG
1453  003242  072060                  DH41
1454  003244  072344                  DT41
1455                                   DF41
1456  003246  067263          ;ITEM   203
1457  003250  070631                  EM203                   ;RHBA HAS WRONG ADDRESS
1458  003252  072060                  DH41
1459  003254  072344                  DT41
1460                                   DF41
1461  003256  067343          ;ITEM   204
1462  003260  070631                  EM204                   ;TESTER DATA BUFFER HAS WRONG INFO
1463  003262  072060                  DH41
1464  003264  072344                  DT41
1465                                   DF41
1466  003266  067430          ;ITEM   205
1467  003270  070631                  EM205                   ;RH DID NOT INTERUPT
1468  003272  072060                  DH41
1469  003274  072344                  DT41
1470                                   DF41
1471  003276  067514          ;ITEM   206
1472  003300  070631                  EM206                   ;RHWC SHOULD BE ZERO
1473  003302  072060                  DH41
1474  003304  072344                  DT41
1475                                   DF41
1476  003306  067540          ;ITEM   207
1477  003310  000000                  EM207                   ;TRANSFER WAS DONE ON PORT B
1478  003312  000000                  0
1479  003314  000000                  0
1480                                   0
1481                           ;RH REGISTERS
1482
1483
1484  003316  000774           RHVEC:774                              ;RH VECTOR ADDRESS
1485                           ;;*************************************************************************
```

```
1486                                ;WORD COUNT REGISTER (RHWC)
1487                                ;EACH BIT IS CALLED BY BIT NUMBER
1488
1489
1490
1491                                ;BUS ADDRESS REGISTER (RHBA)
1492                                ;EACH BIT IS CALLED BY BIT NUMBER
1493
1494
1495
1496                                ;CONTROL AND STATUS REGISTER 2 (RHCS2)
1497
1498     000001                     US1=    1                   ;UNIT SELECT (BIT #0)
1499     000002                     US2=    2                   ;UNIT SELECT (BIT #1)
1500     000004                     US4=    4                   ;UNIT SELECT (BIT #2)
1501     000010                     BAI=    10                  ;BUS ADDRESS INCREMENT INHIBIT (BIT #3)
1502     000020                     PAT=    20                  ;INVERT PARITY CHECK FOR MCPE
1503     000040                     CLR=    40                  ;CLEAR (BIT #5)
1504     000100                     IR=     100                 ;INPUT READY (BIT #6)
1505     000200                     OR=     200                 ;OUTPUT READY (BIT #7)
1506     000400                     MPE=    400                 ;MASS BUS PARITY ERROR (BIT #8)
1507     001000                     MXF=    1000                ;MISSED TRANSFER ERROR (BIT #9)
1508     002000                     PGE=    2000                ;PROGRAM ERROR (BIT #10)
1509     004000                     NEM=    4000                ;NON EXISTANT MEMORY (BIT #11)
1510     010000                     NED=    10000               ;NON EXISTANT DRIVE (BIT #12)
1511     020000                     UPE=    20000               ;UNIBUS PARITY ERROR (BIT #13)
1512     040000                     WCE=    40000               ;WRITE CHECK ERROR (BIT #14)
1513     100000                     DLT=    100000              ;DATA LATE (BIT #15)
1514
1515                                ;CONTROL AND STATUS REGISTER 3 (RHCS3)
1516
1517     000001                     IPCK0=  1                   ;INVERT PARITY,ON LOW BYTE OF EVEN WORD (BIT #0)
1518     000002                     IPCK1=  2                   ;INVERT PARITY,ON HI BYTE OF EVEN WORD (BIT #1)
1519     000004                     IPCK2=  4                   ;INVERT PARITY,ON LOW BYTE OF ODD WORD(BIT #2)
1520     000010                     IPCK3=  10                  ;INVERT PARITY,ON HI BYTE OF ODD WORD(BIT #3)
1521     000100                     IE3=    100                 ;INTERUPT ENABLE,SAME AS BIT 6 OF RHCS1 (BIT #6)
1522     002000                     DBL=    2000                ;DOUBLE WORD OPERATION,SET WHEN LAST MEMORY TRANSFER WAS
1523     004000                     WCELO=  4000                ;WRITE CHECK ERROR EVEN WORD (BIT #11)
1524     010000                     WCEHI=  10000               ;WRITE CHECK ERROR ODD WORD (BIT #12)
1525     020000                     DPELO=  20000               ;DATA PARITY ERROR EVEN WORD (BIT #13)
1526     040000                     DPEHI=  40000               ;DATA PARITY ERROR ODD WORD (BIT #14)
1527     100000                     APE=    100000              ;ADDRESS PARITY ERROR (BIT #15)
1528                                ;DATA BUFFER REGISTER (RHDB)
1529                                ;EACH BIT IS CALLED BY BIT NUMBER
1530
1531
1532
1533
1534
1535                                ;CONTROL AND STATUS 1 REGISTER. (#00)
1536
1537     000001                     GO=     1                   ;GO (BIT #0)
1538     000100                     IE=     100                 ;INTERRUPT ENABLE (BIT #6)
1539     000200                     RDY=    200                 ;READY (BIT #7)
1540     000400                     A16=    400                 ;HIGH ORDER UNIBUS BITS (BIT #8)
1541     001000                     A17=    1000                ;HIGH ORDER UNIBUS BITS (BIT #9)
```

```
1542            002000          PSEL=   2000                    ;PORT SELECT (BIT #10)
1543            004000          DVA=    4000                    ;DEVICE AVAILABLE (BIT #11)
1544            020000          MCPE=   20000                   ;MASSBUSS PARITY ERROR (BIT #13)
1545            040000          TRE=    40000                   ;TRANSFER ERROR (BIT #14)
1546            000100          TREB=   100                     ;TRE BIT FOR A BYTE OPERATION
1547            100000          SC=     100000                  ;SPECIAL CONDITION (BIT #15)
1548
1549                            ;STATUS REGISTER (RHST) (#01)
1550
1551            000200          DRY=    200                     ;DRIVE READY (BIT #7)
1552            000400          DPR=    400                     ;DRIVE PRESENT (BIT #8)
1553            010000          MOL=    10000                   ;MEDIUM ON-LINE (BIT #12)
1554            020000          PIP=    20000                   ;POSITIONING OPERATION IN PROGRESS (BIT #13)
1555            040000          ERR=    40000                   ;COMPOSIT ERROR. (BIT #14)
1556            100000          ATA=    100000                  ;ATTENTION ACTIVE (BIT #15)
1557
1558                            ;ERROR REGISTER #01 (RHER) (#02)
1559            000001          ILF=    1                       ;ILLEGAL FUNCTION (BIT #0)
1560            000004          RMR=    4                       ;REGISTER MODIFICATION REFUSED (BIT #2)
1561            000010          CPE=    10                      ;CONTROL PARITY ERROR(BIT #3)
1562            000020          DPE=    20                      ;DATA PARITY ERROR(BIT #4)
1563            000040          RMBEX=  40                      ;MASSBUS EXCEPTION ,WHEN SET CAUSES AN ABORT OF A DATA T
1564            000100          RFAIL=  100                     ;MASSBUS POWER FAIL(BIT #6)
1565            010000          DTE=    10000                   ;DRIVE TIMING ERROR (BIT #12)
1566            020000          OPI=    20000                   ;OPERATION INCOMPLETE (BIT #13)
1567
```

```
1568                                    ;DIAGNOSTIC REGISTER (RHMR1) (#03)
1569
1570            000001                  DMD=    1               ;DIAGINOSTIC MODE (BIT #0)
1571            000002                  MCLK=   2               ;MAINTAINCE CLOCK (BIT #1)
1572            000004                  FERR=   4               ;FORCE ERROR (BIT #2)
1573            000010                  ICPA=   10              ;INVERT CONTROL PARITY,CAUSES PARITY TO BE EVEN WHEN SET
1574            000020                  IDPA=   20              ;INVERT DATA PARITY,CAUSES DATA PARITY TOBE EVEN WHEN SE
1575            000040                  DPCA=   40              ;DISABLE PARITY CHECK,INHIBITS PARITY CHECK ON BOTH C AN
1576            000100                  NEBL=   100             ;NO END OF BLOCK,INHIBITS TESTER FROM GENERATING END OF
1577            000200                  DTRM=   200             ;WHEN SET DELAYS TRA FROM BEING ASSERTED FOR 500NS (BIT
1578            000400                  DOCC=   400             ;DISSABLE OCCUPY (BIT #8)
1579            001000                  SLKM=   1000            ;SYNC CLOCK MINIMUM WIDTH ,WHEN SET CHANGES SYNC CLOCK T
1580            002000                  ISLK=   2000            ;INVERT SYNC CLOCK,WHEN SET INVERTS SYNC CLOCK,NO EFFECT
1581            004000                  ENPS=   4000            ;ENABLE PATTERN SHIFT,WHEN SET CAUSES A 16 OR 18 BIT ROT
1582            010000                  BMD18=  10000           ;18 BIT MODE (BIT #12)
1583
1584                                    ;ATTENTION SUMMARY PSEUDO-REGISTER (RHAS) (#04)
1585
1586            000001                  AT0=    1               ;DEVICE 0 (BIT #0)
1587            000002                  AT1=    2               ;DEVICE 1 (BIT #1)
1588            000004                  AT2=    4               ;DEVICE 2 (BIT #2)
1589            000010                  AT3=    10              ;DEVICE 3 (BIT #3)
1590            000020                  AT4=    20              ;DEVICE 4 (BIT #4)
1591            000040                  AT5=    40              ;DEVICE 5 (BIT #5)
1592            000100                  AT6=    100             ;DEVICE 6 (BIT #6)
1593            000200                  AT7=    200             ;DEVICE 7 (BIT #7)
1594
1595                                    ;TRANSFER CONTROL REGISTER (#5)
1596
1597            000001                  DN0=    1               ;DRIVE NUBER BIT #0 (BIT #0)
1598            000002                  DN1=    2               ;DRIVE NUMBER BIT #1 (BIT #1)
1599            000004                  DN2=    4               ;DRIVE NUMBER BIT #2 (BIT #2)
1600            000010                  SCLK=   10              ;SYNC CLOCK RANGE BIT ,WHEN CLEAR SYNC CLOCK IS 0.4-2.6
1601                                                            ;WHEN SET 2.0-10.6 MICRO SECONDS (BIT #3)
1602            000020                  GAP=    20              ;GAP SIZE BIT,SETS GAP SIZE TO 5 MICROSECONDS WHEN CLEAR
1603            000040                  BL0=    40              ;BLOCK SIZE BIT 0 (BIT #5)
1604            000100                  BL1=    100             ;BLOCK SIZE BIT 1(BIT #6)
1605            000200                  BL2=    200             ;BLOCK SIZE BIT 2(BIT #7)
1606
1607                                    ;RH70 I/O REGISTERS LOCATED IN RH
1608
1609    003320  160100                  ADD1:   160100          ;BASE ADDRESS RH #1
1610    003322  160200                  ADD2:   160200          ;BASE ADDRESS RH #2
1611    003324  160300                  ADD3:   160300          ;BASE ADDRESS RH #3
1612    003326  160400                  ADD4:   160400          ;BASE ADDRESS RH #4
1613    003330  000000                  RHCS1:  0                       ;CONTROL AND STATUS 1
1614    003332  000000                  RHWC:   0                       ;WORD COUNT
1615    003334  000000                  RHBA:   0                       ;BUS ADDRESS
1616    003336  000000                  RHMR2:  0                       ;TRANSFER CONTROL REGISTER
1617    003340  000000                  RHCS2:  0                       ;CONTROL AND STATUS 2
1618    003342  000000                  RHST:   0                       ;TESTER STATUS
1619    003344  000000                  RHER:   0                       ;ERROR REGISTER
1620    003346  000000                  RHAS:   0                       ;ATTENTION SUMMARY REG
1621    003350  000000                  RHTDB:  0                       ;TESTER DATA REGISTER
1622    003352  000000                  RHDB:   0                       ;DATA BUFFER
1623    003354  000000                  RHMR1:  0                       ;DIAGNOSTIC (MAINTENCE) REGISTER
```

```
1624  003356  000000          RHDT:   0                       ;DRIVE TYPE REGISTER
1625  003360  000000          RHBAE:  0                       ;BUS ADDRESS EXTENTION
1626  003362  000000          RHCS3:  0                       ;CONTROL AND STATUS 3
1627  003364  000000          RHCS1B: 0                       ;HIGH BYTE OF RHCS1 REG.
1628
1629  003366  000000          DEVIC1: 0                       ;ADDRESS OF RH #1
1630  003370  000000          DEVIC2: 0                       ;ADDRESS OF RH #2
1631  003372  000000          DEVIC3: 0                       ;ADDRESS OF RH #3
1632  003374  000000          DEVIC4: 0                       ;ADDRESS OF RH #4
1633
1634  003376  000000          DEVCNT: 0                       ;DEVICE COUNTER
1635  003400  000000          DEVIC5: 0                       ;USED TO CONSTRUCT REG. ADDRESSES
1636
1637                          ;OFF11 WILL BE USED AS A CALCULATION LOCATION
1638
1639  003402  000000          OFF11:  0               ;REG. CALCULATION LOCATION
1640          177740          LERADD= 177740                  ;LOW ERROR ADDRESS REG.
1641          177742          HERADD= 177742                  ;HIGH ERROR ADDRESS REG
1642          177744          MEMERR= 177744                  ;MEMORY SYSTEM ERROR REG
1643  003404  000000          REGEND: 0                       ;REGISTER ENDING ADDRESS
1644  003406  000000          VECADD: 0                       ;VECTOR ADDRESS
1645  003410  000000          RETAIN: 0
1646
1647                          ;;**************************************************************************
1648                                  ;REGISTER STORAGE ADDRESSES
1649                          ;;**************************************************************************
1650
1651  003412  000000                  AS:     0               ;ATTENTION SUMMARY
1652  003414  000000                  BA:     0               ;BUS ADDRESS
1653  003416  000000                  BAE:    0               ;BUS ADDRESS EXTENTION
1654  003420  000000                  CS1:    0               ;CONTROL AND STATUS 1
1655  003422  000000                  CS2:    0               ;CONTROL AND STATUS 2
1656  003424  000000                  CS3:    0               ;CONTROL AND STATUS 3
1657  003426  000000                  DB:     0               ;DATA BUFFER
1658  003430  000000                  DR:     0               ;DIAGNOSTIC REGISTER
1659  003432  000000                  DS1:    0               ;TESTER STATUS
1660  003434  000000                  DT:     0               ;DRIVE TYPE
1661  003436  000000                  ER1:    0               ;ERROR REGISTER
1662  003440  000000                  TC:     0               ;TRANSFER CONTROL
1663  003442  000000                  TDR:    0               ;TESTER DATA REGISTER
1664  003444  000000                  WC:     0               ;WORD COUNT
1665
1666                          ;;**************************************************************************
1667                                  ;BITS AND BIT PATTERNS
1668                          ;;**************************************************************************
1669
1670          052525                  AB=     52525           ;ALTERNATE BIT PATTERN
1671          125252                  OAB=    125252          ;OPPOSITE ALTERNATE BIT PATTERN
1672          000000                  ZERO=   0               ;CONSTANT ZERO
1673          000001                  ONE=    1               ;CONSTANT 1
1674          000002                  TWO=    2               ;CONSTANT 2
1675                          ;;**************************************************************************
1676
1677                                  ;FUNCTION CODES
1678                          ;;**************************************************************************
1679          000001          NOOP=   01                      ;NO OPERATION,RESETS GO BIT
```

```
1680
1681            000051          WRCH0=  51                      ;THESE WRCH BITS ARE WRITE/CHECK
1682            000052          WRCH1=  52                      ;CODES ,IF THE CODE IS AN ODD
1683            000053          WRCH2=  53                      ;NUMBER THE GO BIT IS INCLUDED
1684            000054          WRCH3=  54                      ;IF THEY ARE EVEN GO BIT IS NOT INCLUDED
1685            000055          WRCH4=  55
1686            000056          WRCH5=  56
1687            000057          WRCH6=  57
1688
1689                            ;;**************************************************************************
1690
1691            000071          READ0=  71                      ;READ CODES
1692            000072          READ1=  72                      ;IF THE CODE IS AN ODD NUMBER
1693            000073          READ2=  73                      ;THE GO BIT IS INCLUDED
1694            000074          READ3=  74
1695            000075          READ4=  75
1696            000076          READ5=  76
1697            000077          READ6=  77
1698
1699                            ;;**************************************************************************
1700
1701            000061          WRITE0= 61                      ;WRITE CODES
1702            000062          WRITE1= 62                      ;IF THE CODE IS AN ODD NUMBER
1703            000063          WRITE2= 63                      ;THE GO BIT IS INCLUDED
1704            000064          WRITE3= 64                      ;IF IT IS EVEN THE GO BIT
1705            000065          WRITE4= 65                      ;IS NOT INCLUDED
1706            000066          WRITE5= 66
1707            000067          WRITE6= 67
1708
1709                            ;;**************************************************************************
1710
1711            000011          DRCLR-  11                      ;CLEARS ALL ERROR BITS IN THE DRIVE
1712                                                            ;AND SETS THE DRIVE READY BIT
1713                            ;;**************************************************************************
1714
1715            000031          SEARCH= 31                      ;SETS A ONE SHOT WHICH SETS
1716                                                            ;ATA AFTER 100USEC + OR MINUS 20%
1717
1718                            ;;**************************************************************************
1719                                    ;WATBIT STORAGE LOCATIONS
1720                            ;;**************************************************************************
1721
1722  003446    000000          BITCNT: 0                       ;BIT COUNTER
1723  003450    000000          LOOCNT: 0                       ;LOOP CPUNT
1724  003452    000000          PASS:   0                       ;PASS COUNT FOR THE LARGE TRANSFER TEST
1725                            ;;**************************************************************************
1726                                    ;THIS IS WHERE THE TEST NUMBER IS STORED JUST
1727                                    ;BEFORE IT IS PRINTED OUT.....................
1728                            ;;**************************************************************************
1729
1730  003454    000000          TSTNM:  0                       ;TEST NO. STORAGE
1731  003456    000000          OFFSET: 0                       ;OFFSET FOR ERROR HEADER
1732  003460    000000          HEDDAD: 0                       ;USE TO FIND HEADER ERROR MESSAGE
1733                            ;;**************************************************************************
1734                                    ;THESE ARE THE READ WRITE BUFFERS
1735                            ;;**************************************************************************
```

```
1736            004000          .=4000
1737  004000    000000          EVENAD: 0                       ;EVEN ADDRESS
1738  004002    000000          ODDAD:  0                       ;ODD ADDRESS
1739            004100          .=4100
1740  004100    000000          RBUF:   0
1741  004102    000000          RBUF1:  0
1742  004104    000000          RBUF2:  0
1743  004106    000000          RBUF3:  0
1744  004110    000000          RBUF4:  0
1745  004112    000000          RBUF5:  0
1746  004114    000000          RBUF6:  0
1747  004116    000000          RBUF7:  0
1748
1749                            ;;*************************************************************************
1750                            ;       THESE ARE FOR THE CLEARS TEST
1751                            ;;*************************************************************************
1752
1753  004120    177777          MINUS:  -1
1754  004122    000000          BEFORE: 0
1755
1756  004124    000000          $CS1:   0
1757  004126    000000          $CS2:   0
1758  004130    000000          $CS3:   0
1759  004132    000000          $ST:    0
1760  004134    000000          $ER:    0
1761  004136    000000          $RHBA:  0
1762  004140    000000          $RHDB:  0
1763  004142    000000          $RHWC:  0
```

```
1764                                    ;;**********************************************************************
1765
1766  004144  005000                    BEGIN:  CLR     R0                      ;GET SKIP FLAG READY
1767  004146  005100                            COM     R0                      ;SET SKIP FLAG
1768  004150  000421                            BR      START                   ;GO TO START
1769  004152  005000                    BEGIN3: CLR     R0                      ;GET SKIP FLAG READY
1770  004154  005037  001174                    CLR     @#REG5                  ;CLR ALTERNATE START FLAG
1771  004160  005137  001174                    COM     @#REG5                  ;SET FOR ALTERNATE START
1772  004164  000413                            BR      START                   ;START PROGRAM
1773  004166  005000                    BEGIN2: CLR     R0                      ;GET R0 READY
1774  004170  005100                            COM     R0                      ;TO BE COMPLIMENTED
1775  004172  000137  004546                    JMP     @#TST1                  ;ENTER DIAG. FOR NEXT PASS
1776  004176  012737  000074  003404    BEGIN1: MOV     #74,@#REGEND
1777  004204  012737  000774  003406            MOV     #774,@#VECADD
1778  004212  005000                            CLR     R0                      ;CLEAR THE SKIP FLAG
1779                                    ;;**********************************************************************
1780
1781  004214                            START:
1782                                    .SBTTL  INITIALIZE THE COMMON TAGS
1783                                    ;;CLEAR THE COMMON TAGS ($CMTAG) AREA
1784  004214  012706  001100                    MOV     #$CMTAG,R6      ;;FIRST LOCATION TO BE CLEARED
1785  004220  005026                            CLR     (R6)+           ;;CLEAR MEMORY LOCATION
1786  004222  022706  001140                    CMP     #SWR,R6 ;;DONE?
1787  004226  001374                            BNE     .-6             ;;LOOP BACK IF NO
1788  004230  012706  000750                    MOV     #STACK,SP       ;;SETUP THE STACK POINTER
1789                                    ;;INITIALIZE A FEW VECTORS
1790  004234  012737  072602  000020            MOV     #$SCOPE,@#IOTVEC ;;IOT VECTOR FOR SCOPE ROUTINE
1791  004242  012737  000340  000022            MOV     #340,@#IOTVEC+2 ;;LEVEL 7
1792  004250  012737  074256  000030            MOV     #$ERROR,@#EMTVEC ;;EMT VECTOR FOR ERROR ROUTINE
1793  004256  012737  000340  000032            MOV     #340,@#EMTVEC+2 ;;LEVEL 7
1794  004264  012737  075006  000034            MOV     #$TRAP,@#TRAPVEC ;;TRAP VECTOR FOR TRAP CALLS
1795  004272  012737  000340  000036            MOV     #340,@#TRAPVEC+2;LEVEL 7
1796  004300  012737  073052  000024            MOV     #$PWRDN,@#PWRVEC ;;POWER FAILURE VECTOR
1797  004306  012737  000340  000026            MOV     #340,@#PWRVEC+2 ;;LEVEL 7
1798  004314  005037  001212                    CLR     $TIMES          ;;INITIALIZE NUMBER OF ITERATIONS
1799  004320  005037  001214                    CLR     $ESCAPE         ;;CLEAR THE ESCAPE ON ERROR ADDRESS
1800  004324  112737  000001  001115            MOVB    #1,$ERMAX       ;;ALLOW ONE ERROR PER TEST
1801  004332  012737  004332  001106            MOV     #.,$LPADR       ;;INITIALIZE THE LOOP ADDRESS FOR SCOPE
1802  004340  012737  004340  001110            MOV     #.,$LPERR       ;;SETUP THE ERROR LOOP ADDRESS
1803                                    ;;SIZE FOR A HARDWARE SWITCH REGISTER. IF NOT FOUND OR IT IS
1804                                    ;;EQUAL TO A "-1", SETUP FOR A SOFTWARE SWITCH REGISTER.
1805  004346  013746  000004                    MOV     @#ERRVEC,-(SP)  ;;SAVE ERROR VECTOR
1806  004352  012737  004406  000004            MOV     #64$,@#ERRVEC   ;;SET UP ERROR VECTOR
1807  004360  012737  177570  001140            MOV     #DSWR,SWR       ;;SETUP FOR A HARDWARE SWICH REGISTER
1808  004366  012737  177570  001142            MOV     #DDISP,DISPLAY  ;;AND A HARDWARE DISPLAY REGISTER
1809  004374  022777  177777  174536            CMP     #-1,@SWR        ;;TRY TO REFERENCE HARDWARE SWR
1810  004402  001012                            BNE     66$             ;;BRANCH IF NO TIMEOUT TRAP OCCURRED
1811                                                                    ;;AND  THE HARDWARE SWR IS NOT = -1
1812  004404  000403                            BR      65$             ;;BRANCH IF NO TIMEOUT
1813  004406  012716  004414          64$:     MOV     #65$,(SP)       ;;SET UP FOR TRAP RETURN
1814  004412  000002                            RTI
1815  004414  012737  000176  001140  65$:     MOV     #SWREG,SWR      ;;POINT TO SOFTWARE SWR
1816  004422  012737  000174  001142            MOV     #DISPREG,DISPLAY
1817  004430  012637  000004          66$:     MOV     (SP)+,@#ERRVEC  ;;RESTORE ERROR VECTOR
1818
1819  004434  005700                            TST     R0                      ;WAS IT A RESTART
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1820  004436  100443                          BMI     AROUND                  ;YES,SKIP TYPING
1821  004440  104401  004446                  TYPE    ,68$            ;;TYPE ASCIZ STRING
1822  004444  000427                          BR      67$             ;;GET OVER THE ASCIZ
1823                                  ;;68$:  .ASCIZ  <15><12>/RH 11 AND 70 I O AND CONTROLLER DIAGNOSTIC/
1824  004524                          67$:
1825  004524  104401  004532                  TYPE    ,70$            ;;TYPE ASCIZ STRING
1826  004530  000406                          BR      69$             ;;GET OVER THE ASCIZ
1827                                  ;;70$:  .ASCIZ  <15><12>/CZRHB-D /
1828  004546                          69$:
1829  004546                          AROUND:
1830
1831                                  ;;**************************************************************************
1832                                  ;*TEST 1         THIS IS THE RH ADRESS DECODE TEST
1833                                          ;*THIS PROGRAM WILL ALLOW THE OPERATOR TO SAY
1834                                          ;*WHICH RH IS ON THE BUS AND WHAT ITS BASE
1835                                          ;*ADDRESS IS.  THE RH IS THEN TESTED FOR A
1836                                          ;*RESPONSE AND CHECKED FOR A TESTER BEING
1837                                          ;*CONNECTED.
1838                                  ;;**************************************************************************
1839  004546  000004                  TST1:   SCOPE
1840  004550  012737  000001  001212          MOV     #1,$TIMES       ;;DO 1 ITERATION
1841  004556  012737  047172  000114          MOV     #PARITY,@#114
1842  004564  012706  000750                  MOV     #STACK,SP
1843  004570  012737  000340  000116          MOV     #340,@#116
1844  004576  012737  046740  000004          MOV     #TIEOUT,@#ERRVEC        ;SET UP TIMEOUT
1845  004604  012737  000340  000006          MOV     #340,@#ERRVEC+2         ;SETUP PRIORTY
1846  004612  005700                          TST     R0                      ;SKIP TYPOUT ?
1847  004614  001403                          BEQ     SKIPIN                  ;NO
1848  004616  005000                          CLR     R0                      ;CLEAR SKIP FLAG
1849  004620  000137  006552                  JMP     @#TST2                  ;GET OUT OF TEST
1850  004624  005001                  SKIPIN: CLR     R1                      ;GET R1 READY
1851  004626  005737  0011~                   TST     $REG5                   ;IS IT AN ALTERNATE START
1852  004632  001402                          BEQ     SLEUTH                  ;NO
1853  004634  000137  004644                  JMP     KONG                    ;YES DO ALTERNATE SETUP
1854  004640  000137  005066          SLEUTH: JMP     AD1ERR                  ;DO REGULAR SETUP
1855  004644  005037  001174          KONG:   CLR     $REG5                   ;RESET ALT. START FLAG
1856  004650  104401  004656                  TYPE    ,65$            ;;TYPE ASCIZ STRING
1857  004654  000416                          BR      64$             ;;GET OVER THE ASCIZ
1858                                  ;;65$:  .ASCIZ  <15><12>/TYPE BASE ADDRESS FOR RH /
1859  004712                          64$:
1860  004712  104410                          RDOCT
1861  004714  012637  003366                  MOV     (SP)+,DEVIC1            ;GET BASE ADDRESS
1862  004720  104401  004726                  TYPE    ,67$            ;;TYPE ASCIZ STRING
1863  004724  000415                          BR      66$             ;;GET OVER THE ASCIZ
1864                                  ;;67$:  .ASCIZ  <15><12>/TYPE RH VECTOR ADDRESS /
1865  004760                          66$:
1866  004760  104410                          RDOCT
1867  004762  012637  003406                  MOV     (SP)+,VECADD            ;GET VECTOR ADDRESS
1868  004766  104401  004774                  TYPE    ,69$            ;;TYPE ASCIZ STRING
1869  004772  000426                          BR      68$             ;;GET OVER THE ASCIZ
1870                                  ;;69$:  .ASCIZ  <15><12>/HOW MANY REGISTERS ARE YOU JUMPERED FOR /
1871  005050                          68$:
1872  005050  104410                          RDOCT
1873  005052  012637  003404                  MOV     (SP)+,REGEND            ;GET NUMBER OF REG
1874  005056  006137  003404                  ROL     REGEND                  ;MULT BY 2
1875  005062  000137  005402                  JMP     GI1                     ;GO CREATE ADDRESSES
```

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1876  005066  013737  003320  003366  AD1ERR: MOV     ADD1,DEVIC1             ;SETUP DEVICE 1
1877  005074  012737  005166  000004          MOV     #AD2ERR,ERRVEC          ;FOR TIMEOUT
1878  005102  005777  176214                  TST     @ADD2                   ;IS THFRE A DEVICE
1879  005106  013737  003322  00337C          MOV     ADD2,DEVIC2             ;YES
1880  005114  012737  005206  000004          MOV     #AD3ERR,ERRVEC          ;FOR TIMEOUT
1881  005122  005777  176176                  TST     @ADD3                   ;IS THERE A DEVICE
1882  005126  013737  003324  003372          MOV     ADD3,DEVIC3             ;YES
1883  005134  012737  005226  000004          MOV     #AD4ERR,ERRVEC          ;FOR TIMEOUT
1884  005142  005777  176160                  TST     @ADD4                   ;IS THERE A DEVICE
1885  005146  013737  003326  003374          MOV     ADD4,DEVIC4             ;YES
1886  005154  012737  046740  000004          MOV     #TIEOUT,ERRVEC          ;REPLACE TIMEOUT
1887  005162  000137  006054                  JMP     RESTAR          ;TEST DEVICES
1888  005166  005037  003370          AD2ERR: CLR     DEVIC2                  ;NO DEVICE 2
1889  005172  012737  046740  000004          MOV     #TIEOUT,ERRVEC          ;REPLACE TIMEOUT
1890  005200  022626                          CMP     (SP)+,(SP)+             ;CORRECT STACK
1891  005202  000137  006054                  JMP     RESTAR                  ;TEST DEVICES
1892  005206  005037  003372          AD3ERR: CLR     DEVIC3                  ;NO DEVICE 3
1893  005212  012737  046740  000004          MOV     #TIEOUT,ERRVEC          ;REPLACE TIMEOUT
1894  005220  022626                          CMP     (SP)+,(SP)+             ;CORRECT STACK
1895  005222  000137  006054                  JMP     RESTAR                  ;TEST DEVICES
1896  005226  005037  003374          AD4ERR: CLR     DEVIC4                  ;NO DEVICE 4
1897  005232  012737  046740  000004          MOV     #TIEOUT,ERRVEC          ;REPLACE TIMEOUT
1898  005240  022626                          CMP     (SP)+,(SP)+             ;CORRECT STACK
1899  005242  000137  006054                  JMP     RESTAR                  ;TEST DEVICES
1900  005246  005737  000042          GIGO:   TST     @#42                    ;IS THERE A MONITOR
1901  005252  001402                          BEQ     GIG1                    ;NO
1902  005254  000137  046144                  JMP     $EOP                    ;YES EXIT
1903  005260  022737  160100  003366  GIG1:   CMP     #160100,DEVIC1          ;ARE WE HERE AFTER 210
1904  005266  001402                          BEQ     SA200                   ;NO, 200
1905  005270  000137  004644                  JMP     KONG                    ;GET NEW ADDRESS FOR 210
1906  005274                          SA200:
1907  005274  104401  005302                  TYPE    ,65$            ;;TYPE ASCIZ STRING
1908  005300  000420                          BR      64$             ;;GET OVER THE ASCIZ
1909                                  ;;65$:  .ASCIZ  <15><12>/TYPE BASE ADDRESS FOR RH #1 /
1910  005342                          64$:
1911  005342  104410                          RDOCT
1912  005344  012637  003366                  MOV     (SP)+,DEVIC1            ;GET BASE ADDRESS FOR RH1
1913  005350  105737  001103                  TSTB    $ERFLG                  ;ARE WE HERE BECAUSE OF AN ADDRESS ERROR
1914  005354  001405                          BEQ     GO1                     ;NO,GET READY FOR NEXT ADDRESS
1915  005356  005737  003366                  TST     DEVIC1                  ;IS IT A ZERO
1916  005362  001007                          BNE     GI1                     ;NO
1917  005364  000137  005260                  JMP     GIG1                    ;NEED FIRST ADDRESS
1918  005370  005737  003366          GO1:    TST DEVIC1                      ;DID HE CORRECT WITH A 0
1919  005374  001012                          BNE     GIGO1                   ;GET BASE FOR RH # 2
1920  005376  000137  005260                  JMP     GIG1                    ;NEED ADDRESS
1921  005402  013737  003366  003400  GI1:    MOV     DEVIC1,DEVIC5           ;GET READY TO CREATE REG. ADDRESS
1922  005410  012737  005246  003410          MOV     #GIGO,RETAIN            ;SAVE RETURN ADDRESS
1923  005416  000137  006146                  JMP     GIGO4                   ;CONSTRUCT REGISTER ADDRESSES
1924  005422  005737  000042          GIGO1:  TST     @#42                    ;IS THER A MONITOR
1925  005426  001402                          BEQ     GIG2                    ;NO
1926  005430  000137  046144                  JMP     $EOP                    ;EXIT
1927  005434                          GIG2:
1928  005434  104401  005442                  TYPE    ,65$            ;;TYPE ASCIZ STRING
1929  005440  000420                          BR      64$             ;;GET OVER THE ASCIZ
1930                                  ;;65$:  .ASCIZ  <15><12>/TYPE BASE ADDRESS FOR RH #2 /
1931  005502                          64$:
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1932  005502  104410                          RDOCT                           ;GET VALUE
1933  005504  012637  003370                  MOV     (SP)+,DEVIC2            ;SAVE ADDRESS
1934  005510  105737  001103                  TSTB    $ERFLG                  ;ARE WE HERE BECAUSE OF ERROR
1935  005514  001405                          BEQ     GO2                     ;NO
1936  005516  005737  003370                  TST     DEVIC2                  ;IS IT 0
1937  005522  001007                          BNE     GI2                     ;NO
1938  005524  000137  045366                  JMP     RESTAT                  ;SET UP FOR RH #1
1939  005530  005737  003370          GO2:    TST     DEVIC2                  ;IS IT 0
1940  005534  001012                          BNE     GIGO2                   ;NO,GET NEXT ADDRESS
1941  005536  000137  006054                  JMP     RESTAR                  ;CREATE ADDRESS FOR RH#1
1942  005542  013737  003370  003400  GI2:    MOV     DEVIC2,DEVIC5           ;GET READY TO CREATE
1943  005550  012737  005422  003410          MOV     #GIGO1,RETAIN           ;SAVE RETURN ADDRESS
1944  005556  000137  006146                  JMP     GIGO4                   ;CREATE REG. ADDRESSES
1945  005562  005737  000042          GIGO2:  TST     @#42                    ;IS THERE A MONITOR
1946  005566  001402                          BEQ     GIG3                    ;NO
1947  005570  000137  046144                  JMP     $EOP                    ;EXIT
1948  005574                          GIG3:
1949  005574  104401  005602                  TYPE    ,65$                ;;TYPE ASCIZ STRING
1950  005600  000420                          BR      64$                 ;;GET OVER THE ASCIZ
1951                                  ;;65$:  .ASCIZ  <15><12>/TYPE BASE ADDRESS FOR RH #3 /
1952  005642                          64$:
1953  005642  104410                          RDOCT
1954  005644  012637  003372                  MOV     (SP)+,DEVIC3            ;SAVE ADDRESS
1955  005650  105737  001103                  TSTB    $ERFLG                  ;ARE WE HERE DO TO ERROR
1956  005654  001405                          BEQ     GO3                     ;NO
1957  005656  005737  003372                  TST      DEVIC3                 ;IS IT 0
1958  005662  001007                          BNE     GI3                     ;NO
1959  005664  000137  045366                  JMP     RESTAT                  ;RESTART PASS
1960  005670  005737  003372          GO3:    TST     DEVIC3                  ;IS IT 0
1961  005674  001012                          BNE     GIGO3                   ;GET NEXT ADDRESS
1962  005676  000137  006054                  JMP     RESTAR                  ;CREATE RH#1 ADDRESSES
1963  005702  013737  003372  003400  GI3:    MOV     DEVIC3,DEVIC5           ;SETUP TO CREATE ADDRESS
1964  005710  012737  005562  003410          MOV     #GIGO2,RETAIN           ;SAVE RETURN ADDRESS
1965  005716  000137  006146                  JMP     GIGO4                   ;CREATE ADDRESSES
1966  005722  005737  000042          GIGO3:  TST     @#42                    ;IS THERE A MONITOR
1967  005726  001402                          BEQ     GIG4                    ;NO
1968  005730  000137  046144                  JMP     $EOP                    ;EXIT
1969  005734                          GIG4:
1970  005734  104401  005742                  TYPE    ,65$                ;;TYPE ASCIZ STRING
1971  005740  000420                          BR      64$                 ;;GET OVER THE ASCIZ
1972                                  ;;65$:  .ASCIZ  <15><12>/TYPE BASE ADDRESS FOR RH #4 /
1973  006002                          64$:
1974  006002  104410                          RDOCT
1975  006004  012637  003374                  MOV     (SP)+,DEVIC4            ;SAVE ADDRESS
1976  006010  105737  001103                  TSTB    $ERFLG                  ;ARE WE HERE BECAUSE OF ERROR
1977  006014  001405                          BEQ     GO4                     ;NO
1978  006016  005737  003374                  TST     DEVIC4                  ;IS IT 0
1979  006022  001004                          BNE     GI4                     ;NO
1980  006024  000137  045366                  JMP     RESTAT                  ;RESTART PASS
1981  006030  000137  006054          GO4:    JMP     RESTAR                  ;GO SET UP REG. ADDRESSES
1982  006034  013737  003374  003400  GI4:    MOV     DEVIC4,DEVIC5           ;GET READY TO CREATE REG. ADDRESSES
1983  006042  012737  005722  003410          MOV     #GIGO3,RETAIN           ;STORE RETURN ADDRESS
1984  006050  000137  006146                  JMP     GIGO4                   ;GO CREATE ADDRESSES
1985  006054  013737  003366  003400  RESTAR: MOV     DEVIC1,DEVIC5           ;GET READY TO CREATE REG. ADDRESSES
1986  006062  012737  005246  003410          MOV     #GIGO,RETAIN            ;SAVE RETURN ADDRESS
1987  006070  104401  006076                  TYPE    ,65$                ;;TYPE ASCIZ STRING
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                        BR      64$             ;;GET OVER THE ASCIZ
                ;;65$:  .ASCIZ  <15><12>/TESTING RH #1 AT BASE ADDRESS /
                64$:
                        MOV     DEVIC1,-(SP)    ;;SAVE DEVIC1 FOR TYPEOUT
                        TYPOC                   ;;GO TYPE--OCTAL ASCII(ALL DIGITS)
                GIGO4:  MOV     DEVIC5,@#OFF11          ;SETUP FOR ADDRESSES
                        MOV     #RHCS1,R2               ;SET UP WHERE TO PUT THEM
                4$:     MOV     @#OFF11,(R2)+           ;SETUP ADDRESS
                        ADD     #TWO,@#OFF11            ;SETUP NEXT ADDRESS
                        CMP     #RHBAE,R2               ;ARE ALL ADDRESSES SET UP
                        BEQ     3$                      ;IS INFORMATION CORRECT?
                        BR      4$                      ;NO SETUP NEW ADDRESS
                3$:     MOV     DEVIC5,@#OFF11
                        ADD     REGEND,@#OFF11
                        MOV     @#OFF11,RHBAE           ;WITH CORRECT ADDRESS
                        ADD     #2,@#OFF11              ;SETUP RHCS3 ADDRESS
                        MOV     @#OFF11,RHCS3           ;WITH CORRECT ADDRESS
                        MOV     RHCS1,RHCS1B            ;SETUP RHCS1B WITH
                        INC     RHCS1B                  ;HIGH BYTE ADDRESS OF RHCS1
                TSTADD: MOV     @#ERRVEC,-(SP)          ;SAVE TIOUT VALUE
                        MOV     #ADDERR,@#ERRVEC        ;SETUP NEW TIOUT VALUE
                        MOV     #7,@RHCS2               ;SETUP UNIT NO.
                        TST     @RHCS1                  ;WILL RH RESPOND
                        CMP     #40,@RHDT               ;IS A TESTER THERE
                        BEQ     1$                      ;YES ,CONTINUE
                        ERROR   34                      ;TESTER IS NOT CONNECTED
                        JMP     ADDERR+2                ;BAD ADDRESS
                1$:     CMPB    #7,@RHMR2               ;IS THERE ALSO A 7 FOR UNIT NO.
                        BEQ     2$                      ;YES,CONTINUE
                        ERROR   71                      ;BAD ADDRESS
                        JMP     ADDERR+2
                2$:     TST     (SP)+                   ;CORRECT STACK
                        BR      RHTEST                  ;YES AN RH IS THERE
                ADDERR: CMP     (SP)+,(SP)+             ;CORRECT STACK
                        MOV     (SP)+,@#ERRVEC          ;REPLACE OLD TIOUT VALUE
                        ERROR   36                      ;RH DID NOT RESPOND
                        JMP     @RETAIN                 ;GET CORRECT BASE ADDRESS
                RHTEST: MOV     (SP)+,@#ERRVEC          ;REPLACE TIEOUT VALUE
                        TST     R1                      ;IS IT A 70
                        BEQ     RH70TT                  ;YES,LETS MAKE SURE
                        MOV     @#ERRVEC,-(SP)          ;SAVE TIME OUT VALUE
                        MOV     #RH11,@#ERRVEC          ;CHECK FOR AN RH11
                        MOV     #IPCK0!IPCK1!IPCK2!IPCK3!IE3,@RHCS3
                                                        ;SET ALL BITS IN RHCS3
                        MOV     (SP)+,@#ERRVEC          ;REPLACE TIMEOUT
                RH11BA:
                        TYPE    ,65$            ;;TYPE ASCIZ STRING
                        BR      64$             ;;GET OVER THE ASCIZ
                ;;65$:  .ASCIZ  <15><12>/TESTING FOR AN RH70/
                64$:
                        CLR     R1                      ;SET UP RH70 FLAG
                        JMP     RH11+6                  ;EXIT
                RH70TT: MOV     @#ERRVEC,-(SP)          ;SAVE LOCATION 4
                        MOV     #FAKE70,@#ERRVEC        ;REPLACE ADDRESS
                        MOV     #IPCK0!IPCK1!IPCK2!IPCK3!IE3,@RHCS3
                                                        ;SET ALL BITS
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                        JMP     RH11+2                  ;EXIT TEST
                FAKE70: CMP     (SP)+,(SP)+             ;CORRECT STACK
                        MOV     (SP)+,@#ERRVEC          ;CORRECT TIMEOUT
                RH70BA: CLR     R1                      ;GET FLAG READY
                        COM     R1                      ;SET FOR RH11
                        TYPE    ,65$            ;;TYPE ASCIZ STRING
                        BR      64$             ;;GET OVER THE ASCIZ
                ;;65$:  .ASCIZ  <15><12>/TESTING AN RH11/
                64$:
                        BR      ERR1
                RH11:   CMP     (SP)+,(SP)+             ;CORRECT STACK POINTER
                        MOV     (SP)+,@#ERRVEC          ;REPLACE TIMEOUT VALUE
                ERR1:   JSR     R7,ERRTST
                ;;**************************************************************
                ;*TEST 2         CLEAR TEST
                        ;*THIS TEST CHECKS THAT ALL
                        ;*ERROR BITS ARE CLEARED AFTER
                        ;*THE CLEAR BIT WAS LOADED INTO
                        ;*RHCS2 REGISTER.............
                ;;**************************************************************
                TST2:   SCOPE
                        MOV     #1,$TIMES       ;;DO 1 ITERATION
                        CLR     $TMP5                   ;GET READY TO
                        COM     $TMP5                   ;SET UP FOR JSR ROUTINE
                ;;**************************************************************
                        ;*THIS TEST IS ALSO ENTERED AT THE LABLE CLEER
                        ;*AT THE END OF ALL THE ERROR BIT TESTS TO SEE
                        ;*THAT A CLEAR WILL CLEAR THE ERROR BIT SET
                ;;**************************************************************
                CLEER:  MOV     #CLR,@RHCS2             ;TELL IT TO CLEAR
                        MOV     #7,@RHCS2               ;SETJP UNIT NO.
                        CMPB    #7,@RHMR2               ;HAS DEVICE BEEN SET TO 7
                        BNE     1$                      ;NO,FIND WHAT BIT WAS NOT SET
                ;;**************************************************************
                        ;*THE TEST IS ENTERED HERE IF THE ERROR BIT BEING
                        ;*FORCED SET DID NOT SET TO SEE IF ANY OTHER ERROR
                        ;*BIT DID SET.............
                ;;**************************************************************
                12$:    TST     R1                      ;IS IT AN 11 OR A 70
                        BMI     15$                     ;IT'S A 70
                        TST     BEFORE                  ;ARE WE HERE FOR SHORTS
                        BEQ     14$                     ;NO
                        BIT     $CS3,@RHCS3             ;ANY EXTRA ERROR BITS
                        BEQ     15$                     ;NO
                        JMP     13$                     ;WE FOUND AN ERROR
                14$:    BIT     #WCELO!WCEHI!DPELO!DPEHI!APE,@RHCS3
                                                        ;TEST ERROR BITS
                        BEQ     5$                      ;NO ERROR BITS SET
                        JMP     13$                     ;GO REPORT ERROR BITS
                15$:    TST     BEFORE                  ;ARE WE HERE FOR SHORTS
                        BEQ     5$                      ;NO
                        BIT     $CS1,@RHCS1             ;YES SEE IF THERE ARE ANY
                        BNE     2$                      ;NONE FOUND
                        BR      16$                     ;GO CHECK THE NEXT ONE
                5$:     BIT     #TRE!SC!MCPE,@RHCS1     ;ANY ERROR BITS SET IN CS1
                        BNE     2$                      ;YES,FIND THEM
```

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2100  006710  005737  004122          16$:  TST   BEFORE                    ;ARE WE HERE FOR SHORTS
2101  006714  001405                        BEQ   6$                        ;NO
2102  006716  033777  004126  174414        BIT   $CS2,@RHCS2               ;ANY SHORTS
2103  006724  001065                        BNE   3$                        ;YES
2104  006726  000404                        BR    17$                       ;NO,CONTINUE
2105  006730  032777  177400  174402  6$:   BIT   #MPE!MXF.PGE!NEM!NED.UPE!WCE!DLT,@RHCS2
2106                                                                        ;ARE ANY ERROR BITS SET IN CS2
2107  006736  001060                        BNE   3$                        ;YES ,FIND THEM
2108  006740  005737  004122          17$:  TST   BEFORE                    ;ARE WE HERE FOR SHORTS
2109  006744  001405                        BEQ   7$                        ;NO
2110  006746  033777  004132  174366        BIT   $ST,@RHST                 ;ANY SHORTS ?
2111  006754  001076                        BNE   9$                        ;YES
2112  006756  000404                        BR    18$                       ;CONTINUE
2113  006760  032777  140000  174354  7$:   BIT   #ERR!ATA,@RHST            ;ARE ANY ERROR BITS SET IN ER1
2114  006766  001071                        BNE   9$                        ;YES ,GO FIND THEM
2115  006770  005737  004122          18$:  TST   BEFORE                    ;ARE WE HERE FOR SHORTS
2116  006774  001405                        BEQ   8$                        ;NO
2117  006776  033777  004134  174340        BIT   $ER,@RHER                 ;YES ,SEE IF THER ARE ANY
2118  007004  001046                        BNE   4$                        ;WE FOUND SOME
2119  007006  000404                        BR    19$                       ;CONTINUE
2120  007010  032777  030175  174326  8$:   BIT   #ILF!RMR!CPE.DPE!RMBEX!RFAIL!DTE!OPI,@RHER
2121                                                                        ;ANY ERRORS IN RHER REG.
2122  007016  001041                        BNE   4$                        ;YES,GO FIND THEM
2123  007020  005737  001210          19$:  TST   $TMP5                     ;IS IT BEING USED AS A SUBROUTINE
2124  007024  001501                        BEQ   LEAVE                     ;YES
2125  007026  005037  001210                CLR   $TMP5                     ;SETUP SUB ROUTINE FLAG
2126  007032  000477                        BR    ERR2                      ;WAS THERE ANY ERRORS
2127  007034  004737  050026          1$:   JSR   R7,FOUND                  ;DEVICE NO. ERROR
2128  007040  017737  174274  004100        MOV   @RHCS2,RBUF               ;GET CONTENTS
2129  007046  104071                        ERROR 71                        ;DEVICE NO. NOT =7
2130  007050  004737  046354                JSR   R7,WATBIT                 ;FIND BIT NOT SET
2131  007054  000660                        BR    12$                       ;TEST REST OF ERROR BITS
2132  007056  004737  047706          2$:   JSR   R7,FINDIT                 ;RHCS1 IN ERROR
2133  007062  017737  174242  004100        MOV   @RHCS1,RBUF               ;GET CONTENTS
2134  007070  104072                        ERROR 72                        ;ERROR BIT SET IN CS1
2135  007072  004737  046354                JSR   R7,WATBIT                 ;WHAT BIT IS SET
2136  007076  000704                        BR    16$                       ;TEST REST OF REGISTERS
2137  007100  004737  047732          3$:   JSR   R7,LOOKFO                 ;ERROR IN RHCS2
2138  007104  017737  174230  004100        MOV   @RHCS2,RBUF               ;GET CONTENTS
2139  007112  104073                        ERROR 73                        ;BIT SET IN CS2
2140  007114  004737  046354                JSR   R7,WATBIT                 ;TELL WHAT BIT
2141  007120  000707                        BR    17$                       ;CONTINUE TEST
2142  007122  004737  047756          4$:   JSR   R7,LOOKED                 ;RHER HAS A BIT SET
2143  007126  017737  174212  004100        MOV   @RHER,RBUF                ;GET CONTENTS
2144  007134  104074                        ERROR 74                        ;ER1 HAS AN ERROR BIT SET
2145  007136  004737  046354                JSR   R7,WATBIT                 ;TELL WHAT BIT
2146  007142  005737  001210                TST   $TMP5                     ;IS IT BEING USED AS A SUBROUTINE
2147  007146  001430                        BEQ   LEAVE                     ;YES
2148  007150  000430                        BR    ERR2                      ;WAS THERE ANY ERRORS
2149  007152  004737  050002          9$:   JSR   R7,FIND                   ;RHST HAS AN ERROR BIT SET
2150  007156  017737  174160  004100        MOV   @RHST,RBUF                ;GET CONTENTS
2151  007164  104075                        ERROR 75                        ;ERROR IN RHST
2152  007166  004737  046354                JSR   R7,WATBIT                 ;TELL WHAT BIT
2153  007172  000676                        BR    18$                       ;CONTINUE TEST
2154  007174  004737  050052          13$:  JSR   R7,CS3ERR                 ;CLEAR UNWANTED BITS
2155  007200  017737  174156  004100        MOV   @RHCS3,RBUF               ;GET REG. CONTENTS
```

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2156  007206  104176                    ERROR   176                     ;RHCS3 HAS AN ERROR BIT SET
2157  007210  004737  046354            JSR     R7,WATBIT               ;TELL WHAT BITS
2158  007214  000137  006660            JMP     15$                     ;CONT CHECK
2159  007220  000137  006616            JMP     12$                     ;START JSR WHYFO
2160  007224  000137  007220  WHYFO:    JMP     .-4                     ;FIND ERROR BITS SET
2161  007230  000207          LEAVE:    RTS     R7                      ;GO BACK TO PROGRAM THAT SENT YOU HERE
2162  007232  004737  050202  ERR2:     JSR     R7,ERRTST
2163                          ;;**********************************************************************
2164                          ;*TEST 3         THIS TEST SEES IF THE TESTER IS CONNECTED
2165                                  ;*THIS TEST SEES IF THE DEVICE CODE IS
2166                                  ;*A 40 TO SAY AN RH SIMULATOR IS ATTACHED
2167                          ;;**********************************************************************
2168  007236  000004          TST3:     SCOPE
2169  007240  012777  000040  174072    MOV     #CLR,@RHCS2             ;CLEAR TESTER
2170  007246  012777  000007  174064    MOV     #7,@RHCS2               ;UNIT SEVEN
2171  007254  017737  174076  001172    MOV     @RHDT,$REG4             ;GET DRIVE TYPE
2172  007262  022737  000040  001172    CMP     #40,$REG4               ;IS IT THE TESTER
2173  007270  001401                    BEQ     ERR4                    ;WAS  THERE AN ERROR
2174  007272  104034                    ERROR   34                      ;TESTER NOT CONNECTED
2175  007274  004737  050202  ERR4:     JSR     R7,ERRTST               ;
2176
2177
2178                          ;;**********************************************************************
2179                          ;*TEST 4         WC CLEAR TEST
2180                                  ;*THIS TEST WILL SEE THAT WHEN A CLEAR IS GIVEN
2181                                  ;*THE WORD COUNT REGISTER REMAINS THE SAME
2182                          ;;**********************************************************************
2183  007300  000004          TST4:     SCOPE
2184  007302  012737  000001  001212    MOV     #1,$TIMES       ;;DO 1 ITERATION
2185  007310  012777  177777  174014    MOV     #-1,@RHWC               ;MAKE WC NEGITIVE
2186  007316  022777  177777  174006    CMP     #-1,@RHWC               ;WAS IT LOADED CORRECTLY
2187  007324  001056                    BNE     WCERR1                  ;NO,ALL BITS DID NOT SET
2188  007326  012777  000040  174004  HERE:     MOV     #CLR,@RHCS2             ;TELL DEVICE TO CLEAR
2189  007334  017737  173770  003420    MOV     @RHCS1,CS1              ;SAVE RHCS1
2190  007342  017737  173764  003444    MOV     @RHWC,WC                ;SAVE WORD COUNT
2191  007350  017737  173760  003414    MOV     @RHBA,BA                ;SAVE BUS ADDRESS
2192  007356  005701                    TST     R1                      ;IS IT AN RH11
2193  007360  001406                    BEQ     87$                     ;NO IT'S A 70
2194  007362  005037  003416            CLR     BAE                     ;CLEAR BAE
2195  007366  005037  003424            CLR     CS3                     ;CLEAR CS3
2196  007372  000137  007412            JMP     86$                     ;CONTINUE
2197  007376  017737  173756  003416  87$:      MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
2198  007404  017737  173752  003424            MOV     @RHCS3,CS3              ;SAVE RHCS3
2199  007412  017737  173722  003422  86$:      MOV     @RHCS2,CS2              ;SAVE CS2
2200  007420  017737  173716  003432            MOV     @RHST,DS1               ;SAVE TESTER STATUS
2201  007426  017737  173712  003436            MOV     @RHER,ER1               ;SAVE ERROR REGISTER
2202  007434  017737  173710  003442            MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
2203  007442  017737  173670  003440            MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
2204  007450  005777  173656                    TST     @RHWC                   ;DID IT CLEAR
2205  007454  001434                    BEQ     WCERR2                  ;YES,CLEAR SHOULD NOT CLEAR WC
2206  007456  000137  007576            JMP     @#DOIT                  ;GO TO NEXT CHECK
2207  007462  005777  173644  WCERR1:   TST     @RHWC                   ;DID ANY BITS LOAD
2208  007466  001416                    BEQ     1$                      ;NO
2209  007470  012737  177777  001162    MOV     #-1,$REG0               ;SAVE WHAT WC SHOULD HAVE BEEN
2210  007476  017737  173630  003444    MOV     @RHWC,WC                ;SAVE CONTENTS OF WC
2211  007504  104042                    ERROR   42                      ;ALL BITS DID NOT SET
```

```
 2212  007506  013737  003444  001200          MOV     WC,$TMP1                ;SETUP FOR WATBIT
 2213  007514  004737  046354                  JSR     R7,WATBIT               ;FIND THE BIT(S)
 2214  007520  000137  007326                  JMP     @#HERE                  ;SEE IF BITS SET CLEAR
 2215  007524  013737  177777  001162  1$:     MOV     -1,$REGO                ;SETUP FOR ERROR
 2216  007532  017737  173574  003444          MOV     @RHWC,WC                ;GET BAD DATA
 2217  007540  104043                          ERROR   43                      ;WC DID NOT LOAD ANY BITS
 2218  007542  000137  007576                  JMP     @#DOIT                  ;GO TO NEXT REG. TEST
 2219  007546  012737  177777  001162  WCERR2: MOV     #-1,$REGO               ;SETUP GOOD DATA
 2220  007554  017737  173552  003444          MOV     @RHWC,WC                ;GET BAD DATA
 2221  007562  013737  003444  001200          MOV     WC,$TMP1                ;SETUP FOR WATBIT
 2222  007570  104044                          ERROR   44                      ;SOME BITS CLEARED IN WC
 2223  007572  004737  046354                  JSR     R7,WATBIT               ;FIND THE BITS THAT CLEARED
 2224  007576  004737  006572          DOIT:   JSR     R7,CLEER                ;CLEAR ERRORS
 2225  007602  004737  050202                  JSR     R7,ERRTST
```

```
                                ;;*****************************************************************
                                ;*TEST 5         RHBA CLEAR TEST

                                        ;*THIS TEST SEES THAT WHEN A CLEAR IS GENERATED
                                        ;*THE BUS ADDRESS REGISTER IS CLEARED

                                ;;*****************************************************************
007606  000004                  TST5:   SCOPE
007610  012777  177776  173516  ITDO:   MOV     #-2,@RHBA               ;SET ALL BITS IN RHBA
007616  022777  177776  173510          CMP     #-2,@RHBA               ;ARE THEY ALL SET
007624  001066                          BNE     1$                      ;ALL THE BITS DID NOT SET
007626  012777  000040  173504          MOV     #CLR,@RHCS2             ;TELL IT TO CLEAR
007634  017737  173470  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
007642  017737  173464  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
007650  017737  173460  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
007656  005701                          TST     R1                      ;IS IT AN RH11
007660  001406                          BEQ     87$                     ;NO IT'S A 70
007662  005037  003416                  CLR     BAE                     ;CLEAR BAE
007666  005037  003424                  CLR     CS3                     ;CLEAR CS3
007672  000137  007712                  JMP     86$                     ;CONTINUE
007676  017737  173456  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
007704  017737  173452  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
007712  017737  173422  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
007720  017737  173416  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
007726  017737  173412  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
007734  017737  173410  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
007742  017737  173370  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
007750  005777  173360                  TST     @RHBA                   ;IS IT ZERO
007754  001421                          BEQ     TOIT                    ;TEST IS GOOD
007756  005037  001162                  CLR     $REG0                   ;CREATE GOOD DATA
007762  017737  173346  001200          MOV     @RHBA,$TMP1             ;SETUP FOR WATBIT
007770  104045                          ERROR   45                      ;RHBA DID NOT CLEAR
007772  004737  046354                  JSR     R7,WATBIT               ;FIND BITS STILL SET
007776  000137  010020                  JMP     @#TOIT                  ;GO TO NEXT REG. TEST
010002  012737  177776  001162  1$:     MOV     #-2,$REG0               ;SETUP GOOD DATA
010010  017737  173320  001200          MOV     @RHBA,$TMP1             ;SETUP FOR WATBIT
010016  104046                          ERROR   46                      ;BITS DID NOT SET IN RHBA
010020                          TOIT:
010020  004737  006572                  JSR     R7,CLEER                ;CLEAR ERRORS
010024  004737  050202                  JSR     R7,ERRTST
                                ;;*****************************************************************
                                ;*TEST 6         RHBAE CLEAR TEST
                                        ;*THIS TEST CHECKS THAT WHEN A CLEAR IS GENERATED
                                        ;*THE BUS ADDRESS EXTENSION REGISTER IS CLEARED
                                ;;*****************************************************************
010030  000004                  TST6:   SCOPE
010032  005701                          TST     R1                      ;IS IT A 70 OR AN 11
010034  100510                          BMI     TST7            ;;SKIP OVER TEST FOR RH11
010036  012777  000077  173314  WATFOR: MOV     #77,@RHBAE              ;SET ALL BITS IN RHBAE
010044  022777  000077  173306          CMP     #77,@RHBAE              ;ARE THEY ALL SET
010052  001066                          BNE     1$                      ;ALL THE BITS DID NOT SET
010054  012777  000040  173256          MOV     #CLR,@RHCS2             ;TELL IT TO CLEAR
010062  017737  173242  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
010070  017737  173236  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
010076  017737  173232  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
010104  005701                          TST     R1                      ;IS IT AN RH11
```

```
2282  010106  001406                          BEQ     87$                     ;NO IT'S A 70
2283  010110  005037  003416                  CLR     BAE                     ;CLEAR BAE
2284  010114  005037  003424                  CLR     CS3                     ;CLEAR CS3
2285  010120  000137  010140                  JMP     86$                     ;CONTINUE
2286  010124  017737  173230  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
2287  010132  017737  173224  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
2288  010140  017737  173174  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
2289  010146  017737  173170  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
2290  010154  017737  173164  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
2291  010162  017737  173162  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
2292  010170  017737  173142  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
2293  010176  005777  173156                  TST     @RHBAE                  ;IS IT ZERO
2294  010202  001421                          BEQ     WATFIV                  ;TEST IS GOOD
2295  010204  005037  001162                  CLR     $REG0                   ;CREATE GOOD DATA
2296  010210  017737  173144  001200          MOV     @RHBAE,$TMP1            ;SETUP FOR WATBIT
2297  010216  104100                          ERROR   100                     ;RHBAE DID NOT CLEAR
2298  010220  004737  046354                  JSR     R7,WATBIT               ;FIND BITS STILL SET
2299  010224  000137  010246                  JMP     @#WATFIV                        ;GO TO NEXT REG. TEST
2300  010230  012737  000077  001162  1$:     MOV     #77,$REG0               ;SETUP GOOD DATA
2301  010236  017737  173116  001200          MOV     @RHBAE,$TMP1            ;SETUP FOR WATBIT
2302  010244  104101                          ERROR   101                     ;BITS DID NOT SET IN RHBAE
2303  010246                          WATFIV:
2304  010246  004737  006572                  JSR     R7,CLEER                ;CLEAR ERRORS
2305  010252  004737  050202                  JSR     R7,ERRTST
2306                                  ;;**********************************************************************
2307                                  ;*TEST 7         RHDB CLEAR TEST
2308                                          ;*THIS TEST CHECKS THAT WHEN A CLEAR IS GENERATED
2309                                          ;*OUTPUT READY IS NEGATED
2310                                  ;;**********************************************************************
2311  010256  000004                  TST7:   SCOPE
2312  010260  012777  177777  173064          MOV     #-1,@RHDB               ;SET ALL BITS IN RHDB
2313  010266  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
2314  010272  032777  000200  173040  18$:     BIT     #OR,@RHCS2              ;IS OR SET
2315  010300  001015                          BNE     DBMG                    ;BIT IS SET
2316  010302  005237  003446                  INC     BITCNT                  ;COUNT UP
2317  010306  001371                          BNE     18$                     ;NOT FINISHED COUNTING
2318  010310  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
2319  010314  032777  000200  173016  19$:     BIT     #OR,@RHCS2              ;IS IT SET YET?
2320  010322  001004                          BNE     DBMG                    ;YES
2321  010324  005237  003446                  INC     BITCNT                  ;COUNT UP
2322  010330  001401                          BEQ     DBMG                    ;BIT IS NOT GOING TO SET
2323  010332  000770                          BR      19$
2324  010334                          DBMG:
2325  010334  017737  172770  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
2326  010342  017737  172764  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
2327  010350  017737  172760  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
2328  010356  005701                          TST     R1                      ;IS IT AN RH11
2329  010360  001406                          BEQ     87$                     ;NO IT'S A 70
2330  010362  005037  003416                  CLR     BAE                     ;CLEAR BAE
2331  010366  005037  003424                  CLR     CS3                     ;CLEAR CS3
2332  010372  000137  010412                  JMP     86$                     ;CONTINUE
2333  010376  017737  172756  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
2334  010404  017737  172752  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
2335  010412  017737  172722  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
2336  010420  017737  172716  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
2337  010426  017737  172712  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
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2338  010434  017737  172710  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
2339  010442  017737  172670  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
2340  010450  032777  000200  172662          BIT     #OR,@RHCS2              ;IS OUTPUT READY SET
2341  010456  001001                          BNE     HURTS                   ;YES ,CONTINUE TEST
2342  010460  104041                          ERROR   41                      ;OUTPUT READY DID NOT SET
2343  010462  022777  177777  172662  HURTS:  CMP     #-1,@RHDB               ;DID INFO GET LOADED TO DB
2344  010470  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
2345  010474  032777  000200  172636  18$:    BIT     #OR,@RHCS2              ;IS OR SET
2346  010502  001015                          BNE     DBMSG                   ;BIT IS SET
2347  010504  005237  003446                  INC     BITCNT                  ;COUNT UP
2348  010510  001371                          BNE     18$                     ;NOT FINISHED COUNTING
2349  010512  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
2350  010516  032777  000200  172614  19$:    BIT     #OR,@RHCS2              ;IS IT SET YET?
2351  010524  001004                          BNE     DBMSG                   ;YES
2352  010526  005237  003446                  INC     BITCNT                  ;COUNT UP
2353  010532  001401                          BEQ     DBMSG                   ;BIT IS NOT GOING TO SET
2354  010534  000770                          BR      19$
2355  010536                          DBMSG:
2356  010536  012777  000040  172574          MOV     #CLR,@RHCS2             ;TELL IT TO CLEAR
2357  010544  005037  003446                  CLR     BITCNT                  ;CLEAR THE COUNTER
2358  010550  032777  000200  172562  18$:    BIT     #OR,@RHCS2              ;DID OUTPUT READY CLEAR
2359  010556  001403                          BEQ     SNAFOO                  ;YES GET OUT OF LOOP
2360  010560  005237  003446                  INC     BITCNT                  ;INCREMENT COUNT LOOP
2361  010564  001371                          BNE     18$                     ;CONTINUE LOOP IF NO CARRY
2362  010566  032777  000200  172544  SNAFOO: BIT     #OR,@RHCS2              ;IS OUTPUT READY CLEARED
2363  010574  001403                          BEQ     1$                      ;YES,EXIT TEST
2364  010576  104114                          ERROR   114                     ;OUTPUT READY NOT CLEARED
2365                                                                          ;BY SETTING CLR IN RHCS2
2366  010600  004737  007224                  JSR     R7,WHYFO                ;ANY ERROR BITS SET
2367  010604  004737  006572          1$:     JSR     R7,CLEER                ;CLEAR ERRORS
2368  010610  004737  050202                  JSR     R7,ERRTST
2369                                  ;;**************************************************************************
2370                                  ;*TEST 10        PROM REGISTER DECODE TEST
2371                                          ;*THIS TEST CHECKS THAT THE PROM
2372                                          ;*CAN ACCESS ALL REGISTERS
2373                                  ;;**************************************************************************
2374  010614  000004                  TST10:  SCOPE
2375  010616  023727  003366  160100          CMP     DEVIC1,#160100          ;CHECK FOR WHAT REG END
2376  010624  001000                          BNE     1$                      ;WE ARE OK
2377  010626  013704  003356          1$:     MOV     RHDT,R4                 ;SETUP TO TEST RH11
2378  010632  005724                          TST     (R4)+                   ;CORRECT ADDRESS
2379  010634  023704  003360                  CMP     RHBAE,R4                ;ARE ALL REGISTERS CHECKED
2380  010640  001526                          BEQ     ERR3                    ;WERE THERE ANY ERRORS
2381  010642  005724                  2$:     TST     (R4)+                   ;TEST REGISTER
2382  010644  001004                          BNE     3$                      ;SOME INFORMATION WAS FOUND
2383  010646  023704  003360                  CMP     RHBAE,R4                ;ARE ALL REGISTERS CHECKED
2384  010652  001521                          BEQ     ERR3                    ;WAS THERE ANY ERRORS
2385  010654  000772                          BR      2$                      ;TEST NOT COMPLETED
2386  010656  005744                  3$:     TST     -(R4)                   ;CORRECT ADDRESS
2387  010660  010437  003416                  MOV     R4,BAE                  ;SAVE ADDRESS
2388  010664  011437  001162                  MOV     (R4),$REG0              ;GET CONTENTS
2389  010670  017737  172452  003412          MOV     @RHAS,AS                ;GET ATTENTION SUMMARY
2390  010676  104052                          ERROR   52                      ;FALSE INFO IN FAKE REGISTER
2391  010700  005003                          CLR     R3                      ;CET OFFSET READY
2392  010702  013737  003330  003420          MOV     RHCS1,CS1               ;GET ADDRESS TO START CHECKING
2393  010710  027737  172504  001162  29$:    CMP     @CS1,$REG0              ;HAS A REGISTER BEEN FOUND THAT COMPARES
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2394  010716  001412                          BEQ     28$                     ;YES,PRINT IT OUT
2395  010720  023737  003356  003420  30$:    CMP     RHDT,CS1                ;IS IT LAST REG IN RH11
2396  010726  001473                          BEQ     ERR3                    ;WAS THERE ANY ERRORS
2397  010730  062737  000002  003420          ADD     #TWO,CS1                ;NO,CORRECT FOR NEXT CHECK
2398  010736  062703  000004                  ADD     #4,R3                   ;CORRECT OFFSET
2399  010742  000762                          BR      29$                     ;CONTINUE TEST
2400  010744  032737  020000  177570  28$:    BIT     #SW13,@#177570          ;SKIP ERROR PRINTOUT
2401  010752  001024                          BNE     55$                     ;SKIP MESSAGE
2402  010754  104401  010762                  TYPE    ,65$            ;;TYPE ASCIZ STRING
2403  010760  000421                          BR      64$             ;;GET OVER THE ASCIZ
2404                                  ·:65$:  .ASCIZ  <15><12>/REGISTER CONTENTS COMPARES TO:/
2405  011024                                  .$:
2406  011024  000163  011030          55$:    JMP     27$(R3)                 ;PRINT REGISTER
2407  011030  104053                  27$:    ERROR   53                      ;RHCS1
2408  011032  000732                          BR      30$                     ;CONTINUE TEST
2409  011034  104054                          ERROR   54                      ;RHWC
2410  011036  000730                          BR      30$                     ;CONTINUE TEST
2411  011040  104055                          ERROR   55                      ;RHBA
2412  011042  000726                          BR      30$                     ;CONTINUE TEST
2413  011044  104056                          ERROR   56                      ;RHMR2
2414  011046  000724                          BR      30$                     ;CONTINUE TEST
2415  011050  104057                          ERROR   57                      ;RHCS2
2416  011052  000722                          BR      30$                     ;CONTINUE TEST
2417  011054  104060                          ERROR   60                      ;RHST
2418  011056  000720                          BR      30$                     ;CONTINUE TEST
2419  011060  104061                          ERROR   61                      ;RHER
2420  011062  000716                          BR      30$                     ;CONTINUE TEST
2421  011064  104062                          ERROR   62                      ;RHAS
2422  011066  000714                          BR      30$                     ;CONTINUE TEST
2423  011070  104063                          ERROR   63                      ;RHTDB
2424  011072  000712                          BR      30$                     ;CONTINUE TEST
2425  011074  104064                          ERROR   64                      ;RHDB
2426  011076  000710                          BR      30$                     ;CONTINUE TEST
2427  011100  104065                          ERROR   65                      ;RHMR1
2428  011102  000706                          BR      30$                     ;CONTINUE TEST
2429  011104  104066                          ERROR   66                      ;RHDT
2430  011106  000704                          BR      30$                     ;CONTINUE TEST
2431  011110  104067                          ERROR   67                      ;RHBAE
2432  011112  000702                          BR      30$                     ;CONTINUE TEST
2433  011114  104070                          ERROR   70                      ;RHCS3
2434  011116  004737  050202          ERR3:   JSR     R7,ERRTST
2435  011122  004737  006572                  JSR     R7,CLEER                ;CLEAR ERRORS
2436
2437                                  ;;**********************************************************************
2438                                  ;*TEST 11        RHCS3 TEST
2439                                          ;*THIS TEST CHECKS THE READ/WRITE BITS
2440                                          ;*IN THE RHCS3 REGISTER CAN BE CLEARED AND SET.
2441                                  ;;**********************************************************************
2442  011126  000004                  TST11:  SCOPE
2443  011130  012777  000040  172202          MOV     #CLR,@RHCS2             ;CLEAR TESTER
2444  011136  012777  000007  172174          MOV     #7,@RHCS2               ;SETUP UNIT SEVEN
2445  011144  005701                          TST     R1                      ;IS IT AN RH70
2446  011146  001122                          BNE     TST12           ;;THIS IS A RH11
2447  011150  012737  000004  003450          MOV     #4,LOOCNT               ;SETUP LOOP COUT OF FOUR
2448  011156  012737  000001  001162          MOV     #1,$REG0                ;SETUP BIT TO BE TESTED
2449  011164  013777  001162  172170  1$:     MOV     $REG0,@RHCS3            ;SET THE BIT
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2450  011172  017737  172164  003424          MOV     @RHCS3,CS3              ;SAVE CONTENTS OF RHCS3
2451  011 00  013737  003424  001200          MOV     CS3,$TMP1               ;SETUP FOR WHAT BIT IF NEEDED
2452  011  6  123777  001162  172146          CMPB    $REG0,@RHCS3            ;IS THE BIT SET?
2453  011  :  001022                          BNE     2$                      ;NO,GO TO ERROR
2454  011216  006137  001162                  ROL     $REG0                   ;SETUP TO TEST NEXT BIT
2455  011222  005337  003450                  DEC     LOOCNT                  ;-1 TO THE LOOP COUNT
2456  011226  001356                          BNE     1$                      ;TEST NEXT BIT
2457  011230  012737  000100  001162          MOV     #IE3,$REG0              ;SET INTERRUPT BIT
2458  011236  013777  001162  172116          MOV     $REG0,@RHCS3            ;SET BIT
2459  011244  017737  172112  003424          MOV     @RHCS3,CS3                      ;SAVE CONTENTS
2460  011252  023777  001162  172102          CMP     $REG0,@RHCS3                    ;IS BIT SET?
2461  011260  001451                          BEQ     ERR5                    ;WAS THERE AN ERROR
2462  011262                          2$:
2463  011262  017737  172042  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
2464  011270  017737  172036  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
2465  011276  017737  172032  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
2466  011304  005701                          TST     R1                      ;IS IT AN RH11
2467  011306  001406                          BEQ     87$                     ;NO IT'S A 70
2468  011310  005037  003416                  CLR     BAE                     ;CLEAR BAE
2469  011314  005037  003424                  CLR     CS3                     ;CLEAR CS3
2470  011320  000137  011340                  JMP     86$                     ;CONTINUE
2471  011324  017737  172030  003416  87$:     MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
2472  011332  017737  172024  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
2473  011340  017737  171774  003422  86$:     MOV     @RHCS2,CS2              ;SAVE CS2
2474  011346  017737  171770  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
2475  011354  017737  171764  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
2476  011362  017737  171762  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
2477  011370  017737  171742  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
2478  011376  104035                          ERROR   35                      ;BIT DID NOT SET
2479  011400  004737  046354                  JSR     R7,WATBIT               ;TELL WHAT BIT POSITION IS NO GOOD
2480  011404  004737  050202          ERR5:   JSR     R7,ERRTST
2481  011410  004737  006572                  JSR     R7,CLEER                ;CLEAR ERRORS
2482
2483                                  ;;**********************************************************************
2484                                  ;*TEST 12        RHWC BIT TEST
2485                                        ;*THIS TEST CHECKS THE WORD COUNT REGISTER
2486                                        ;*TO SEE IF ALL BITS CAN BE SET AND CLEARED
2487                                        ;*AND CHECKS THE REGISTER USING ALTERNATE BITS
2488                                        ;*SET (52525) AND USING (125252) TO MAKE SURE
2489                                        ;*IT WORKS WITH ALTERNATE PATTERN.
2490                                  ;;**********************************************************************
2491  011414  000004                  TST12:  SCOPE
2492  011416  012737  000001  001162          MOV     #ONE,$REG0              ;SET UP REFERANCE WORD
2493  011424  013777  001162  171700  RHWCT:  MOV     $REG0,@RHWC             ;MOVE BIT INTO WORD COUNT REGISTER
2494  011432  023777  001162  171672          CMP     $REG0,@RHWC             ;IS BIT SET?
2495  011440  001454                          BEQ     1$                      ;YES,CONTINUE BIT TEST
2496  011442  013737  003444  001200          MOV     WC,$TMP1                ;SETUP FOR WATBIT PROG.
2497  011450  004737  046354                  JSR     R7,WATBIT               ;GO TO WATBIT PROGRAM
2498  011454  017737  171650  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
2499  011462  017737  171644  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
2500  011470  017737  171640  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
2501  011476  005701                          TST     R1                      ;IS IT AN RH11
2502  011500  001406                          BEQ     87$                     ;NO IT'S A 70
2503  011502  005037  003416                  CLR     BAE                     ;CLEAR BAE
2504  011506  005037  003424                  CLR     CS3                     ;CLEAR CS3
2505  011512  000137  011532                  JMP     86$                     ;CONTINUE
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2506  011516  017737  171636  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
2507  011524  017737  171632  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
2508  011532  017737  171602  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
2509  011540  017737  171576  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
2510  011546  017737  171572  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
2511  011554  017737  171570  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
2512  011562  017737  171550  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
2513  011570  104001                          ERROR   1                       ;BIT WAS NOT SET IN RHWC REG
2514  011572  005737  001162          1$:     TST     $REG0                   ;WAS IT BIT 15 THAT WAS LAST TESTED
2515  011576  100403                          BMI     RHWCA                   ;YES ,GO TO NEXT PART OF TEST
2516  011600  006137  001162                  ROL     $REG0                   ;NO,THEN TEST NEXT BIT
2517  011604  000707                          BR      RHWCT                   ;DO BIT TEST AGAIN
2518  011606  012737  052525  001162  RHWCA:  MOV     #AB,$REG0               ;SET UP ALTERNATE BIT PATTERN
2519  011614  013777  001162  171510          MOV     $REG0,@RHWC             ;SET ALTERNATE BITS
2520  011622  017737  171504  003444          MOV     @RHWC,WC                ;SAVE RHWC CONTENTS
2521  011630  023777  001162  171474          CMP     $REG0,@RHWC             ;ARE THEY ALL SET?
2522  011636  001457                          BEQ     1$                      ;YES,CONTINUE TEST
2523  011640  013737  003444  001200          MOV     WC,$TMP1                ;SETUP FOR WATBIT PROG.
2524  011646  004737  046354                  JSR     R7,WATBIT               ;GO TO WATBIT PROGRAM
2525  011652  017737  171452  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
2526  011660  017737  171446  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
2527  011666  017737  171442  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
2528  011674  005701                          TST     R1                      ;IS IT AN RH11
2529  011676  001406                          BEQ     87$                     ;NO IT'S A 70
2530  011700  005037  003416                  CLR     BAE                     ;CLEAR BAE
2531  011704  005037  003424                  CLR     CS3                     ;CLEAR CS3
2532  011710  000137  011730                  JMP     86$                     ;CONTINUE
2533  011714  017737  171440  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
2534  011722  017737  171434  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
2535  011730  017737  171404  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
2536  011736  017737  171400  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
2537  011744  017737  171374  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
2538  011752  017737  171372  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
2539  011760  017737  171352  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
2540  011766  104001                          ERROR   1                       ;TEST FAILED
2541  011770  012737  125252  001162          MOV     #0AB,$REG0              ;SET UP ALTERNATE OPPISITE BITS
2542  011776  013777  001162  171326  1$:     MOV     $REG0,@RHWC             ;SET OPPISITE ALTERNATE BITS
2543  012004  017737  171322  003444          MOV     @RHWC,WC                ;SAVE CONTENTS OF RHWC
2544  012012  023777  001162  171312          CMP     $REG0,@RHWC             ;ARE CORRECT BITS SET?
2545  012020  001454                          BEQ     ERR6                    ;WAS THERE AN ERROR
2546  012022  013737  003444  001200          MOV     WC,$TMP1                ;SETUP FOR WATBIT PROG.
2547  012030  004737  046354                  JSR     R7,WATBIT               ;GO TO WATBIT PROGRAM
2548  012034                          GOOF:
2549  012034  017737  171270  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
2550  012042  017737  171264  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
2551  012050  017737  171260  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
2552  012056  005701                          TST     R1                      ;IS IT AN RH11
2553  012060  001406                          BEQ     87$                     ;NO IT'S A 70
2554  012062  005037  003416                  CLR     BAE                     ;CLEAR BAE
2555  012066  005037  003424                  CLR     CS3                     ;CLEAR CS3
2556  012072  000137  012112                  JMP     86$                     ;CONTINUE
2557  012076  017737  171256  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
2558  012104  017737  171252  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
2559  012112  017737  171222  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
2560  012120  017737  171216  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
2561  012126  017737  171212  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
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2562  012134  017737  171210  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
2563  012142  017737  171170  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
2564  012150  104001                          ERROR   1                       ;OPPISITE BIT TEST FAILED
2565  012152  013737  003332  004142  ERR6:   MOV     RHWC,$RHWC              ;GET READY TO TEST BYTES
2566  012160  012777  000000  171144          MOV     #ZERO,@RHWC             ;CLEAR WC FIRST
2567  012166  113777  004120  171746          MOVB    MINUS,@$RHWC            ;CHECK LOBYTE
2568  012174  022777  000377  171130          CMP     #377,@RHWC              ;ANY EXTRA BITS
2569  012202  001401                          BEQ     HIBYTE                  ;OK SO FAR
2570  012204  104200                          ERROR   200                     ;HIBYTE GATE NOT WORKING PROPERLY
2571  012206  005237  004142          HIBYTE: INC     $RHWC                   ;GET READY FOR NEXT BYTE
2572  012212  012777  000000  171112          MOV     #ZERO,@RHWC             ;CLEAR WC
2573  012220  113777  004121  171714          MOVB    MINUS+1,@$RHWC          ;CHECK THE HI BYTE
2574  012226  022777  177400  171076          CMP     #177400,@RHWC           ;IS IT OK
2575  012234  001401                          BEQ     ALRIGT                  ;ITS OK
2576  012236  104200                          ERROR   200                     ;LOBYTE GATE NOT WORKING PROPERLY
2577  012240  004737  050202          ALRIGT: JSR     R7,ERRTST
2578  012244  012777  000000  171060          MOV     #ZERO,@RHWC             ;CLEAR WORD COUNT
2579  012252  004737  006572                  JSR     R7,CLEER                ;CLEAR ERRORS
2580
2581
2582                                  ;;*****************************************************************
2583                                  ;*TEST 13       RHBAE BIT TEST
2584                                          ;*THIS TEST TESTS THE RHBAE REGISTER
2585                                          ;*ONLY IF THE RH IS AN RH70,RH11'S
2586                                          ;*DO NOT HAVE AN RHBAE REGISTER
2587                                  ;;*****************************************************************
2588  012256  000004                  TST13:  SCOPE
2589  012260  005701                          TST     R1                      ;IS RH AN RH70
2590  012262  001104                          BNE     TST14           ;;NO PASS OVER TEST
2591  012264  012737  000001  001162          MOV     #1,$REG0                ;SET UP BIT TEST
2592  012272  013777  001162  171060  BAETST: MOV     $REG0,@RHBAE            ;SET BIT IN RHBAE REGISTER
2593  012300  017737  171054  003416          MOV     @RHBAE,BAE              ;SAVE CONTENTS OF RHBAE REGISTER
2594  012306  023777  001162  171044          CMP     $REG0,@RHBAE            ;IS IT SET?
2595  012314  001454                          BEQ     1$                      ;YES CONTINUE TEST
2596  012316  013737  003416  001200          MOV     BAE,$TMP1               ;SETUP FOR WATBIT PROG.
2597  012324  004737  046354                  JSR     R7,WATBIT               ;GO TO WATBIT PROGRAM
2598  012330  017737  170774  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
2599  012336  017737  170770  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
2600  012344  017737  170764  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
2601  012352  005701                          TST     R1                      ;IS IT AN RH11
2602  012354  001406                          BEQ     87$                     ;NO IT'S A 70
2603  012356  005037  003416                  CLR     BAE                     ;CLEAR BAE
2604  012362  005037  003424                  CLR     CS3                     ;CLEAR CS3
2605  012366  000137  012406                  JMP     86$                     ;CONTINUE
2606  012372  017737  170762  003416  87$:     MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
2607  012400  017737  170756  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
2608  012406  017737  170726  003422  86$:     MOV     @RHCS2,CS2              ;SAVE CS2
2609  012414  017737  170722  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
2610  012422  017737  170716  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
2611  012430  017737  170714  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
2612  012436  017737  170674  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
2613  012444  104002                          ERROR   2                       ;BIT DID NIT SET
2614  012446  022737  000040  001162  1$:     CMP     #40,$REG0               ;IS IT LAST BIT TO BE TESTED
2615  012454  001403                          BEQ     ERR7                    ;WAS THERE AN ERROR
2616  012456  006137  001162                  ROL     $REG0                   ;NO,SET UP FOR NEXT BIT
2617  012462  000703                          BR      BAETST                  ;CONTINUE TEST
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                                ERR7:   JSR     R7,CLEER                ;CLEAR ERRORS
                                        JSR     R7,ERR$ST
                                ;;**********************************************************************
                                ;*TEST 14        RHBA BIT TEST
                                        ;*THIS TEST TESTS THE BUS ADDRESS REGISTER
                                        ;*BY FIRST ALTERNATLY SETTING AND CLEARING
                                        ;*BITS IN THE BA REGISTER AND THEN BY USING
                                        ;*AN ALTERNATE BIT PATTERN (52525) AND AN
                                        ;*OPPOSITE BIT PATTERN (125252).
                                ;;**********************************************************************
012474  000004                TST14:  SCOPE
012476  012737  000002  001162        MOV     #TWO,$REG0              ;SET UP BIT TEST
012504  013777  001162  170622  BATST: MOV     $REG0,@RHBA             ;SET BIT IN RHBA REGISTER
012512  017737  170616  003414        MOV     @RHBA,BA                ;SAVE CONTENTS OF BA REGISTER
012520  023777  001162  170606        CMP     $REG0,@RHBA             ;ARE CORRECT BITS SET
012526  001454                      BEQ     1$                      ;YES,CONTINUE TEST
012530  013737  003414  001200        MOV     BA,$TMP1                ;SETUP FOR WATBIT PROG.
012536  017737  170566  003420        MOV     @RHCS1,CS1              ;SAVE RHCS1
012544  017737  170562  003444        MOV     @RHWC,WC                ;SAVE WORD COUNT
012552  017737  170556  003414        MOV     @RHBA,BA                ;SAVE BUS ADDRESS
012560  005701                      TST     R1                      ;IS IT AN RH11
012562  001406                      BEQ     87$                     ;NO IT'S A 70
012564  005037  003416              CLR     BAE                     ;CLEAR BAE
012570  005037  003424              CLR     CS3                     ;CLEAR CS3
012574  000137  012614              JMP     86$                     ;CONTINUE
012600  017737  170554  003416  87$:  MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
012606  017737  170550  003424        MOV     @RHCS3,CS3              ;SAVE RHCS3
012614  017737  170520  003422  86$:  MOV     @RHCS2,CS2              ;SAVE CS2
012622  017737  170514  003432        MOV     @RH$T,DS1               ;SAVE TESTER STATUS
012630  017737  170510  003436        MOV     @RHER,ER1               ;SAVE ERROR REGISTER
012636  017737  170506  003442        MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
012644  017737  170466  003440        MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
012652  104003                      ERROR   3                       ;NO,CORRECT BITS ARE NOT SET
012654  004737  046354              JSR     R7,WATBIT               ;GO TO WATBIT PROGRAM
012660  005737  001162          1$: TST     $REG0                   ;WAS BIT 15 THE LAST BIT TESTED
012664  100403                      BMI     BATSTA                  ;YES,GO TO ALTERNATE BIT TEST
012666  006137  001162              ROL     $REG0                   ;NO,SET UP TO TEST NEXT BIT
012672  000704                      BR      BATST                   ;CONTINUE BIT TEST
012674  012737  052525  001162  BATSTA: MOV     #AB,$REG0               ;SET UP BIT PATTERN
012702  042737  000001  001162        BIC     #ONE,$REG0              ;CLEAR BIT 0 POSITION
012710  013777  001162  170416        MOV     $REG0,@RHBA             ;SET BITS IN RHBA REGISTER
012716  017737  170412  003414        MOV     @RHBA,BA                ;SAVE CONTENTS OF BA REGISTER
012724  023777  001162  170402        CMP     $REG0,@RHBA             ;ARE CORRECT BITS SET
012732  001454                      BEQ     1$                      ;YES,CONTINUE TEST
012734  013737  003414  001200        MOV     BA,$TMP1                ;SETUP FOR WATBIT PROG.
012742  017737  170362  003420        MOV     @RHCS1,CS1              ;SAVE RHCS1
012750  017737  170356  003444        MOV     @RHWC,WC                ;SAVE WORD COUNT
012756  017737  170352  003414        MOV     @RHBA,BA                ;SAVE BUS ADDRESS
012764  005701                      TST     R1                      ;IS IT AN RH11
012766  001406                      BEQ     87$                     ;NO IT'S A 70
012770  005037  003416              CLR     BAE                     ;CLEAR BAE
012774  005037  003424              CLR     CS3                     ;CLEAR CS3
013000  000137  013020              JMP     86$                     ;CONTINUE
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2674  013004  017737  170350  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
2675  013012  017737  170344  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
2676  013020  017737  170314  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
2677  013026  017737  170310  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
2678  013034  017737  170304  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
2679  013042  017737  170302  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
2680  013050  017737  170262  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
2681  013056  104003                          ERROR   3                       ;NO,CORRECT BITS ARE NOT SET
2682  013060  004737  046354                  JSR     R7,WATBIT               ;GO TO WATBIT PROGRAM
2683  013064  012737  125252  001162  1$:     MOV     #0AB,$REG0              ;SET UP OPPOSITE ALTERNATE BIT TEST
2684  013072  013777  001162  170234          MOV     $REG0,@RHBA             ;SET BITS IN RHBA REGISTER
2685  013100  017737  170230  003414          MOV     @RHBA,BA                ;SAVE CONTENTS OF BA REGISTER
2686  013106  023777  001162  170220          CMP     $REG0,@RHBA             ;ARE CORRECT BITS SET
2687  013114  001454                          BEQ     ERR10                   ;WAS THERE AN ERROR
2688  013116  013737  003414  001200          MOV     BA,$TMP1                ;SETUP FOR WATBIT PROG.
2689  013124                          GOOFED:
2690  013124  017737  170200  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
2691  013132  017737  170174  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
2692  013140  017737  170170  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
2693  013146  005701                          TST     R1                      ;IS IT AN RH11
2694  013150  001406                          BEQ     87$                     ;NO IT'S A 70
2695  013152  005037  003416                  CLR     BAE                     ;CLEAR BAE
2696  013156  005037  003424                  CLR     CS3                     ;CLEAR CS3
2697  013162  000137  013202                  JMP     86$                     ;CONTINUE
2698  013166  017737  170166  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
2699  013174  017737  170162  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
2700  013202  017737  170132  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
2701  013210  017737  170126  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
2702  013216  017737  170122  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
2703  013224  017737  170120  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
2704  013232  017737  170100  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
2705  013240  104003                          ERROR   3                       ;NO,CORRECT BITS ARE NOT SET
2706  013242  004737  046354                  JSR     R7,WATBIT               ;GO TO WATBIT PROGRAM
2707  013246  013737  003334  004136  ERR10:  MOV     RHBA,$RHBA              ;GET READY TO TEST BYTES
2708  013254  012777  000000  170052          MOV     #ZERO,@RHBA             ;ZERO THE BUS ADDRESS
2709  013262  113777  004120  170646          MOVB    MINUS,@$RHBA            ;MOVE THE BYTE
2710  013270  022777  000376  170036          CMP     #376,@RHBA              ;DID IT GET THERE ALRIGHT
2711  013276  001401                          BEQ     99$                     ;YES,CHECK NEXT BYTE
2712  013300  104202                          ERROR   202                     ;HIGH BYTE DOES NOT SEEM TO BE WORKING
2713  013302  005237  004136          99$:    INC     $RHBA                   ;GET READY FOR NEXT BYTE
2714  013306  012777  000000  170020          MOV     #ZERO,@RHBA             ;ZERO THE BUS ADDRESS
2715  013314  113777  004121  170614          MOVB    MINUS+1,@$RHBA          ;MOVE TO UPPER BYTE
2716  013322  022777  177400  170004          CMP     #177400,@RHBA           ;DID IT GET THERE ALRIGHT
2717  013330  001401                          BEQ     98$                     ;YES,EXIT TEST
2718  013332  104202                          ERROR   202                     ;LOBYTE IS NOT WORKING PROPERLY
2719  013334  004737  006572          98$:    JSR     R7,CLEER                ;CLAER ERRORS
2720  013340  004737  050202                  JSR     R7,ERRTST
2721
```

```

                                        ;;******************** *******************************************
                                        ;*TEST 15          RHDB BIT TEST
                                                ;*THIS TEST TESTS THE RH DATA BUFFER REGISTER
                                                ;*BY FIRST ALTERNATLY SETTING AND RESETING BITS
                                                ;*IN THE RHDB REGISTER AND THEN BY USING AN
                                                ;*ALTERNATE BIT PATTERN (52525) AND AN OPPISITE
                                                ;*ALTERNATE BIT PATTERN (125252)
                                        ;;**************************************************************
 013344  000004                         TST15:  SCOPE


 013346  005037  003450                         CLR     LOOCNT                  ;CLEAR LOOP COUNT
 013352  012737  000001  001162                 MOV     #ONE,$REGO              ;SET UP BIT TEST
 013360  013777  001162  167764 DBTST:  MOV     $REGO,@RHDB             ;SET BIT IN RHDB REGISTER
 013366  005037  003446                         CLR     BITCNT                  ;CLEAR BIT COUNTER
 013372  032777  000200  167730 18$:    BIT     #RDY,@RHCS1             ;IS RDY SET
 013400  001015                                 BNE     ABLE                    ;BIT IS SET
 013402  005237  003446                         INC     BITCNT                  ;COUNT UP
 013406  001371                                 BNE     18$                     ;NOT FINISHED COUNTING
 013410  005037  003446                         CLR     BITCNT                  ;GET READY TO DO IT AGAIN
 013414  032777  000200  167706 19$:    BIT     #RDY,@RHCS1             ;IS IT SET YET?
 013422  001004                                 BNE     ABLE                    ;YES
 013424  005237  003446                         INC     BITCNT                  ;COUNT UP
 013430  001401                                 BEQ     ABLE                    ;BIT IS NOT GOING TO SET
 013432  000770                                 BR      19$
 013434                                 ABLE:
 013434  017737  167670  003420                 MOV     @RHCS1,CS1              ;SAVE RHCS1
 013442  017737  167664  003444                 MOV     @RHWC,WC                ;SAVE WORD COUNT
 013450  017737  167660  003414                 MOV     @RHBA,BA                ;SAVE BUS ADDRESS
 013456  005701                                 TST     R1                      ;IS IT AN RH11
 013460  001406                                 BEQ     87$                     ;NO IT'S A 70
 013462  005037  003416                         CLR     BAE                     ;CLEAR BAE
 013466  005037  003424                         CLR     CS3                     ;CLEAR CS3
 013472  000137  013512                         JMP     86$                     ;CONTINUE
 013476  017737  167656  003416 87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
 013504  017737  167652  003424                 MOV     @RHCS3,CS3              ;SAVE RHCS3
 013512  017737  167622  003422 86$:    MOV     @RHCS2,CS2              ;SAVE CS2
 013520  017737  167616  003432                 MOV     @RHST,DS1               ;SAVE TESTER STATUS
 013526  017737  167612  003436                 MOV     @RHER,ER1               ;SAVE ERROR REGISTER
 013534  017737  167610  003442                 MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
 013542  017737  167570  003440                 MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
 013550  032777  000200  167552                 BIT     #RDY,@RHCS1             ;IS READY SET
 013556  001003                                 BNE     RDYSET                  ;SKIP ERROR
 013560  104102                                 ERROR   102                     ;READY DID NOT SET
 013562  004737  007224                         JSR     R7,WHYFO                ;ANY ERRORS SET
 013566  032777  000200  167544 RDYSET: BIT     #OR,@RHCS2              ;IS OR SET?
 013574  001004                                 BNE     ORSET                   ;YES,IT'S SET
 013576  017737  167550  003426                 MOV     @RHDB,DB                ;SAVE CONTENTS OF RHDB REGISTER
 013604  104041                                 ERROR   41                      ;OUTPUT READY DID NOT SET
 013606  017737  167540  003426 ORSET:  MOV     @RHDB,DB                ;SAVE CONTENTS OF REGISTER
 013614  023737  001162  003426                 CMP     $REGO,DB                ;IS CORRECT BIT SET?
 013622  001406                                 BEQ     1$                      ;YES,CONTINUE TEST
 013624  013737  003426  001200                 MOV     DB,$TMP1                ;SETUP FOR WATBIT PROG.
 013632  104004                                 ERROR   4                       ;NO,CORRECT BIT IS NOT SET
 013634  004737  046354                         JSR     R7,WATBIT               ;GO TO WATBIT PROGRAM
```

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2778  013640  005737  001162          1$:     TST     $REG0                   ;WAS BIT 15 THE LAST BIT TESTED
2779  013644  100415                          BMI     DBTSTA                  ;YES,GO TO ALTERNATE BIT PATTERN TEST
2780  013646  022737  000001  003450          CMP     #ONE,LOOCNT             ;IS IT FIRST TIME
2781  013654  001404                          BEQ     2$                      ;NO, IT'S SECOND
2782  013656  005237  003450                  INC     LOOCNT                  ;YES,
2783  013662  000137  013360                  JMP     DBTST                   ;CONTINUE TEST
2784  013666  005037  003450          2$:     CLR     LOOCNT                  ;CLEAR LOOP COUNT
2785  013672  006137  001162                  ROL     $REG0                   ;NO,SET UP TO TEST NEXT BIT
2786  013676  000630                          BR      DBTST                   ;GO AND TEST BIT
2787  013700  022737  000001  003450  DBTSTA: CMP     #ONE,LOOCNT             ;IS IT FIRST TIME
2788  013706  001404                          BEQ     1$                      ;NO
2789  013710  005237  003450                  INC     LOOCNT                  ;INCREMENT LOOP COUNTER
2790  013714  000137  013360                  JMP     DBTST                   ;DO AGAIN
2791  013720  012737  052525  001162  1$:     MOV     #AB,$REG0               ;SET UP BIT PATTERN TEST
2792  013726  013777  001162  167416          MOV     $REG0,@RHDB             ;SET BITS IN REGISTER
2793  013734  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
2794  013740  032777  000200  167372  18$:     BIT     #OR,@RHCS2              ;IS OR SET
2795  013746  001015                          BNE     DBOUT                   ;BIT IS SET
2796  013750  005237  003446                  INC     BITCNT                  ;COUNT UP
2797  013754  001371                          BNE     18$                     ;NOT FINISHED COUNTING
2798  013756  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
2799  013762  032777  000200  167350  19$:     BIT     #OR,@RHCS2              ;IS IT SET YET?
2800  013770  001004                          BNE     DBOUT                   ;YES
2801  013772  005237  003446                  INC     BITCNT                  ;COUNT UP
2802  013776  001401                          BEQ     DBOUT                   ;BIT IS NOT GOING TO SET
2803  014000  000770                          BR      19$
2804  014002                          DBOUT:
2805  014002  017737  167322  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
2806  014010  017737  167316  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
2807  014016  017737  167312  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
2808  014024  005701                          TST     R1                      ;IS IT AN RH11
2809  014026  001406                          BEQ     87$                     ;NO IT'S A 70
2810  014030  005037  003416                  CLR     BAE                     ;CLEAR BAE
2811  014034  005037  003424                  CLR     CS3                     ;CLEAR CS3
2812  014040  000137  014060                  JMP     86$                     ;CONTINUE
2813  014044  017737  167310  003416  87$:     MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
2814  014052  017737  167304  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
2815  014060  017737  167254  003422  86$:     MOV     @RHCS2,CS2              ;SAVE CS2
2816  014066  017737  167250  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
2817  014074  017737  167244  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
2818  014102  017737  167242  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
2819  014110  017737  167222  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
2820  014116  032777  000200  167214          BIT     #OR,@RHCS2              ;IS OUTPUT READY ?
2821  014124  001001                          BNE     2$                      ;YES CONTINUE TEST
2822  014126  104041                          ERROR   41                      ;OUTPUT READY DID@NOT SET
2823  014130  023777  001162  167214  2$:     CMP     $REG0,@RHDB             ;ARE CORRECT BITS SET?
2824  014136  001411                          BEQ     1$                      ;YES,CONTINUE TESTS
2825  014140  017737  167206  003426          MOV     @RHDB,DB                ;SAVE CONTENTS OF REGISTER
2826  014146  013737  003426  001200          MOV     DB,$TMP1                ;SETUP FOR WATBIT TEST
2827  014154  104004                          ERROR   4                       ;NO,CORRECT BITS ARE NOT SET
2828  014156  004737  046354                  JSR     R7,WATBIT               ;GO TO WATBIT PROGRAM
2829  014162  012737  125252  001162  1$:     MOV     #0AB,$REG0              ;SET UP OPPISITE ALTERNATE BIT PATTERN TEST
2830  014170  013777  001162  167154          MOV     $REG0,@RHDB             ;SET BITS IN REGISTER
2831  014176  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
2832  014202  032777  000200  167130  18$:     BIT     #OR,@RHCS2              ;IS OR SET
2833  014210  001015                          BNE     0ABTST                  ;BIT IS SET
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2834  014212  005237  003446          INC     BITCNT                  ;COUNT UP
2835  014216  001371                  BNE     18$                     ;NOT FINISHED COUNTING
2836  014220  005037  003446          CLR     BITCNT                  ;GET READY TO DO IT AGAIN
2837  014224  032777  000200  167106  19$:    BIT     #OR,@RHCS2      ;IS IT SET YET?
2838  014232  001004                  BNE     OABTST                  ;YES
2839  014234  005237  003446          INC     BITCNT                  ;COUNT UP
2840  014240  001401                  BEQ     OABTST                  ;BIT IS NOT GOING TO SET
2841  014242  000770                  BR      19$
2842  014244                          OABTST:
2843  014244                          MYSTIC:
2844  014244  017737  167060  003420          MOV     @RHCS1,CS1      ;SAVE RHCS1
2845  014252  017737  167054  003444          MOV     @RHWC,WC        ;SAVE WORD COUNT
2846  014260  017737  167050  003414          MOV     @RHBA,BA        ;SAVE BUS ADDRESS
2847  014266  005701                  TST     R1                      ;IS IT AN RH11
2848  014270  001406                  BEQ     87$                     ;NO IT'S A 70
2849  014272  005037  003416          CLR     BAE                     ;CLEAR BAE
2850  014276  005037  003424          CLR     CS3                     ;CLEAR CS3
2851  014302  000137  014322          JMP     86$                     ;CONTINUE
2852  014306  017737  167046  003416  87$:    MOV     @RHBAE,BAE      ;SAVE BUS ADDRESS EXTENSION
2853  014314  017737  167042  003424          MOV     @RHCS3,CS3      ;SAVE RHCS3
2854  014322  017737  167012  003422  86$:    MOV     @RHCS2,CS2      ;SAVE CS2
2855  014330  017737  167006  003432          MOV     @RHST,DS1       ;SAVE TESTER STATUS
2856  014336  017737  167002  003436          MOV     @RHER,ER1       ;SAVE ERROR REGISTER
2857  014344  017737  167000  003442          MOV     @RHTDB,TDR      ;SAVE TESTER DATA REG.
2858  014352  017737  166760  003440          MOV     @RHMR2,TC       ;SAVE MR2 TESTER REG.
2859  014360  032777  000200  166752          BIT     #OR,@RHCS2      ;IS OUTPUT READY SET
2860  014366  001001                  BNE     2$                      ;YES
2861  014370  104041                  ERROR   41                      ;OUTPUT READY DID NOT SET
2862  014372  017737  166754  003426  2$:     MOV     @RHDB,DB        ;SAVE CONTENTS OF REGISTER
2863  014400  023737  001162  003426          CMP     $REG0,DB        ;ARE CORRECT BITS SET?
2864  014406  001406                  BEQ     ERR11                   ;WAS THERE AN ERROR
2865  014410  013737  003426  001200          MOV     DB,$TMP1        ;SETUP FOR WATBIT PROG.
2866  014416  104004                  ERROR   4                       ;CORRECT BITS ARE NOT SET
2867  014420  004737  046354          JSR     R7,WATBIT               ;GO TO WATBIT PROGRAM
2868  014424  004737  006572  ERR11:  JSR     R7,CLEER                ;CLEAR ERRORS
2869  014430  004737  050202          JSR     R7,ERRTST
2870
2871
2872
2873                                  ;;**********************************************************************
2874                                  ;*TEST 16       RHWC OPERATIONAL TEST
2875                                  ;*THIS TEST CHECKS THAT WHEN THE WORD COUNT
2876                                  ;*REGISTER IS INCREMENTED IT IS CARRYED TO THE
2877                                  ;*HIGHEST BIT AND IS RETURNED TO ZERO
2878                                  ;;**********************************************************************
2879  014434  000004          TST16:  SCOPE
2880  014436  012777  177777  166666          MOV     #-1,@RHWC       ;SETUP FOR 1 WORD
2881  014444  012777  000007  166666          MOV     #7,@RHCS2       ;SETUP UNIT 7
2882  014452  005701                  TST     R1                      ;IS IT AN RH11
2883  014454  100403                  BMI     1$                      ;YES
2884  014456  012777  000000  166674          MOV     #ZERO,@RHBAE    ;SETUP BUS ADDRESS EXTENSION
2885  014464  012777  001204  166642  1$:     MOV     #$TMP3,@RHBA    ;SETUP BUS ADDRESS
2886  014472  012777  000061  166630          MOV     #WRITE0,@RHCS1
2887  014500  005037  003446          CLR     BITCNT                  ;CLEAR BIT COUNTER
2888  014504  032777  000200  166616  18$:    BIT     #RDY,@RHCS1     ;IS RDY SET
2889  014512  001015                  BNE     6$                      ;BIT IS SET
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2890  014514  005237  003446                  INC     BITCNT                  ;COUNT UP
2891  014520  001371                          BNE     18$                     ;NOT FINISHED COUNTING
2892  014522  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
2893  014526  032777  000200  166574  19$:    BIT     #RDY,@RHCS1             ;IS IT SET YET?
2894  014534  001004                          BNE     6$                      ;YES
2895  014536  005237  003446                  INC     BITCNT                  ;COUNT UP
2896  014542  001401                          BEQ     6$                      ;BIT IS NOT GOING TO SET
2897  014544  000770                          BR      19$
2898  014546                          6$:
2899  014546  017737  166556  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
2900  014554  017737  166552  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
2901  014562  017737  166546  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
2902  014570  005701                          TST     R1                      ;IS IT AN RH11
2903  014572  001406                          BEQ     87$                     ;NO IT'S A 70
2904  014574  005037  003416                  CLR     BAE                     ;CLEAR BAE
2905  014600  005037  003424                  CLR     CS3                     ;CLEAR CS3
2906  014604  000137  014624                  JMP     86$                     ;CONTINUE
2907  014610  017737  166544  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
2908  014616  017737  166540  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
2909  014624  017737  166510  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
2910  014632  017737  166504  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
2911  014640  017737  166500  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
2912  014646  017737  166476  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
2913  014654  017737  166456  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
2914  014662  032777  000200  166440          BIT     #RDY,@RHCS1             ;IS READY SET
2915  014670  001007                          BNE     2$                      ;YES
2916  014672  005777  166434                  TST     @RHWC                   ;DOES WC=0
2917  014676  001425                          BEQ     3$                      ;YES
2918  014700  022777  177777  166424          CMP     #-1,@RHWC               ;IS IT EQUAL TO OLD
2919  014706  001410                          BEQ     4$                      ;YES,SEE IF DATA WAS WRITTEN
2920  014710  005777  166416          2$:     TST     @RHWC                   ;DID WC INCREMENT ?
2921  014714  001435                          BEQ     8$                      ;YES,EXIT TEST
2922  014716  005037  001162                  CLR     $REG0                   ;SETUP GOOD DATA
2923  014722  104077                          ERROR   77                      ;RDY DID NOT SET, WC DID NOT CLEAR
2924  014724  004737  007224                  JSR     R7,WHYFO                ;ARE ANY ERROR BITS SET
2925  014730  023777  001204  166412  4$:     CMP     $TMP3,@RHTDB            ;WAS INFO WRITTEN TO TESTER
2926  014736  001414                          BEQ     5$                      ;INFO WAS WRITTEN TO TESTER
2927  014740  005037  001162                  CLR     $REG0                   ;SETUP GOOD DATA
2928  014744  104123                          ERROR   123                     ;WRITE OPERATION DID NOT WORK
2929  014746  000137  015010                  JMP     8$                      ;RH DID NOT START OPERATION
2930  014752  023777  001204  166370  3$:     CMP     $TMP3,@RHTDB
2931  014760  001010                          BNE     7$
2932  014762  104102                          ERROR   102                     ;RDY BIT NOT SET
2933                                                                          ;INFORMATION WAS WRITTEN TO TEST DB
2934  014764  000137  015010                  JMP     8$
2935  014770  005037  001162          5$:     CLR     $REG0                   ;SETUP GOOD DATA
2936  014774  104103                          ERROR   103                     ;DURING A WRITE OPERATION RDY
2937                                                                          ;DID NOT SET, WC DID NOT INCREMENT
2938                                                                          ;BUT CORRECT INFO DID GET WRITTEN
2939                                                                          ;TO TESTER
2940  014776  000137  015010                  JMP     8$
2941
2942  015002  104104                  7$:     ERROR   104                     ;RDY BIT DID NOT SET AFTER
2943                                                                          ;A WRITE OPERATION, WC WAS INC
2944                                                                          ;AND INF WAS NOT WRITTEN TO
2945                                                                          ;TESTER
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2946  015004  004737  007224              JSR     R7,WHYFO                ;WAS AN ERROR SET
2947  015010  004737  006572  8$:         JSR     R7,CLEER                ;CLEAR ERRORS
2948  015014  004737  050202              JSR     R7,ERRTST               ;WAS THER ANY ERRORS
2949
2950                                      ;;*********************************************************************
2951                                      ;*TEST 17        RHBA OPERATIONAL TEST
2952                                      ;*THIS TEST CHECKS THAT THE BUS ADDRESS REGISTER
2953                                      ;*WILL CARRY THROUGH TO THE HIGHEST BIT
2954                                      ;*IN THE BUS ADDRESS EXTENSION REGISTER OR BIT A17
2955                                      ;*IN THE RHCS1 REGISTER AFTER IT IS INCREMENTED
2956                                      ;;*********************************************************************
2957  015020  000004             TST17:  SCOPE
2958  015022  012737  000001  001212      MOV     #1,$TIMES       ;;DO 1 ITERATION
2959
2960  015030  005701                      TST     R1                      ;IS IT AN 11 OR A 70
2961  015032  100403                      BMI     1$                      ;IT'S AN RH11
2962  015034  012777  000037  166316      MOV     #37,@RHBAE              ;SETUP BAE IN RH70
2963  015042  012777  177776  166264  1$: MOV     #177776,@RHBA           ;SETUP BA
2964  015050  012777  177777  166254      MOV     #-1,@RHWC               ;SETUP WORD COUNT
2965  015056  005701                      TST     R1                      ;IS IT A RH70
2966  015060  001404                      BEQ     34$                     ;YES
2967  015062  012777  000461  166240      MOV     #A16!WRITE0,@RHCS1      ;TELL IT TO WRITE
2968  015070  000403                      BR      35$                     ;SKIP OVER 70 CODE
2969  015072  112777  000061  166230  34$: MOVB   #WRITE0,@RHCS1          ;TELL IT TO WRITE
2970  015100                      35$:
2971  015100  005037  003446              CLR     BITCNT                  ;CLEAR BIT COUNTER
2972  015104  032777  000200  166216  18$: BIT    #RDY,@RHCS1             ;IS RDY SET
2973  015112  001015                      BNE     2$                      ;BIT IS SET
2974  015114  005237  003446              INC     BITCNT                  ;COUNT UP
2975  015120  001371                      BNE     18$                     ;NOT FINISHED COUNTING
2976  015122  005037  003446              CLR     BITCNT                  ;GET READY TO DO IT AGAIN
2977  015126  032777  000200  166174  19$: BIT    #RDY,@RHCS1             ;IS IT SET YET?
2978  015134  001004                      BNE     2$                      ;YES
2979  015136  005237  003446              INC     BITCNT                  ;COUNT UP
2980  015142  001401                      BEQ     2$                      ;BIT IS NOT GOING TO SET
2981  015144  000770                      BR      19$
2982  015146                      2$:
2983  015146  017737  166156  003420      MOV     @RHCS1,CS1              ;SAVE RHCS1
2984  015154  017737  166152  003444      MOV     @RHWC,WC                ;SAVE WORD COUNT
2985  015162  017737  166146  003414      MOV     @RHBA,BA                ;SAVE BUS ADDRESS
2986  015170  005701                      TST     R1                      ;IS IT AN RH11
2987  015172  001406                      BEQ     87$                     ;NO IT'S A 70
2988  015174  005037  003416              CLR     BAE                     ;CLEAR BAE
2989  015200  005037  003424              CLR     CS3                     ;CLEAR CS3
2990  015204  000137  015224              JMP     86$                     ;CONTINUE
2991  015210  017737  166144  003416  87$: MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
2992  015216  017737  166140  003424      MOV     @RHCS3,CS3              ;SAVE RHCS3
2993  015224  017737  166110  003422  86$: MOV     @RHCS2,CS2              ;SAVE CS2
2994  015232  017737  166104  003432      MOV     @RHST,DS1               ;SAVE TESTER STATUS
2995  015240  017737  166100  003436      MOV     @RHER,ER1               ;SAVE ERROR REGISTER
2996  015246  017737  166076  003442      MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
2997  015254  017737  166056  003440      MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
2998  015262  005701                      TST     R1                      ;IS IT AN 11 OR A 70
2999  015264  001406                      BEQ     12$                     ;DO RH70 PART OF TEST
3000  015266  032777  001000  166034      BIT     #A17,@RHCS1             ;DID A17 GET SET
3001  015274  001022                      BNE     4$                      ;YES
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3002  015276  000137  015410                 JMP     5$                      ;CONT. FOR RH11
3003  015302  022777  000040  166050  12$:   CMP     #40,@RHBAE              ;DID BAE INC
3004  015310  001414                         BEQ     4$                      ;BAE INCREMENTED
3005  015312  022777  000037  166040         CMP     #37,@RHBAE              ;IS BAE OLD VALUE
3006  015320  001420                         BEQ     3$                      ;BAE DID NOT INCREMENT
3007  015322  005777  166032                 TST     @RHBAE                  ;IS BAE ZERO
3008  015326  001425                         BEQ     9$                      ;BAE IS ZERO
3009  015330  104105                         ERROR   105                     ;BAE GOT MESSED UP DOING A WRITE
3010  015332  004737  007224                 JSR     R7,WHYFO                ;DID AN ERROR OTHER THAN NEM CAVSIT
3011  015336  000137  015426                 JMP     10$
3012  015342  005777  165766          4$:    TST     @RHBA                   ;DID BA INCREMENT ?
3013  015346  001443                         BEQ     8$                      ;YES ,EXIT TEST
3014  015350  104112                         ERROR   112                     ;BA DID NOT INCREMENT
3015  015352  004737  007224                 JSR     R7,WHYFO                ;WAS AN ERROR BIT SET
3016  015356  000137  015456                 JMP     8$                      ;EXIT TEST
3017  015362  104106                  3$:    ERROR   106                     ;BAE DID NOT INCREMENT
3018  015364  004737  007224                 JSR     R7,WHYFO                ;WAS AN ERROR BIT SET
3019  015370  000137  015456                 JMP     8$                      ;EXIT TEST
3020  015374  104107                  6$:    ERROR   107                     ;BAE INCREMENTED OK BUT A17 +
3021                                                                          ;A16 DID NOT INC PROPERLY IN RHCS1
3022  015376  000137  015456                 JMP     8$                      ;EXIT TEST
3023  015402  104110                  9$:    ERROR   110                     ;RHBAE IS ZERO
3024  015404  000137  015456                 JMP     8$                      ;BIT 5 IN BAE SHOULD BE SET
3025  015410  033777  000400  165712  5$:    BIT     A16,@RHCS1              ;IS A 16 SET
3026  015416  001003                         BNE     10$                     ;YES, BA DID NOT INCREMENT
3027  015420  104111                         ERROR   111                     ;A17 DID NOT SET WHEN BA WAS
3028                                                                          ;INC
3029  015422  000137  015456                 JMP     8$                      ;EXIT TEST
3030  015426  005777  165702          10$:   TST     @RHBA                   ;DOES BA =0
3031  015432  001403                         BEQ     11$                     ;YES, BA INCREMENTED
3032  015434  104112                         ERROR   112                     ;BA DID NOT INCREMENT
3033  015436  000137  015456                 JMP     8$                      ;EXIT TEST
3034  015442  005701                  11$:   TST     R1                      ;IS IT A 70 OR 11
3035  015444  100403                         BMI     13$                     ;GO TO CORRECT ERROR
3036  015446  104076                         ERROR   76                      ;BA INCREMENTED BUT DID NOT
3037                                                                          ;CARRY TO BAE
3038  015450  000137  015456                 JMP     8$                      ;GET OUT OF TEST
3039  015454  104113                  13$:   ERROR   113                     ;BA INCREMENTED BUT IT DID NOT
3040                                                                          ;CARRY OVER TO A17 + A16
3041  015456  004737  006572          8$:    JSR     R7,CLEER                ;CLEAR ERRORS
3042  015462  004737  050202                 JSR     R7,ERRTST               ;WAS THERE ANY ERRORS
3043
3044                                  ;;**************************************************************************
3045                                  ;*TEST 20        NEM,TRE,SC BIT TEST
3046                                          ;*THIS TEST WILL CHECK THAT NON EXISTING MEMORY
3047                                          ;*WILL SET THE TRE AND SC BIT IN RHCS1 REGISTER
3048                                  ;;**************************************************************************
3049  015466  000004                  TST20: SCOPE
3050  015470  005701                         TST     R1
3051  015472  001404                         BEQ     40$
3052  015474  013777  003362  165632         MOV     RHCS3,@RHBA
3053  015502  000403                         BR      41$
3054
3055  015504  012777  177702  165622  40$:   MOV     #177702,@RHBA           ;SET UP BUS ADDRESS
3056  015512  005701                  41$:   TST     R1                      ;IS IT AN RH70
3057  015514  100403                         BMI     9$                      ;NO SKIP RH11 PORTION
```

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3058  015516  012777  000077  165634          MOV     #77,@RHBAE              ;SET UP BAE REGISTER
3059  015524  012777  177777  165600  9$:     MOV     #-1,@RHWC               ;SET WORD COUNT TO ONE WORD
3060  015532  012777  000007  165600          MOV     #7,@RHCS2               ;SET UNIT NUMBER
3061  015540  012777  001471  165562          MOV     #A16!A17!READ0,@RHCS1   ;TELL IT TO READ
3062  015546  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
3063  015552  032777  000200  165550  18$:    BIT     #RDY,@RHCS1            ;IS RDY SET
3064  015560  001015                          BNE     DELTA                   ;BIT IS SET
3065  015562  005237  003446                  INC     BITCNT                  ;COUNT UP
3066  015566  001371                          BNE     18$                     ;NOT FINISHED COUNTING
3067  015570  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
3068  015574  032777  000200  165526  19$:    BIT     #RDY,@RHCS1            ;IS IT SET YET?
3069  015602  001004                          BNE     DELTA                   ;YES
3070  015604  005237  003446                  INC     BITCNT                  ;COUNT UP
3071  015610  001401                          BEQ     DELTA                   ;BIT IS NOT GOING TO SET
3072  015612  000770                          BR      19$
3073  015614                          DELTA:
3074  015614  017737  165520  003422          MOV     @RHCS2,CS2              ;SAVE CONTENTS OF RHCS2
3075  015622  017737  165502  001162          MOV     @RHCS1,$REG0            ;SET UP NEEDED BITS ONLY
3076  015630  042737  027777  001162          BIC     #GO!IE!RDY!A16!A17!PSEL!DVA!MCPE!READ6,$REG0
3077                                                                          ;CLEAR BITS NOT NEEDED
3078  015636  017737  165466  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
3079  015644  017737  165462  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
3080  015652  017737  165456  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
3081  015660  005701                          TST     R1                      ;IS IT AN RH11
3082  015662  001406                          BEQ     87$                     ;NO IT'S A 70
3083  015664  005037  003416                  CLR     BAE                     ;CLEAR BAE
3084  015670  005037  003424                  CLR     CS3                     ;CLEAR CS3
3085  015674  000137  015714                  JMP     86$                     ;CONTINUE
3086  015700  017737  165454  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
3087  015706  017737  165450  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
3088  015714  017737  165420  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
3089  015722  017737  165414  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
3090  015730  017737  165410  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
3091  015736  017737  165406  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
3092  015744  017737  165366  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
3093  015752  032777  000200  165350          BIT     #RDY,@RHCS1            ;IS READY SET
3094  015760  001003                          BNE     99$                     ;YES CONTINUE TES1
3095  015762  104102                          ERROR   102                     ;READY NOT SET
3096  015764  004737  007224                  JSR     R7,WHYFO                ;ANY ERRORS SET
3097  015770  032777  004000  165342  99$:    BIT     #NEM,@RHCS2            ;IS NEM SET
3098  015776  001016                          BNE     1$                      ;YES CHECK TRE AND SC
3099  016000  022737  140000  001162          CMP     #SC!TRE,$REG0           ;IS THE SC AND TRE BITS SET
3100  016006  001460                          BEQ     2$                      ;YES NEM IS IN ERROR
3101  016010  032737  040000  001162          BIT     #TRE,$REG0              ;IS JUST THE TRE BIT SET
3102  016016  001060                          BNE     3$                      ;TRE BIT MUST BE IN ERROR
3103  016020  032737  100000  001162          BIT     #SC,$REG0               ;IS JUST THE SC BIT SET
3104  016026  001060                          BNE     4$                      ;SC BIT SET ERRONIOUSLY
3105  016030  104005                          ERROR   5                       ;NEM NOT SET IN RHCS2
3106  016032  000467                          BR      8$                      ;SET UP TO TEST AGAIN
3107  016034  022737  140000  001162  1$:     CMP     #SC!TRE,$REG0           ;IS SC AND TRE SET
3108  016042  001030                          BNE     22$                     ;FIND THE ERROR
3109  016044  012737  020000  004124          MOV     #MCPE,$CS1                      ;TEST FOR SHORTS
3110  016052  012737  173400  004126          MOV     #MPE!MXF!PGE!NED!UPE!WCE!DLT,$CS2
3111  016060  012737  174000  004130          MOV     #WCELO!WCEHI.DPELO!DPEHI!APE,$CS3
3112  016066  012737  000000  004132          MOV     #0,$ST
3113  016074  012737  030175  004134          MOV     #ILF!RMR!CPE!DPE!RMBEX!RFAIL!DTE!OPI,$ER
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3114  016102  012737  177777  004122          MOV     #-1,BEFORE              ;TELL WHYFO ITS FOR SHORTS
3115  016110  004737  007224                  JSR     R7,WHYFO                ;TEST FOR SHORTS
3116  016114  005037  004122                  CLR     BEFORE                  ;WE HAVE CHECKED FOR SHORTS
3117  016120  000137  016212                  JMP     8$                      ;LEAVE THE TEST
3118  016124  032737  040000  001162  22$:    BIT     #TRE,$REGO              ;THEN IS THE TRE BIT SET
3119  016132  001022                          BNE     6$                      ;SC BIT DID NOT SEE TRE BIT
3120  016134  032737  100000  001162          BIT     #SC,$REGO               ;IS THE SC BIT SET
3121  016142  001022                          BNE     7$                      ;TRE HAS AN OPEN GOING TO BUS
3122  016144  104006                          ERROR   6                       ;TRE SET LOGIC NOT WORKING
3123  016146  000421                          BR      8$                      ;SET UP TO TEST AGAIN
3124  016150  104007                  2$:     ERROR   7                       ;NEM HAS OPEN IN LINE GOING TO BUS
3125  016152  004737  007224                  JSR     R7,WHYFO                ;SEE IF ANY OTHER ERROR BIT IS
3126                                                                          ;SET OTHER THAN NEM
3127  016156  000415                          BR      8$                      ;SET UP TO TEST AGAIN
3128  016160  104010                  3$:     ERROR   10                      ;SOMTHING WRONG WITH TRE BIT
3129  016162  004737  007224                  JSR     R7,WHYFO                ;SEE IF AN ERROR BIT IS SET
3130                                                                          ;OR BOTH NEM IN RHCS2 AND SC IN
3131                                                                          ;RHCS1 HAS AN OPEN BETWEEN IT AND THE BUS
3132  016166  000411                          BR      8$                      ;SET UP TO TEST AGAIN
3133  016170  104011                  4$:     ERROR   11                      ;SC BIT WAS SET BY EITHER ATTN OR
3134  016172  004737  007224                  JSR     R7,WHYFO                ;FIND WHAT ERROR BIT IS SET
3135                                                                          ;MCPE ERROR OR SC IS SHORTED TO +5 VOLTS
3136  016176  000405                          BR      8$                      ;SETUP TO TEST AGAIN
3137  016200  104012                  6$:     ERROR   12                      ;TRE WAS SET BY OTHER THAN NEM
3138  016202  004737  007224                  JSR     R7,WHYFO                ;FIND ERROR BIT THAT SET TRE
3139  016206  000401                          BR      8$                      ;SETUP TO TEST AGAIN
3140  016210  104013                  7$:     ERROR   13                      ;TRE HAS AN OPEN GOING TO THE BUS
3141  016212  032737  041400  177570  8$:     BIT     #SW14!SW9!SW8,@#177570  ;ANY LOOPING BEEING DONE
3142  016220  001003                          BNE     21$                     ;YES,LOAD TRE NO MATTER WHAT
3143  016222  105737  001103                  TSTB    $ERFLG                  ;WAS THERE AN ERROR
3144  016226  001010                          BNE     9$                      ;SKIP TRE CHECK
3145  016230  112777  000100  165126  21$:    MOVB    #TREB,@RHCS1B           ;LOAD TRE
3146  016236  032777  004000  165074          BIT     #NEM,@RHCS2             ;DID ERROR CLEAR
3147  016244  001401                          BEQ     9$                      ;YES EXIT TEST
3148  016246  104050                          ERROR   50                      ;LOADING TRE DID NOT CLEAR ERROR
3149  016250  004737  006572          9$:     JSR     R7,CLEER                ;SEE IF ERRORS ARE CLEARED
3150  016254  004737  050202                  JSR     R7,ERRTST
3151
3152
3153                                  ;;*****************************************************************
3154                                  ;*TEST 21        WCE,TRE,SC BIT TEST
3155                                          ;*THIS TEST WILL CHECK THAT TRE AND SC SET
3156                                          ;*WHEN A WRITE CHECK ERROR OCCURS (WCE)
3157                                  ;;*****************************************************************
3158  016260  000004                  TST21:  SCOPE
3159  016262  012777  177777  165042          MOV     #-1,@RHWC               ;ONE WORD TRANSFER
3160  016270  012777  000007  165042          MOV     #7,@RHCS2               ;TO UNIT ONE
3161  016276  005701                          TST     R1                      ;IS IT AN RH70
3162  016300  001003                          BNE     9$                      ;NO .
3163  016302  012777  000000  165050          MOV     #ZERO,@RHBAE            ;SETUP RHBAE REGISTER
3164  016310  012777  001172  165016  9$:     MOV     #$REG4,@RHBA            ;SETUP BUS ADDRESS
3165  016316  012737  052525  001172          MOV     #AB,$REG4               ;CREATE INFORMATION
3166  016324  012777  000061  164776          MOV     #WRITEO,@RHCS1          ;TELL IT TO WRITE
3167  016332  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
3168  016336  032777  000200  164764  18$:    BIT     #RDY,@RHCS1             ;IS RDY SET
3169  016344  001015                          BNE     WCETST                  ;BIT IS SET
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3170  016346  005237  003446          INC     BITCNT                  ;COUNT UP
3171  016352  001371                  BNE     18$                     ;NOT FINISHED COUNTING
3172  016354  005037  003446          CLR     BITCNT                  ;GET READY TO DO IT AGAIN
3173  016360  032777  000200  164742  19$:    BIT     #RDY,@RHCS1     ;IS IT SET YET?
3174  016366  001004                  BNE     WCETST                  ;YES
3175  016370  005237  003446          INC     BITCNT                  ;COUNT UP
3176  016374  001401                  BEQ     WCETST                  ;BIT IS NOT GOING TO SET
3177  016376  000770                  BR      19$
3178  016400                        WCETST:
3179  016400  052777  000040  164732          BIS     #40,    @RHCS2          ;DO A CONTROLER CLEAR
3180  016406  005037  003446          CLR     BITCNT                  ;SET UP FOR DELAY
3181  016412  005237  003446          17$:    INC     BITCNT          ;COUNT UP
3182  016416  001375                  BNE     17$
3183  016420  012777  000007  164712          MOV     #7,     @RHCS2          ;SELECT UNIT #
3184  016426  005037  003446          CLR     BITCNT                  ;CLEAR BIT COUNTER
3185  016432  032777  000200  164670  18$:    BIT     #RDY,@RHCS1     ;IS RDY SET
3186  016440  001015                  BNE     WCTST                   ;BIT IS SET
3187  016442  005237  003446          INC     BITCNT                  ;COUNT UP
3188  016446  001371                  BNE     18$                     ;NOT FINISHED COUNTING
3189  016450  005037  003446          CLR     BITCNT                  ;GET READY TO DO IT AGAIN
3190  016454  032777  000200  164646  19$:    BIT     #RDY,@RHCS1     ;IS IT SET YET?
3191  016462  001004                  BNE     WCTST                   ;YES
3192  016464  005237  003446          INC     BITCNT                  ;COUNT UP
3193  016470  001401                  BEQ     WCTST                   ;BIT IS NOT GOING TO SET
3194  016472  000770                  BR      19$
3195  016474                        WCTST:
3196  016474  032777  000200  164626          BIT     #RDY,   @RHCS1          ;IS READY SET
3197  016502  001003                  BNE     20$                     ;YES
3198  016504  104102                  ERROR   102                     ;READY NOT SET
3199  016506  004737  007224          JSR     R7,     WHYFO           ;ANY ERRORS     SET
3200  016512  012777  177777  164612  20$:    MOV     #-1,@RHWC               ;RESET WORD COUNT
3201  016520  012777  001172  164606          MOV     #$REG4,@RHBA            ;RESET BUS ADDRESS
3202  016526  012737  125252  001172          MOV     #0AB,$REG4              ;CREATE WRITE CHECK ERROR
3203  016534  012777  000051  164566          MOV     #WRCH0,@RHCS1           ;MAKE THE ERROR
3204  016542  005037  003446          CLR     BITCNT                  ;CLEAR BIT COUNTER
3205  016546  032777  000200  164554  18$:    BIT     #RDY,@RHCS1     ;IS RDY SET
3206  016554  001015                  BNE     WCETRE                  ;BIT IS SET
3207  016556  005237  003446          INC     BITCNT                  ;COUNT UP
3208  016562  001371                  BNE     18$                     ;NOT FINISHED COUNTING
3209  016564  005037  003446          CLR     BITCNT                  ;GET READY TO DO IT AGAIN
3210  016570  032777  000200  164532  19$:    BIT     #RDY,@RHCS1     ;IS IT SET YET?
3211  016576  001004                  BNE     WCETRE                  ;YES
3212  016600  005237  003446          INC     BITCNT                  ;COUNT UP
3213  016604  001401                  BEQ     WCETRE                  ;BIT IS NOT GOING TO SET
3214  016606  000770                  BR      19$
3215  016610                        WCETRE:
3216  016610  017737  164524  003422          MOV     @RHCS2,CS2              ;SAVE CONTENTS
3217  016616  017737  164506  001162          MOV     @RHCS1,$REG0            ;SET UP NEEDED BITS ONLY
3218  016624  042737  027777  001162          BIC     #GO!IE!RDY!A16!A17!PSEL!DVA!MCPE!READ6,$REG0
3219                                                                          ;CLEAR BITS NOT NEEDED
3220  016632  017737  164472  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
3221  016640  017737  164466  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
3222  016646  017737  164462  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
3223  016654  005701                  TST     R1                      ;IS IT AN RH11
3224  016656  001406                  BEQ     87$                     ;NO IT'S A 70
3225  016660  005037  003416          CLR     BAE                     ;CLEAR BAE
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3226  016664  005037  003424                CLR     CS3                     ;CLEAR CS3
3227  016670  000137  016710                JMP     86$                     ;CONTINUE
3228  016674  017737  164460  003416  87$:  MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
3229  016702  017737  164454  003424        MOV     @RHCS3,CS3              ;SAVE RHCS3
3230  016710  017737  164424  003422  86$:  MOV     @RHCS2,CS2              ;SAVE CS2
3231  016716  017737  164420  003432        MOV     @RHST,DS1               ;SAVE TESTER STATUS
3232  016724  017737  164414  003436        MOV     @RHER,ER1               ;SAVE ERROR REGISTER
3233  016732  017737  164412  003442        MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
3234  016740  017737  164372  003440        MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
3235  016746  032777  000200  164354        BIT     #RDY,@RHCS1             ;IS READY SET
3236  016754  001003                        BNE     99$                     ;YES CONTINUE TEST
3237  016756  104102                        ERROR   102                     ;READY NOT SET
3238  016760  004737  007224                JSR     R7,WHYFO                ;ANY ERRORS SET
3239  016764  032777  040000  164346  99$:  BIT     #WCE,@RHCS2             ;IS WCE SET
3240  016772  001016                        BNE     1$                      ;YES CHECK TRE AND SC
3241  016774  022737  140000  001162        CMP     #SC!TRE,$REG0           ;IS THE SC AND TRE BITS SET
3242  017002  001460                        BEQ     2$                      ;YES WCE IS IN ERROR
3243  017004  032737  040000  001162        BIT     #TRE,$REG0              ;IS JUST THE TRE BIT SET
3244  017012  001060                        BNE     3$                      ;TRE BIT MUST BE IN ERROR
3245  017014  032737  100000  001162        BIT     #SC,$REG0               ;IS JUST THE SC BIT SET
3246  017022  001060                        BNE     4$                      ;SC BIT SET ERRONIOUSLY
3247  017024  104014                        ERROR   14                      ;WCE NOT SET IN RHCS2
3248  017026  000467                        BR      8$                      ;SET UP TO TEST AGAIN
3249  017030  022737  140000  001162  1$:   CMP     #SC!TRE,$REG0           ;IS SC AND TRE SET
3250  017036  001030                        BNE     22$                     ;FIND THE ERROR
3251  017040  012737  020000  004124        MOV     #MCPE,$CS1                      ;TEST FOR SHORTS
3252  017046  012737  137400  004126        MOV     #MPE!MXF!PGE!NEM!NED!UPE!DLT,$CS2
3253  017054  012737  160000  004130        MOV     #DPELO!DPEHI!APE,$CS3
3254  017062  013737  004132  004132        MOV     $ST,$ST
3255  017070  013737  004134  004134        MOV     $ER,$ER
3256  017076  012737  177777  004122        MOV     #-1,BEFORE              ;TELL WHYFO ITS FOR SHORTS
3257  017104  004737  007224                JSR     R7,WHYFO                ;TEST FOR SHORTS
3258  017110  005037  004122                CLR     BEFORE                  ;WE HAVE CHECKED FOR SHORTS
3259  017114  000137  017206                JMP     8$                      ;LEAVE THE TEST
3260  017120  032737  040000  001162  22$:  BIT     #TRE,$REG0              ;THEN IS THE TRE BIT SET
3261  017126  001022                        BNE     6$                      ;SC BIT DID NOT SEE TRE BIT
3262  017130  032737  100000  001162        BIT     #SC,$REG0               ;IS THE SC BIT SET
3263  017136  001022                        BNE     7$                      ;TRE HAS AN OPEN GOING TO BUS
3264  017140  104006                        ERROR   6                       ;TRE SET LOGIC NOT WORKING
3265  017142  000421                        BR      8$                      ;SET UP TO TEST AGAIN
3266  017144  104015                  2$:   ERROR   15                      ;WCE HAS OPEN IN LINE GOING TO BUS
3267  017146  004737  007224                JSR     R7,WHYFO                ;SEE IF ANY OTHER ERROR BIT IS
3268                                                                        ;SET OTHER THAN WCE
3269  017152  000415                        BR      8$                      ;SET UP TO TEST AGAIN
3270  017154  104016                  3$:   ERROR   16                      ;SOMTHING WRONG WITH TRE BIT
3271  017156  004737  007224                JSR     R7,WHYFO                ;SEE IF AN ERROR BIT IS SET
3272                                                                        ;OR BOTH WCE IN RHCS2 AND SC IN
3273                                                                        ;RHCS1 HAS AN OPEN BETWEEN IT AND THE BUS
3274  017162  000411                        BR      8$                      ;SET UP TO TEST AGAIN
3275  017164  104011                  4$:   ERROR   11                      ;SC BIT WAS SET BY EITHER ATTN OR
3276  017166  004737  007224                JSR     R7,WHYFO                ;FIND WHAT ERROR BIT IS SET
3277                                                                        ;MCPE ERROR OR SC IS SHORTED TO +5 VOLTS
3278  017172  000405                        BR      8$                      ;SETUP TO TEST AGAIN
3279  017174  104017                  6$:   ERROR   17                      ;TRE WAS SET BY OTHER THAN WCE
3280  017176  004737  007224                JSR     R7,WHYFO                ;FIND ERROR BIT THAT SET TRE
3281  017202  000401                        BR      8$                      ;SETUP TO TEST AGAIN
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3282  017204  104013                    7$:     ERROR   13                      ;TRE HAS AN OPEN GOING TO THE BUS
3283  017206  032737  041400  177570    8$:     BIT     #SW14!SW9!SW8,@#177570  ;ANY LOOPING BEEING DONE
3284  017214  001003                            BNE     21$                     ;YES,LOAD TRE NO MATTER WHAT
3285  017216  105737  001103                    TSTB    $ERFLG                  ;WAS THERE AN ERROR
3286  017222  001010                            BNE     9$                      ;SKIP TRE CHECK
3287  017224  112777  000100  164132    21$:    MOVB    #TREB,@RHCS1B           ;LOAD TRE
3288  017232  032777  040000  164100            BIT     #WCE,@RHCS2             ;DID ERROR CLEAR
3289  017240  001401                            BEQ     9$                      ;YES EXIT TEST
3290  017242  104050                            ERROR   50                      ;LOADING TRE DID NOT CLEAR ERROR
3291  017244  004737  006572            9$:     JSR     R7,CLEER                ;SEE IF ERRORS ARE CLEARED
3292  017250  004737  050202                    JSR     R7,ERRTST
3293
3294                                    ;;**************************************************************************
3295                                    ;*TEST 22        MDPE ,TRE AND SC BIT TEST
3296                                            ;*THIS TEST CHECKS THAT MDPE CAN BE SET IN
3297                                            ;*RHCS2,AND THAT MDPE SETS TRE AND SC
3298                                            ;*IN THE RHCS1 REGISTER.............
3299                                    ;;**************************************************************************
3300  017254  000004                    TST22:  SCOPE
3301  017256  012777  000007  164054            MOV     #7,@RHCS2               ;SET UNIT #
3302  017264  012777  177774  164040            MOV     #-4,@RHWC               ;SET UP WORD COUNT
3303  017272  005701                            TST     R1                      ;IS IT AN RH70
3304  017274  001003                            BNE     9$                      ;NO ITS AN RH11
3305  017276  012777  000000  164054            MOV     #ZERO,@RHBAE            ;SET UP BAE REGISTER
3306  017304  012777  004100  164022    9$:     MOV     #RBUF,@RHBA             ;SET UP BUS ADDRESS
3307  017312  012777  000071  164010            MOV     #READ0,@RHCS1           ;TELL IT TO READ
3308  017320  012777  000027  164012            MOV     #PAT!7,@RHCS2           ;INVERT PARITY
3309  017326  017737  164006  003422            MOV     @RHCS2,CS2              ;SAVE CONTENTS
3310  017334  005037  003446                    CLR     BITCNT                  ;CLEAR BIT COUNTER
3311  017340  032777  000200  163762    18$:    BIT     #RDY,@RHCS1             ;IS RDY SET
3312  017346  001015                            BNE     UPETRE                  ;BIT IS SET
3313  017350  005237  003446                    INC     BITCNT                  ;COUNT UP
3314  017354  001371                            BNE     18$                     ;NOT FINISHED COUNTING
3315  017356  005037  003446                    CLR     BITCNT                  ;GET READY TO DO IT AGAIN
3316  017362  032777  000200  163740    19$:    BIT     #RDY,@RHCS1             ;IS IT SET YET?
3317  017370  001004                            BNE     UPETRE                  ;YES
3318  017372  005237  003446                    INC     BITCNT                  ;COUNT UP
3319  017376  001401                            BEQ     UPETRE                  ;BIT IS NOT GOING TO SET
3320  017400  000770                            BR      19$
3321  017402                            UPETRE:
3322  017402  017737  163722  001162            MOV     @RHCS1,$REGO            ;SET UP NEEDED BITS ONLY
3323  017410  042737  027777  001162            BIC     #GO!IE!RDY!A16!A17!PSEL!DVA!MCPE!READ6,$REGO
3324                                                                            ;CLEAR BITS NOT NEEDED
3325  017416  017737  163706  003420            MOV     @RHCS1,CS1              ;SAVE RHCS1
3326  017424  017737  163702  003444            MOV     @RHWC,WC                ;SAVE WORD COUNT
3327  017432  017737  163676  003414            MOV     @RHBA,BA                ;SAVE BUS ADDRESS
3328  017440  005701                            TST     R1                      ;IS IT AN RH11
3329  017442  001406                            BEQ     87$                     ;NO IT'S A 70
3330  017444  005037  003416                    CLR     BAE                     ;CLEAR BAE
3331  017450  005037  003424                    CLR     CS3                     ;CLEAR CS3
3332  017454  000137  017474                    JMP     86$                     ;CONTINUE
3333  017460  017737  163674  003416    87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
3334  017466  017737  163670  003424            MOV     @RHCS3,CS3              ;SAVE RHCS3
3335  017474  017737  163640  003422    86$:    MOV     @RHCS2,CS2              ;SAVE CS2
3336  017502  017737  163634  003432            MOV     @RHST,DS1               ;SAVE TESTER STATUS
3337  017510  017737  163630  003436            MOV     @RHER,ER1               ;SAVE ERROR REGISTER
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3338  017516  017737  163626  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
3339  017524  017737  163606  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
3340  017532  032777  000200  163570          BIT     #RDY,@RHCS1             ;IS READY SET
3341  017540  001003                          BNE     99$                     ;YES CONTINUE TEST
3342  017542  104102                          ERROR   102                     ;READY NOT SET
3343  017544  004737  007224                  JSR     R7,WHYFO                ;ANY ERRORS SET
3344  017550  032777  000400  163562  99$:    BIT     #MPE,@RHCS2             ;IS MPE SET
3345  017556  001016                          BNE     1$                      ;YES CHECK TRE AND SC
3346  017560  022737  140000  001162          CMP     #SC!TRE,$REG0           ;IS THE SC AND TRE BITS SET
3347  017566  001460                          BEQ     2$                      ;YES MPE IS IN ERROR
3348  017570  032737  040000  001162          BIT     #TRE,$REG0              ;IS JUST THE TRE BIT SET
3349  017576  001060                          BNE     3$                      ;TRE BIT MUST BE IN ERROR
3350  017600  032737  100000  001162          BIT     #SC,$REG0               ;IS JUST THE SC BIT SET
3351  017606  001060                          BNE     4$                      ;SC BIT SET ERRONIOUSLY
3352  017610  104116                          ERROR   116                     ;MPE NOT SET IN RHCS2
3353  017612  000467                          BR      8$                      ;SET UP TO TEST AGAIN
3354  017614  022737  140000  001162  1$:     CMP     #SC!TRE,$REG0           ;IS SC AND TRE SET
3355  017622  001030                          BNE     22$                     ;FIND THE ERROR
3356  017624  013737  004124  004124          MOV     $CS1,$CS1                       ;TEST FOR SHORTS
3357  017632  012737  177000  004126          MOV     #MXF!PGE!NEM!NED!UPE!WCE!DLT,$CS2
3358  017640  012737  174000  004130          MOV     #WCELO!WCEHI!DPELO!DPEHI!APE,$CS3
3359  017646  013737  004132  004132          MOV     $ST,$ST
3360  017654  013737  004134  004134          MOV     $ER,$ER
3361  017662  012737  177777  004122          MOV     #-1,BEFORE              ;TELL WHYFO ITS FOR SHORTS
3362  017670  004737  007224                  JSR     R7,WHYFO                ;TEST FOR SHORTS
3363  017674  005037  004122                  CLR     BEFORE                  ;WE HAVE CHECKED FOR SHORTS
3364  017700  000137  017772                  JMP     8$                      ;LEAVE THE TEST
3365  017704  032737  040000  001162  22$:    BIT     #TRE,$REG0              ;THEN IS THE TRE BIT SET
3366  017712  001022                          BNE     6$                      ;SC BIT DID NOT SEE TRE BIT
3367  017714  032737  100000  001162          BIT     #SC,$REG0               ;IS THE SC BIT SET
3368  017722  001022                          BNE     7$                      ;TRE HAS AN OPEN GOING TO BUS
3369  017724  104006                          ERROR   6                       ;TRE SET LOGIC NOT WORKING
3370  017726  000421                          BR      8$                      ;SET UP TO TEST AGAIN
3371  017730  104120                  2$:     ERROR   120                     ;MPE HAS OPEN IN LINE GOING TO BUS
3372  017732  004737  007224                  JSR     R7,WHYFO                ;SEE IF ANY OTHER ERROR BIT IS
3373                                                                          ;SET OTHER THAN MPE
3374  017736  000415                          BR      8$                      ;SET UP TO TEST AGAIN
3375  017740  104121                  3$:     ERROR   121                     ;SOMTHING WRONG WITH TRE BIT
3376  017742  004737  007224                  JSR     R7,WHYFO                ;SEE IF AN ERROR BIT IS SET
3377                                                                          ;OR BOTH MPE IN RHCS2 AND SC IN
3378                                                                          ;RHCS1 HAS AN OPEN BETWEEN IT AND THE BUS
3379  017746  000411                          BR      8$                      ;SET UP TO TEST AGAIN
3380  017750  104011                  4$:     ERROR   11                      ;SC BIT WAS SET BY EITHER ATTN OR
3381  017752  004737  007224                  JSR     R7,WHYFO                ;FIND WHAT ERROR BIT IS SET
3382                                                                          ;MCPE ERROR OR SC IS SHORTED TO +5 VOLTS
3383  017756  000405                          BR      8$                      ;SETUP TO TEST AGAIN
3384  017760  104122                  6$:     ERROR   122                     ;TRE WAS SET BY OTHER THAN MPE
3385  017762  004737  007224                  JSR     R7,WHYFO                ;FIND ERROR BIT THAT SET TRE
3386  017766  000401                          BR      8$                      ;SETUP TO TEST AGAIN
3387  017770  104013                  7$:     ERROR   13                      ;TRE HAS AN OPEN GOING TO THE BUS
3388  017772  032737  041400  177570  8$:     BIT     #SW14!SW9!SW8,@#177570  ;ANY LOOPING BEEING DONE
3389  020000  001003                          BNE     21$                     ;YES,LOAD TRE NO MATTER WHAT
3390  020002  105737  001103                  TSTB    $ERFLG                  ;WAS THERE AN ERROR
3391  020006  001010                          BNE     9$                      ;SKIP TRE CHECK
3392  020010  112777  000100  163346  21$:    MOVB    #TREB,@RHCS1B           ;LOAD TRE
3393  020016  032777  000400  163314          BIT     #MPE,@RHCS2             ;DID ERROR CLEAR
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3394  020024  001401                        BEQ     9$                      ;YES EXIT TEST
3395  020026  104050                        ERROR   50                      ;LOADING TRE DID NOT CLEAR ERROR
3396  020030  004737  006572        9$:     JSR     R7,CLEER                ;SEE IF ERRORS ARE CLEARED
3397  020034  004737  050202                JSR     R7,ERRTST
3398
3399                                ;;*****************************************************************
3400                                ;*TEST 23       UPE,TRE,SC ERROR TEST (RH11)
3401                                        ;*THIS TEST CHECKS THE UPE BIT IN RHCS2
3402                                        ;*TO SEE IF IT SETS AND WHEN IT SETS IS
3403                                        ;*TRE AND SC BITS SET IN RHCS1.....
3404                                ;;*****************************************************************
3405  020040  000004                TST23:  SCOPE
3406
3407  020042  012777  000007  163270        MOV     #7,@RHCS2               ;SET UP UNIT 7
3408  020050  005701                        TST     R1                      ;IS IT AN RH11
3409  020052  100402                        BMI     FITIT                   ;IT'S AN RH11,DO THE TEST
3410  020054  000137  020524                JMP     FIT                     ;IT'S AN RH70, EXIT TEST
3411  020060  012777  020007  163252  FITIT: MOV     #UPE!7,@RHCS2           ;SET PARITY ERROR IN RH11'S CS2 REG
3412  020066  017737  163236  001162        MOV     @RHCS1,$REG0            ;SET UP NEEDED BITS ONLY
3413  020074  042737  027777  001162        BIC     #GO!IE!RDY!A16!A17!PSEL!DVA!MCPE!READ6,$REG0
3414                                                                        ;CLEAR BITS NOT NEEDED
3415  020102  017737  163222  003420        MOV     @RHCS1,CS1              ;SAVE RHCS1
3416  020110  017737  163216  003444        MOV     @RHWC,WC                ;SAVE WORD COUNT
3417  020116  017737  163212  003414        MOV     @RHBA,BA                ;SAVE BUS ADDRESS
3418  020124  005701                        TST     R1                      ;IS IT AN RH11
3419  020126  001406                        BEQ     87$                     ;NO IT'S A 70
3420  020130  005037  003416                CLR     BAE                     ;CLEAR BAE
3421  020134  005037  003424                CLR     CS3                     ;CLEAR CS3
3422  020140  000137  020160                JMP     86$                     ;CONTINUE
3423  020144  017737  163210  003416  87$:  MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
3424  020152  017737  163204  003424        MOV     @RHCS3,CS3              ;SAVE RHCS3
3425  020160  017737  163154  003422  86$:  MOV     @RHCS2,CS2              ;SAVE CS2
3426  020166  017737  163150  003432        MOV     @RHST,DS1               ;SAVE TESTER STATUS
3427  020174  017737  163144  003436        MOV     @RHER,ER1               ;SAVE ERROR REGISTER
3428  020202  017737  163142  003442        MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
3429  020210  017737  163122  003440        MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
3430  020216  032777  000200  163104        BIT     #RDY,@RHCS1             ;IS READY SET
3431  020224  001003                        BNE     99$                     ;YES CONTINUE TEST
3432  020226  104102                        ERROR   102                     ;READY NOT SET
3433  020230  004737  007224                JSR     R7,WHYFO                ;ANY ERRORS SET
3434  020234  032777  020000  163076  99$:  BIT     #UPE,@RHCS2             ;IS UPE SET
3435  020242  001016                        BNE     1$                      ;YES CHECK TRE AND SC
3436  020244  022737  140000  001162        CMP     #SC!TRE,$REG0           ;IS THE SC AND TRE BITS SET
3437  020252  001460                        BEQ     2$                      ;YES UPE IS IN ERROR
3438  020254  032737  040000  001162        BIT     #TRE,$REG0              ;IS JUST THE TRE BIT SET
3439  020262  001060                        BNE     3$                      ;TRE BIT MUST BE IN ERROR
3440  020264  032737  100000  001162        BIT     #SC,$REG0               ;IS JUST THE SC BIT SET
3441  020272  001060                        BNE     4$                      ;SC BIT SET ERRONIOUSLY
3442  020274  104020                        ERROR   20                      ;UPE NOT SET IN RHCS2
3443  020276  000467                        BR      8$                      ;SET UP TO TEST AGAIN
3444  020300  022737  140000  001162  1$:   CMP     #SC!TRE,$REG0           ;IS SC AND TRE SET
3445  020306  001030                        BNE     22$                     ;FIND THE ERROR
3446  020310  013737  004124  004124        MOV     $CS1,$CS1                       ;TEST FOR SHORTS
3447  020316  012737  157400  004126        MOV     #MPE!MXF!PGE!NEM!NED!WCE!DLT,$CS2
3448  020324  013737  004130  004130        MOV     $CS3,$CS3
3449  020332  013737  004132  004132        MOV     $ST,$ST
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3450  020340  013737  004134  004134          MOV     $ER,$ER
3451  020346  012737  177777  004122          MOV     #-1,BEFORE              ;TELL WHYFO ITS FOR SHORTS
3452  020354  004737  007224                  JSR     R7,WHYFO                ;TEST FOR SHORTS
3453  020360  005037  004122                  CLR     BEFORE                  ;WE HAVE CHECKED FOR SHORTS
3454  020364  000137  020456                  JMP     8$                      ;LEAVE THE TEST
3455  020370  032737  040000  001162  22$:    BIT     #TRE,$REG0              ;THEN IS THE TRE BIT SET
3456  020376  001022                          BNE     6$                      ;SC BIT DID NOT SEE TRE BIT
3457  020400  032737  100000  001162          BIT     #SC,$REG0               ;IS THE SC BIT SET
3458  020406  001022                          BNE     7$                      ;TRE HAS AN OPEN GOING TO BUS
3459  020410  104006                          ERROR   6                       ;TRE SET LOGIC NOT WORKING
3460  020412  000421                          BR      8$                      ;SET UP TO TEST AGAIN
3461  020414  104021                  2$:     ERROR   21                      ;UPE HAS OPEN IN LINE GOING TO BUS
3462  020416  004737  007224                  JSR     R7,WHYFO                ;SEE IF ANY OTHER ERROR BIT IS
3463                                                                          ;SET OTHER THAN UPE
3464  020422  000415                          BR      8$                      ;SET UP TO TEST AGAIN
3465  020424  104023                  3$:     ERROR   23                      ;SOMTHING WRONG WITH TRE BIT
3466  020426  004737  007224                  JSR     R7,WHYFO                ;SEE IF AN ERROR BIT IS SET
3467                                                                          ;OR BOTH UPE IN RHCS2 AND SC IN
3468                                                                          ;RHCS1 HAS AN OPEN BETWEEN IT AND THE BUS
3469  020432  000411                          BR      8$                      ;SET UP TO TEST AGAIN
3470  020434  104011                  4$:     ERROR   11                      ;SC BIT WAS SET BY EITHER ATTN OR
3471  020436  004737  007224                  JSR     R7,WHYFO                ;FIND WHAT ERROR BIT IS SET
3472                                                                          ;MCPE ERROR OR SC IS SHORTED TO +5 VOLTS
3473  020442  000405                          BR      8$                      ;SETUP TO TEST AGAIN
3474  020444  104022                  6$:     ERROR   22                      ;TRE WAS SET BY OTHER THAN UPE
3475  020446  004737  007224                  JSR     R7,WHYFO                ;FIND ERROR BIT THAT SET TRE
3476  020452  000401                          BR      8$                      ;SETUP TO TEST AGAIN
3477  020454  104013                  7$:     ERROR   13                      ;TRE HAS AN OPEN GOING TO THE BUS
3478  020456  032737  041400  177570  8$:     BIT     #SW14!SW9!SW8,@#177570  ;ANY LOOPING BEEING DONE
3479  020464  001003                          BNE     21$                     ;YES,LOAD TRE NO MATTER WHAT
3480  020466  105737  001103                  TSTB    $ERFLG                  ;WAS THERE AN ERROR
3481  020472  001010                          BNE     9$                      ;SKIP TRE CHECK
3482  020474  112777  000100  162662  21$:    MOVB    #TREB,@RHCS1B           ;LOAD TRE
3483  020502  032777  020000  162630          BIT     #UPE,@RHCS2             ;DID ERROR CLEAR
3484  020510  001401                          BEQ     9$                      ;YES EXIT TEST
3485  020512  104050                          ERROR   50                      ;LOADING TRE DID NOT CLEAR ERROR
3486  020514  004737  006572          9$:     JSR     R7,CLEER                ;SEE IF ERRORS ARE CLEARED
3487  020520  004737  050202                  JSR     R7,ERRTST
3488
3489  020524                          FIT:
3490                                  ;;*********************************************************************
3491                                  ;*TEST 24       UPE,TRE,SC ERROR TEST (RH70)
3492                                          ;*THIS TEST CHECKS THE UPE BIT IN RHCS2
3493                                          ;*TO SEE IF IT SETS AND WHEN IT SETS IS
3494                                          ;*TRE AND SC BITS SET IN RHCS1.....
3495                                  ;;*********************************************************************
3496  020524  000004                  TST24:  SCOPE
3497
3498  020526  012777  000007  162604          MOV     #7,@RHCS2               ;SETUP UNIT 7
3499  020534  005701                          TST     R1                      ;IS IT AN RH11
3500  020536  001402                          BEQ     PLACE                   ;IT'S AN RH70
3501  020540  000137  021306                  JMP     FANGIE                  ;IT'S AN RH11, EXIT TEST
3502  020544  012777  000004  162610  PLACE:  MOV     #IPCK2,@RHCS3           ;SETUP FOR PARITY ERROR
3503  020552  012777  177776  162552          MOV     #-2,@RHWC               ;SETUP WORD COUNT TO TWO WORDS
3504  020560  012777  000000  162572          MOV     #ZERO,@RHBAE            ;SETUP BAE
3505  020566  012777  001162  162540          MOV     #$REG0,@RHBA            ;SETUP ADDRESS
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3506  020574  012777  000061  162526          MOV     #WRITE0,@RHCS1  ;TELL IT TO WRITE
3507  020602  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
3508  020606  032777  000200  162514  8$:     BIT     #RDY,@RHCS1             ;IS RDY SET
3509  020614  001015                          BNE     DYNO                    ;BIT IS SET
3510  020616  005237  003446                  INC     BITCNT                  ;COUNT UP
3511  020622  001371                          BNE     18$                     ;NOT FINISHED COUNTING
3512  020624  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
3513  020630  032777  000200  162472  19$:    BIT     #RDY,@RHCS1             ;IS IT SET YET?
3514  020636  001004                          BNE     DYNO                    ;YES
3515  020640  005237  003446                  INC     BITCNT                  ;COUNT UP
3516  020644  001401                          BEQ     DYNO                    ;BIT IS NOT GOING TO SET
3517  020646  000770                          BR      19$
3518  020650                          DYNO:
3519  020650  017737  162454  001162          MOV     @RHCS1,$REG0            ;SET UP NEEDED BITS ONLY
3520  020656  042737  027777  001162          BIC     #GO!IE!RDY!A16!A17!PSEL!DVA!MCPE!READ6,$REG0
3521                                                                          ;CLEAR BITS NOT NEEDED
3522  020664  017737  162440  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
3523  020672  017737  162434  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
3524  020700  017737  162430  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
3525  020706  005701                          TST     R1                      ;IS IT AN RH11
3526  020710  001406                          BEQ     87$                     ;NO IT'S A 70
3527  020712  005037  003416                  CLR     BAE                     ;CLEAR BAE
3528  020716  005037  003424                  CLR     CS3                     ;CLEAR CS3
3529  020722  000137  020742                  JMP     86$                     ;CONTINUE
3530  020726  017737  162426  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
3531  020734  017737  162422  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
3532  020742  017737  162372  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
3533  020750  017737  162366  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
3534  020756  017737  162362  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
3535  020764  017737  162360  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
3536  020772  017737  162340  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
3537  021000  032777  000200  162322          BIT     #RDY,@RHCS1             ;IS READY SET
3538  021006  001003                          BNE     99$                     ;YES CONTINUE TEST
3539  021010  104102                          ERROR   102                     ;READY NOT SET
3540  021012  004737  007224                  JSR     R7,WHYFO                ;ANY ERRORS SET
3541  021016  032777  020000  162314  99$:    BIT     #UPE,@RHCS2             ;IS UPE SET
3542  021024  001016                          BNE     1$                      ;YES CHECK TRE AND SC
3543  021026  022737  140000  001162          CMP     #SC!TRE,$REG0           ;IS THE SC AND TRE BITS SET
3544  021034  001460                          BEQ     2$                      ;YES UPE IS IN ERROR
3545  021036  032737  040000  001162          BIT     #TRE,$REG0              ;IS JUST THE TRE BIT SET
3546  021044  001060                          BNE     3$                      ;TRE BIT MUST BE IN ERROR
3547  021046  032737  100000  001162          BIT     #SC,$REG0               ;IS JUST THE SC BIT SET
3548  021054  001060                          BNE     4$                      ;SC BIT SET ERRONIOUSLY
3549  021056  104020                          ERROR   20                      ;UPE NOT SET IN RHCS2
3550  021060  000467                          BR      8$                      ;SET UP TO TEST AGAIN
3551  021062  022737  140000  001162  1$:     CMP     #SC!TRE,$REG0           ;IS SC AND TRE SET
3552  021070  001030                          BNE     22$                     ;FIND THE ERROR
3553  021072  013737  004124  004124          MOV     $CS1,$CS1                       ;TEST FOR SHORTS
3554  021100  012737  157400  004126          MOV     #MPE!MXF!PGE!NEM!NED!WCE!DLT,$CS2
3555  021106  012737  134100  004130          MOV     #APE!DPELO!WCEHI!WCELO!IE3,$CS3
3556  021114  013737  004132  004132          MOV     $ST,$ST
3557  021122  013737  004134  004134          MOV     $ER,$ER
3558  021130  012737  177777  004122          MOV     #-1,BEFORE              ;TELL WHYFO ITS FOR SHORTS
3559  021136  004737  007224                  JSR     R7,WHYFO                ;TEST FOR SHORTS
3560  021142  005037  004122                  CLR     BEFORE                  ;WE HAVE CHECKED FOR SHORTS
3561  021146  000137  021240                  JMP     8$                      ;LEAVE THE TEST
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3562  021152  032737  040000  001162  22$:    BIT     #TRE,$REG0              ;THEN IS THE TRE BIT SET
3563  021160  001022                          BNE     6$                      ;SC BIT DID NOT SEE TRE BIT
3564  021162  032737  100000  001162          BIT     #SC,$REG0               ;IS THE SC BIT SET
3565  021170  001022                          BNE     7$                      ;TRE HAS AN OPEN GOING TO BUS
3566  021172  104006                          ERROR   6                       ;TRE SET LOGIC NOT WORKING
3567  021174  000421                          BR      8$                      ;SET UP TO TEST AGAIN
3568  021176  104021                  2$:     ERROR   21                      ;UPE HAS OPEN IN LINE GOING TO BUS
3569  021200  004737  007224                  JSR     R7,WHYFO                ;SEE IF ANY OTHER ERROR BIT IS
3570                                                                          ;SET OTHER THAN UPE
3571  021204  000415                          BR      8$                      ;SET UP TO TEST AGAIN
3572  021206  104023                  3$:     ERROR   23                      ;SOMTHING WRONG WITH TRE BIT
3573  021210  004737  007224                  JSR     R7,WHYFO                ;SEE IF AN ERROR BIT IS SET
3574                                                                          ;OR BOTH UPE IN RHCS2 AND SC IN
3575                                                                          ;RHCS1 HAS AN OPEN BETWEEN IT AND THE BUS
3576  021214  000411                          BR      8$                      ;SET UP TO TEST AGAIN
3577  021216  104011                  4$:     ERROR   11                      ;SC BIT WAS SET BY EITHER ATTN OR
3578  021220  004737  007224                  JSR     R7,WHYFO                ;FIND WHAT ERROR BIT IS SET
3579                                                                          ;MCPE ERROR OR SC IS SHORTED TO +5 VOLTS
3580  021224  000405                          BR      8$                      ;SETUP TO TEST AGAIN
3581  021226  104022                  6$:     ERROR   22                      ;TRE WAS SET BY OTHER THAN UPE
3582  021230  004737  007224                  JSR     R7,WHYFO                ;FIND ERROR BIT THAT SET TRE
3583  021234  000401                          BR      8$                      ;SETUP TO TEST AGAIN
3584  021236  104013                  7$:     ERROR   13                      ;TRE HAS AN OPEN GOING TO THE BUS
3585  021240  032737  041400  177570  8$:     BIT     #SW14!SW9!SW8,@#177570  ;ANY LOOPING BEEING DONE
3586  021246  001003                          BNE     21$                     ;YES,LOAD TRE NO MATTER WHAT
3587  021250  105737  001103                  TSTB    $ERFLG                  ;WAS THERE AN ERROR
3588  021254  001010                          BNE     9$                      ;SKIP TRE CHECK
3589  021256  112777  000100  162100  21$:    MOVB    #TREB,@RHCS1B           ;LOAD TRE
3590  021264  032777  020000  162046          BIT     #UPE,@RHCS2             ;DID ERROR CLEAR
3591  021272  001401                          BEQ     9$                      ;YES EXIT TEST
3592  021274  104050                          ERROR   50                      ;LOADING TRE DID NOT CLEAR ERROR
3593  021276  004737  006572          9$:     JSR     R7,CLEER                ;SEE IF ERRORS ARE CLEARED
3594  021302  004737  050202                  JSR     R7,ERRTST
3595
3596  021306                          FANGIE:
3597
3598                                  ;;*******************************************************************
3599                                  ;*TEST 25        NED BIT TEST
3600                                          ;*THIS TEST WILL CHECK THAT NED (NON-EXISTANT DRIVE)
3601                                          ;*SETS TRE AND SC BITS IN RHCS1.....................
3602                                  ;;*******************************************************************
3603  021306  000004                  TST25:  SCOPE
3604
3605  021310  012777  000000  162022          MOV     #ZERO,@RHCS2            ;SETUP NED
3606  021316  005701                          TST     R1                      ;RH11 OR RH70
3607  021320  100403                          BMI     NEDERR                  ;IT'S AN RH11
3608  021322  012777  000000  162030          MOV     #ZERO,@RHBAE            ;SETUP BA EXTENSION
3609  021330  012777  177777  161774  NEDERR: MOV     #-1,@RHWC               ;FOR A 1 WORD TRANSFER
3610  021336  012777  001172  161770          MOV     #$REG4,@RHBA            ;SETUP BA
3611  021344  012777  000061  161756          MOV     #WRITE0,@RHCS1          ;TELL IT TO WRITE
3612  021352  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
3613  021356  032777  000200  161744  18$:    BIT     #RDY,@RHCS1             ;IS RDY SET
3614  021364  001015                          BNE     BAKER                   ;BIT IS SET
3615  021366  005237  003446                  INC     BITCNT                  ;COUNT UP
3616  021372  001371                          BNE     18$                     ;NOT FINISHED COUNTING
3617  021374  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
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3618  021400  032777  000200  161722  19$:    BIT     #RDY,@RHCS1             ;IS IT SET YET?
3619  021406  001004                          BNE     BAKER                   ;YES
3620  021410  005237  003446                  INC     BITCNT                  ;COUNT UP
3621  021414  001401                          BEQ     BAKER                   ;BIT IS NOT GOING TO SET
3622  021416  000770                          BR      19$
3623  021420                          BAKER:
3624  021420  017737  161704  001162          MOV     @RHCS1,$REG0            ;SET UP NEEDED BITS ONLY
3625  021426  042737  027777  001162          BIC     #GO!IE!RDY!A16!A17!PSEL!DVA!MCPE!READ6,$REG0
3626                                                                          ;CLEAR BITS NOT NEEDED
3627  021434  017737  161670  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
3628  021442  017737  161664  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
3629  021450  017737  161660  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
3630  021456  005701                          TST     R1                      ;IS IT AN RH11
3631  021460  001406                          BEQ     87$                     ;NO IT'S A 70
3632  021462  005037  003416                  CLR     BAE                     ;CLEAR BAE
3633  021466  005037  003424                  CLR     CS3                     ;CLEAR CS3
3634  021472  000137  021512                  JMP     86$                     ;CONTINUE
3635  021476  017737  161656  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
3636  021504  017737  161652  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
3637  021512  017737  161622  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
3638  021520  017737  161616  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
3639  021526  017737  161612  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
3640  021534  017737  161610  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
3641  021542  017737  161570  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
3642  021550  032777  000200  161552          BIT     #RDY,@RHCS1             ;IS READY SET
3643  021556  001003                          BNE     99$                     ;YES CONTINUE TEST
3644  021560  104102                          ERROR   102                     ;READY NOT SET
3645  021562  004737  007224                  JSR     R7,WHYFO                ;ANY ERRORS SET
3646  021566  032777  010000  161544  99$:    BIT     #NED,@RHCS2             ;IS NED SET
3647  021574  001016                          BNE     1$                      ;YES CHECK TRE AND SC
3648  021576  022737  140000  001162          CMP     #SC!TRE,$REG0           ;IS THE SC AND TRE BITS SET
3649  021604  001460                          BEQ     2$                      ;YES NED IS IN ERROR
3650  021606  032737  040000  001162          BIT     #TRE,$REG0              ;IS JUST THE TRE BIT SET
3651  021614  001060                          BNE     3$                      ;TRE BIT MUST BE IN ERROR
3652  021616  032737  100000  001162          BIT     #SC,$REG0               ;IS JUST THE SC BIT SET
3653  021624  001060                          BNE     4$                      ;SC BIT SET ERRONIOUSLY
3654  021626  104024                          ERROR   24                      ;NED NOT SET IN RHCS2
3655  021630  000467                          BR      8$                      ;SET UP TO TEST AGAIN
3656  021632  022737  140000  001162  1$:     CMP     #SC!TRE,$REG0           ;IS SC AND TRE SET
3657  021640  001030                          BNE     22$                     ;FIND THE ERROR
3658  021642  012737  000000  004124          MOV     #ZERO,$CS1                      ;TEST FOR SHORTS
3659  021650  012737  167400  004126          MOV     #MPE!MXF!PGE!NEM!UPE!WCE!DLT,$CS2
3660  021656  012737  174100  004130          MOV     #APE!DPEHI!DPELO!WCEHI!WCELO!IE3,$CS3
3661  021664  013737  004132  004132          MOV     $ST,$ST
3662  021672  013737  004134  004134          MOV     $ER,$ER
3663  021700  012737  177777  004122          MOV     #-1,BEFORE              ;TELL WHYFO ITS FOR SHORTS
3664  021706  004737  007224                  JSR     R7,WHYFO                ;TEST FOR SHORTS
3665  021712  005037  004122                  CLR     BEFORE                  ;WE HAVE CHECKED FOR SHORTS
3666  021716  000137  022010                  JMP     8$                      ;LEAVE THE TEST
3667  021722  032737  040000  001162  22$:    BIT     #TRE,$REG0              ;THEN IS THE TRE BIT SET
3668  021730  001022                          BNE     6$                      ;SC BIT DID NOT SEE TRE BIT
3669  021732  032737  100000  001162          BIT     #SC,$REG0               ;IS THE SC BIT SET
3670  021740  001022                          BNE     7$                      ;TRE HAS AN OPEN GOING TO BUS
3671  021742  104006                          ERROR   6                       ;TRE SET LOGIC NOT WORKING
3672  021744  000421                          BR      8$                      ;SET UP TO TEST AGAIN
3673  021746  104025                  2$:     ERROR   25                      ;NED HAS OPEN IN LINE GOING TO BUS
```

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3674  021750  004737  007224          JSR     R7,WHYFO                ;SEE IF ANY OTHER ERROR BIT IS
3675                                                                    ;SET OTHER THAN NED
3676  021754  000415                  BR      8$                      ;SET UP TO TEST AGAIN
3677  021756  104026          3$:     ERROR   26                      ;SOMTHING WRONG WITH TRE BIT
3678  021760  004737  007224          JSR     R7,WHYFO                ;SEE IF AN ERROR BIT IS SET
3679                                                                    ;OR BOTH NED IN RHCS2 AND SC IN
3680                                                                    ;RHCS1 HAS AN OPEN BETWEEN IT AND THE BUS
3681  021764  000411                  BR      8$                      ;SET UP TO TEST AGAIN
3682  021766  104011          4$:     ERROR   11                      ;SC BIT WAS SET BY EITHER ATTN OR
3683  021770  004737  007224          JSR     R7,WHYFO                ;FIND WHAT ERROR BIT IS SET
3684                                                                    ;MCPE ERROR OR SC IS SHORTED TO +5 VOLTS
3685  021774  000405                  BR      8$                      ;SETUP TO TEST AGAIN
3686  021776  104027          6$:     ERROR   27                      ;TRE WAS SET BY OTHER THAN NED
3687  022000  004737  007224          JSR     R7,WHYFO                ;FIND ERROR BIT THAT SET TRE
3688  022004  000401                  BR      8$                      ;SETUP TO TEST AGAIN
3689  022006  104013          7$:     ERROR   13                      ;TRE HAS AN OPEN GOING TO THE BUS
3690  022010  032737  041400  177570  8$:     BIT     #SW14!SW9.SW8,@#177570  ;ANY LOOPING BEEING DONE
3691  022016  001003                  BNE     21$                     ;YES,LOAD TRE NO MATTER WHAT
3692  022020  105737  001103          TSTB    $ERFLG                  ;WAS THERE AN ERROR
3693  022024  001010                  BNE     9$                      ;SKIP TRE CHECK
3694  022026  112777  000100  161330  21$:    MOVB    #TREB,@RHCS1B           ;LOAD TRE
3695  022034  032777  010000  161276          BIT     #NED,@RHCS2             ;DID ERROR CLEAR
3696  022042  001401                  BEQ     9$                      ;YES EXIT TEST
3697  022044  104050                  ERROR   50                      ;LOADING TRE DID NOT CLEAR ERROR
3698  022046  004737  006572          9$:     JSR     R7,CLEER                ;SEE IF ERRORS ARE CLEARED
3699  022052  004737  050202          JSR     R7,ERRTST
3700
3701
3702                                  ;;*****************************************************************
3703                                  ;*TEST 26       MXF ,TRE AND SC BIT TEST
3704                                          ;*THIS TEST WILL CHECK THAT MXF
3705                                          ;*(MISSED TRANSFER ERROR) WILL
3706                                          ;*SET TRE AND SC BITS.....
3707                                  ;;*****************************************************************
3708  022056  000004                  TST26:  SCOPE
3709
3710  022060  012777  000027  161252          MOV     #PAT!7,@RHCS2           ;SET MXF BIT
3711  022066  012777  177777  161236          MOV     #-1,@RHWC               ;SET UP WORD COUNT
3712  022074  012777  004100  161232          MOV     #RBUF,@RHBA             ;SETUP BA
3713  022102  012777  000000  161240          MOV     #ZERO,@RHTDB            ;SET MXF ERROR
3714  022110  012777  000061  161212          MOV     #WRITE0,@RHCS1          ;TELL IT TO WRITE
3715  022116  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
3716  022122  032777  000200  161200  18$:    BIT     #RDY,@RHCS1             ;IS RDY SET
3717  022130  001015                  BNE     CHARLE                  ;BIT IS SET
3718  022132  005237  003446                  INC     BITCNT                  ;COUNT UP
3719  022136  001371                  BNE     18$                     ;NOT FINISHED COUNTING
3720  022140  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
3721  022144  032777  000200  161156  19$:    BIT     #RDY,@RHCS1             ;IS IT SET YET?
3722  022152  001004                  BNE     CHARLE                  ;YES
3723  022154  005237  003446                  INC     BITCNT                  ;COUNT UP
3724  022160  001401                  BEQ     CHARLE                  :BIT IS NOT GOING TO SET
3725  022162  000770                  BR      19$
3726  022164                  CHARLE:
3727  022164  017737  161140  001162          MOV     @RHCS1,$REG0            ;SET UP NEEDED BITS ONLY
3728  022172  042737  027777  001162          BIC     #GO!IE.RDY.A16.A17!PSEL.DVA!MCPE!READ6,$REG0
3729                                                                    ;CLEAR BITS NOT NEEDED
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3730  022200  017737  161124  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
3731  022206  017737  161120  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
3732  022214  017737  161114  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
3733  022222  005701                          TST     R1                      ;IS IT AN RH11
3734  022224  001406                          BEQ     87$                     ;NO IT'S A 70
3735  022226  005037  003416                  CLR     BAE                     ;CLEAR BAE
3736  022232  005037  003424                  CLR     CS3                     ;CLEAR CS3
3737  022236  000137  022256                  JMP     86$                     ;CONTINUE
3738  022242  017737  161112  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
3739  022250  017737  161106  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
3740  022256  017737  161056  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
3741  022264  017737  161052  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
3742  022272  017737  161046  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
3743  022300  017737  161044  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
3744  022306  017737  161024  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
3745  022314  032777  000200  161006          BIT     #RDY,@RHCS1             ;IS READY SET
3746  022322  001003                          BNE     99$                     ;YES CONTINUE TEST
3747  022324  104102                          ERROR   102                     ;READY NOT SET
3748  022326  004737  007224                  JSR     R7,WHYFO                ;ANY ERRORS SET
3749  022332  032777  001000  161000  99$:    BIT     #MXF,@RHCS2             ;IS MXF SET
3750  022340  001016                          BNE     1$                      ;YES CHECK TRE AND SC
3751  022342  022737  140000  001162          CMP     #SC!TRE,$REG0           ;IS THE SC AND TRE BITS SET
3752  022350  001460                          BEQ     2$                      ;YES MXF IS IN ERROR
3753  022352  032737  040000  001162          BIT     #TRE,$REG0              ;IS JUST THE TRE BIT SET
3754  022360  001060                          BNE     3$                      ;TRE BIT MUST BE IN ERROR
3755  022362  032737  100000  001162          BIT     #SC,$REG0               ;IS JUST THE SC BIT SET
3756  022370  001060                          BNE     4$                      ;SC BIT SET ERRONIOUSLY
3757  022372  104030                          ERROR   30                      ;MXF NOT SET IN RHCS2
3758  022374  000467                          BR      8$                      ;SET UP TO TEST AGAIN
3759  022376  022737  140000  001162  1$:     CMP     #SC!TRE,$REG0           ;IS SC AND TRE SET
3760  022404  001030                          BNE     22$                     ;FIND THE ERROR
3761  022406  012737  020000  004124          MOV     #MCPE,$CS1                      ;TEST FOR SHORTS
3762  022414  012737  176400  004126          MOV     #MPE!PGE!NEM!NED!UPE!WCE!DLT,$CS2
3763  022422  013737  004130  004130          MOV     $CS3,$CS3
3764  022430  013737  004132  004132          MOV     $ST,$ST
3765  022436  012737  030165  004134          MOV     #ILF!RMR!DPE!RMBEX!RFAIL.DTE!OPI,$ER
3766  022444  012737  177777  004122          MOV     #-1,BEFORE              ;TELL WHYFO ITS FOR SHORTS
3767  022452  004737  007224                  JSR     R7,WHYFO                ;TEST FOR SHORTS
3768  022456  005037  004122                  CLR     BEFORE                  ;WE HAVE CHECKED FOR SHORTS
3769  022462  000137  022554                  JMP     8$                      ;LEAVE THE TEST
3770  022466  032737  040000  001162  22$:    BIT     #TRE,$REG0              ;THEN IS THE TRE BIT SET
3771  022474  001022                          BNE     6$                      ;SC BIT DID NOT SEE TRE BIT
3772  022476  032737  100000  001162          BIT     #SC,$REG0               ;IS THE SC BIT SET
3773  022504  001022                          BNE     7$                      ;TRE HAS AN OPEN GOING TO BUS
3774  022506  104006                          ERROR   6                       ;TRE SET LOGIC NOT WORKING
3775  022510  000421                          BR      8$                      ;SET UP TO TEST AGAIN
3776  022512  104031                  2$:     ERROR   31                      ;MXF HAS OPEN IN LINE GOING TO BUS
3777  022514  004737  007224                  JSR     R7,WHYFO                ;SEE IF ANY OTHER ERROR BIT IS
3778                                                                          ;SET OTHER THAN MXF
3779  022520  000415                          BR      8$                      ;SET UP TO TEST AGAIN
3780  022522  104032                  3$:     ERROR   32                      ;SOMTHING WRONG WITH TRE BIT
3781  022524  004737  007224                  JSR     R7,WHYFO                ;SEE IF AN ERROR BIT IS SET
3782                                                                          ;OR BOTH MXF IN RHCS2 AND SC IN
3783                                                                          ;RHCS1 HAS AN OPEN BETWEEN IT AND THE BUS
3784  022530  000411                          BR      8$                      ;SET UP TO TEST AGAIN
3785  022532  104011                  4$:     ERROR   11                      ;SC BIT WAS SET BY EITHER ATTN OR
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3786  022534  004737  007224                  JSR     R7,WHYFO                ;FIND WHAT ERROR BIT IS SET
3787                                                                            ;MCPE ERROR OR SC IS SHORTED TO +5 VOLTS
3788  022540  000405                          BR      8$                      ;SETUP TO TEST AGAIN
3789  022542  104033                  6$:     ERROR   33                      ;TRE WAS SET BY OTHER THAN MXF
3790  022544  004737  007224                  JSR     R7,WHYFO                ;FIND ERROR BIT THAT SET TRE
3791  022550  000401                          BR      8$                      ;SETUP TO TEST AGAIN
3792  022552  104013                  7$:     ERROR   13                      ;TRE HAS AN OPEN GOING TO THE BUS
3793  022554  032737  041400  177570  8$:     BIT     #SW14!SW9!SW8,@#177570  ;ANY LOOPING BEEING DONE
3794  022562  001003                          BNE     21$                     ;YES,LOAD TRE NO MATTER WHAT
3795  022564  105737  001103                  TSTB    $ERFLG                  ;WAS THERE AN ERROR
3796  022570  001010                          BNE     9$                      ;SKIP TRE CHECK
3797  022572  112777  000100  160564  21$:    MOVB    #TREB,@RHCS1B           ;LOAD TRE
3798  022600  032777  001000  160532          BIT     #MXF,@RHCS2             ;DID ERROR CLEAR
3799  022606  001401                          BEQ     9$                      ;YES EXIT TEST
3800  022610  104050                          ERROR   50                      ;LOADING TRE DID NOT CLEAR ERROR
3801  022612  004737  006572          9$:     JSR     R7,CLEER                ;SEE IF ERRORS ARE CLEARED
3802  022616  004737  050202                  JSR     R7,ERRTST
3803                                  ;;**************************************************************
3804                                  ;*TEST 27        PGE ERROR BIT TEST
3805                                          ;*THIS TEST FORCES PGE TO SET IN RHCS2
3806                                          ;*AND VERIFYS TRE AND SC IS SET IN RHCS1
3807                                  ;;**************************************************************
3808  022622  000004                  TST27:  SCOPE
3809  022624  012777  000007  160506          MOV     #7,@RHCS2               ;SET UNIT NUMBER
3810  022632  012777  004000  160474          MOV     #EVENAD,@RHBA           ;SETUP BUS ADDRESS
3811  022640  005701                          TST     R1                      ;IS IT AN 11 OR A 70
3812  022642  100403                          BMI     JUMP                    ;ITS AN RH11
3813  022644  012777  000000  160506          MOV     #ZERO,@RHBAE            ;SETUP BAE
3814  022652  012777  000061  160450  JUMP:   MOV     #WRITE0,@RHCS1          ;TELL IT TO WRITE
3815  022660  012777  000061  160442          MOV     #WRITE0,@RHCS1          ;CREATE THE ERROR
3816  022666  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
3817  022672  032777  000200  160430  18$:    BIT     #RDY,@RHCS1             ;IS RDY SET
3818  022700  001015                          BNE     PGETST                  ;BIT IS SET
3819  022702  005237  003446                  INC     BITCNT                  ;COUNT UP
3820  022706  001371                          BNE     18$                     ;NOT FINISHED COUNTING
3821  022710  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
3822  022714  032777  000200  160406  19$:    BIT     #RDY,@RHCS1             ;IS IT SET YET?
3823  022722  001004                          BNE     PGETST                  ;YES
3824  022724  005237  003446                  INC     BITCNT                  ;COUNT UP
3825  022730  001401                          BEQ     PGETST                  ;BIT IS NOT GOING TO SET
3826  022732  000770                          BR      19$
3827  022734                          PGETST:
3828  022734  017737  160370  001162          MOV     @RHCS1,$REGO            ;SET UP NEEDED BITS ONLY
3829  022742  042737  027777  001162          BIC     #GO!IE!RDY!A16!A17!PSEL!DVA!MCPE!READ6,$REGO
3830                                                                          ;CLEAR BITS NOT NEEDED
3831  022750  017737  160354  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
3832  022756  017737  160350  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
3833  022764  017737  160344  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
3834  022772  005701                          TST     R1                      ;IS IT AN RH11
3835  022774  001406                          BEQ     87$                     ;NO IT'S A 70
3836  022776  005037  003416                  CLR     BAE                     ;CLEAR BAE
3837  023002  005037  003424                  CLR     CS3                     ;CLEAR CS3
3838  023006  000137  023026                  JMP     86$                     ;CONTINUE
3839  023012  017737  160342  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
3840  023020  017737  160336  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
3841  023026  017737  160306  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
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3842  023034  017737  160302  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
3843  023042  017737  160276  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
3844  023050  017737  160274  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
3845  023056  017737  160254  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
3846  023064  032777  000200  160236          BIT     #RDY,@RHCS1             ;IS READY SET
3847  023072  001003                          BNE     99$                     ;YES CONTINUE TEST
3848  023074  104102                          ERROR   102                     ;READY NOT SET
3849  023076  004737  007224                  JSR     R7,WHYFO                ;ANY ERRORS SET
3850  023102  032777  002000  160230  99$:    BIT     #PGE,@RHCS2             ;IS PGE SET
3851  023110  001016                          BNE     1$                      ;YES CHECK TRE AND SC
3852  023112  022737  140000  001162          CMP     #SC!TRE,$REG0           ;IS THE SC AND TRE BITS SET
3853  023120  001460                          BEQ     2$                      ;YES PGE IS IN ERROR
3854  023122  032737  040000  001162          BIT     #TRE,$REG0              ;IS JUST THE TRE BIT SET
3855  023130  001060                          BNE     3$                      ;TRE BIT MUST BE IN ERROR
3856  023132  032737  100000  001162          BIT     #SC,$REG0               ;IS JUST THE SC BIT SET
3857  023140  001060                          BNE     4$                      ;SC BIT SET ERRONIOUSLY
3858  023142  104051                          ERROR   51                      ;PGE NOT SET IN RHCS2
3859  023144  000467                          BR      8$                      ;SET UP TO TEST AGAIN
3860  023146  022737  140000  001162  1$:     CMP     #SC!TRE,$REG0           ;IS SC AND TRE SET
3861  023154  001030                          BNE     22$                     ;FIND THE ERROR
3862  023156  013737  004124  004124          MOV     $CS1,$CS1                       ;TEST FOR SHORTS
3863  023164  012737  175400  004126          MOV     #MPE!MXF!NEM!NED!UPE!WCE!DLT,$CS2
3864  023172  013737  004130  004130          MOV     $CS3,$CS3
3865  023200  013737  004132  004132          MOV     $ST,$ST
3866  023206  012737  030175  004134          MOV     #ILF!CPE!RMR!DPE!RMBEX!RFAIL!DTE!OPI,$ER
3867  023214  012737  177777  004122          MOV     #-1,BEFORE              ;TELL WHYFO ITS FOR SHORTS
3868  023222  004737  007224                  JSR     R7,WHYFO                ;TEST FOR SHORTS
3869  023226  005037  004122                  CLR     BEFORE                  ;WE HAVE CHECKED FOR SHORTS
3870  023232  000137  023324                  JMP     8$                      ;LEAVE THE TEST
3871  023236  032737  040000  001162  22$:    BIT     #TRE,$REG0              ;THEN IS THE TRE BIT SET
3872  023244  001022                          BNE     6$                      ;SC BIT DID NOT SEE TRE BIT
3873  023246  032737  100000  001162          BIT     #SC,$REG0               ;IS THE SC BIT SET
3874  023254  001022                          BNE     7$                      ;TRE HAS AN OPEN GOING TO BUS
3875  023256  104006                          ERROR   6                       ;TRE SET LOGIC NOT WORKING
3876  023260  000421                          BR      8$                      ;SET UP TO TEST AGAIN
3877  023262  104123                  2$:     ERROR   123                     ;PGE HAS OPEN IN LINE GOING TO BUS
3878  023264  004737  007224                  JSR     R7,WHYFO                ;SEE IF ANY OTHER ERROR BIT IS
3879                                                                          ;SET OTHER THAN PGE
3880  023270  000415                          BR      8$                      ;SET UP TO TEST AGAIN
3881  023272  104171                  3$:     ERROR   171                     ;SOMTHING WRONG WITH TRE BIT
3882  023274  004737  007224                  JSR     R7,WHYFO                ;SEE IF AN ERROR BIT IS SET
3883                                                                          ;OR BOTH PGE IN RHCS2 AND SC IN
3884                                                                          ;RHCS1 HAS AN OPEN BETWEEN IT AND THE BUS
3885  023300  000411                          BR      8$                      ;SET UP TO TEST AGAIN
3886  023302  104011                  4$:     ERROR   11                      ;SC BIT WAS SET BY EITHER ATTN OR
3887  023304  004737  007224                  JSR     R7,WHYFO                ;FIND WHAT ERROR BIT IS SET
3888                                                                          ;MCPE ERROR OR SC IS SHORTED TO +5 VOLTS
3889  023310  000405                          BR      8$                      ;SETUP TO TEST AGAIN
3890  023312  104172                  6$:     ERROR   172                     ;TRE WAS SET BY OTHER THAN PGE
3891  023314  004737  007224                  JSR     R7,WHYFO                ;FIND ERROR BIT THAT SET TRE
3892  023320  000401                          BR      8$                      ;SETUP TO TEST AGAIN
3893  023322  104013                  7$:     ERROR   13                      ;TRE HAS AN OPEN GOING TO THE BUS
3894  023324  032737  041400  177570  8$:     BIT     #SW14!SW9!SW8,@#177570  ;ANY LOOPING BEEING DONE
3895  023332  001003                          BNE     21$                     ;YES,LOAD TRE NO MATTER WHAT
3896  023334  105737  001103                  TSTB    $ERFLG                  ;WAS THERE AN ERROR
3897  023340  001010                          BNE     9$                      ;SKIP TRE CHECK
```

```
3898  023342  112777  000100  160014  21$:    MOVB    #TREB,@RHCS1B           ;LOAD TRE
3899  023350  032777  002000  157762          BIT     #PGE,@RHCS2             ;DID ERROR CLEAR
3900  023356  001401                          BEQ     9$                      ;YES EXIT TEST
3901  023360  104050                          ERROR   50                      ;LOADING TRE DID NOT CLEAR ERROR
3902  023362  004737  006572          9$:     JSR     R7,CLEER                ;SEE IF ERRORS ARE CLEARED
3903  023366  004737  050202                  JSR     R7,ERRTST
3904                                  ;;**************************************************************************
3905                                  ;*TEST 30        MXF,TRE AND SC BIT TEST (RH11 ONLY)
3906                                  ;*THIS TEST SEES IF MXF CAN BE SET BY A MOVE
3907                                  ;*INSTRUCTION AND THAT TRE AND SC ARE SET IN
3908                                  ;*RHCS1.MXF CAN BE SET THIS WAY IN AN RH11 BUT CN
3909                                  ;*NOT BE SET THIS WAY IN AN RH70.................
3910                                  ;;**************************************************************************
3911  023372  000004                  TST30:  SCOPE
3912  023374  005701                          TST     R1                      ;IS IT A 70 OR 11
3913  023376  100402                          BMI     LEAP                    ;IT'S AN RH11 DO THE TEST
3914  023400  000137  024124                  JMP     FROG                    ;RH70,EXIT TEST
3915  023404  012777  000007  157726  LEAP:   MOV     #7,@RHCS2               ;SETUP UNIT 7
3916  023412  052777  001000  157720          BIS     #MXF,@RHCS2             ;SET MXF
3917  023420  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
3918  023424  032777  001000  157706  18$:    BIT     #MXF,@RHCS2             ;IS MXF SET
3919  023432  001015                          BNE     MIXIT                   ;BIT IS SET
3920  023434  005237  003446                  INC     BITCNT                  ;COUNT UP
3921  023440  001371                          BNE     18$                     ;NOT FINISHED COUNTING
3922  023442  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
3923  023446  032777  001000  157664  19$:    BIT     #MXF,@RHCS2             ;IS IT SET YET?
3924  023454  001004                          BNE     MIXIT                   ;YES
3925  023456  005237  003446                  INC     BITCNT                  ;COUNT UP
3926  023462  001401                          BEQ     MIXIT                   ;BIT IS NOT GOING TO SET
3927  023464  000770                          BR      19$
3928  023466                          MIXIT:
3929  023466  017737  157636  001162          MOV     @RHCS1,$REG0            ;SET UP NEEDED BITS ONLY
3930  023474  042737  027777  001162          BIC     #GO!IE!RDY!A16!A17!PSEL!DVA!MCPE!READ6,$REG0
3931                                                                          ;CLEAR BITS NOT NEEDED
3932  023502  017737  157622  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
3933  023510  017737  157616  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
3934  023516  017737  157612  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
3935  023524  005701                          TST     R1                      ;IS IT AN RH11
3936  023526  001406                          BEQ     87$                     ;NO IT'S A 70
3937  023530  005037  003416                  CLR     BAE                     ;CLEAR BAE
3938  023534  005037  003424                  CLR     CS3                     ;CLEAR CS3
3939  023540  000137  023560                  JMP     86$                     ;CONTINUE
3940  023544  017737  157610  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
3941  023552  017737  157604  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
3942  023560  017737  157554  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
3943  023566  017737  157550  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
3944  023574  017737  157544  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
3945  023602  017737  157542  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
3946  023610  017737  157522  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
3947  023616  032777  000200  157504          BIT     #RDY,@RHCS1             ;IS READY SET
3948  023624  001003                          BNE     99$                     ;YES CONTINUE TEST
3949  023626  104102                          ERROR   102                     ;READY NOT SET
3950  023630  004737  007224                  JSR     R7,WHYFO                ;ANY ERRORS SET
3951  023634  032777  001000  157476  99$:    BIT     #MXF,@RHCS2             ;IS MXF SET
3952  023642  001016                          BNE     1$                      ;YES CHECK TRE AND SC
3953  023644  022737  140000  001162          CMP     #SC!TRE,$REG0           ;IS THE SC AND TRE BITS SET
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3954  023652  001460                        BEQ     2$                      ;YES MXF IS IN ERROR
3955  023654  032737  040000  001162        BIT     #TRE,$REG0              ;IS JUST THE TRE BIT SET
3956  023662  001060                        BNE     3$                      ;TRE BIT MUST BE IN ERROR
3957  023664  032737  100000  001162        BIT     #SC,$REG0               ;IS JUST THE SC BIT SET
3958  023672  001060                        BNE     4$                      ;SC BIT SET ERRONIOUSLY
3959  023674  104030                        ERROR   30                      ;MXF NOT SET IN RHCS2
3960  023676  000467                        BR      8$                      ;SET UP TO TEST AGAIN
3961  023700  022737  140000  001162  1$:   CMP     #SC!TRE,$REG0           ;IS SC AND TRE SET
3962  023706  001030                        BNE     22$                     ;FIND THE ERROR
3963  023710  013737  004124  004124        MOV     $CS1,$CS1                       ;TEST FOR SHORTS
3964  023716  012737  176400  004126        MOV     #MPE!PGE!NEM!NED!UPE!WCE!DLT,$CS2
3965  023724  013737  004130  004130        MOV     $CS3,$CS3
3966  023732  013737  004132  004132        MOV     $ST,$ST
3967  023740  013737  004134  004134        MOV     $ER,$ER
3968  023746  012737  177777  004122        MOV     #-1,BEFORE              ;TELL WHYFO ITS FOR SHORTS
3969  023754  004737  007224                JSR     R7,WHYFO                ;TEST FOR SHORTS
3970  023760  005037  004122                CLR     BEFORE                  ;WE HAVE CHECKED FOR SHORTS
3971  023764  000137  024056                JMP     8$                      ;LEAVE THE TEST
3972  023770  032737  040000  001162  22$:  BIT     #TRE,$REG0              ;THEN IS THE TRE BIT SET
3973  023776  001022                        BNE     6$                      ;SC BIT DID NOT SEE TRE BIT
3974  024000  032737  100000  001162        BIT     #SC,$REG0               ;IS THE SC BIT SET
3975  024006  001022                        BNE     7$                      ;TRE HAS AN OPEN GOING TO BUS
3976  024010  104006                        ERROR   6                       ;TRE SET LOGIC NOT WORKING
3977  024012  000421                        BR      8$                      ;SET UP TO TEST AGAIN
3978  024014  104031                2$:     ERROR   31                      ;MXF HAS OPEN IN LINE GOING TO BUS
3979  024016  004737  007224                JSR     R7,WHYFO                ;SEE IF ANY OTHER ERROR BIT IS
3980                                                                        ;SET OTHER THAN MXF
3981  024022  000415                        BR      8$                      ;SET UP TO TEST AGAIN
3982  024024  104032                3$:     ERROR   32                      ;SOMTHING WRONG WITH TRE BIT
3983  024026  004737  007224                JSR     R7,WHYFO                ;SEE IF AN ERROR BIT IS SET
3984                                                                        ;OR BOTH MXF IN RHCS2 AND SC IN
3985                                                                        ;RHCS1 HAS AN OPEN BETWEEN IT AND THE BUS
3986  024032  000411                        BR      8$                      ;SET UP TO TEST AGAIN
3987  024034  104011                4$:     ERROR   11                      ;SC BIT WAS SET BY EITHER ATTN OR
3988  024036  004737  007224                JSR     R7,WHYFO                ;FIND WHAT ERROR BIT IS SET
3989                                                                        ;MCPE ERROR OR SC IS SHORTED TO +5 VOLTS
3990  024042  000405                        BR      8$                      ;SETUP TO TEST AGAIN
3991  024044  104033                6$:     ERROR   33                      ;TRE WAS SET BY OTHER THAN MXF
3992  024046  004737  007224                JSR     R7,WHYFO                ;FIND ERROR BIT THAT SET TRE
3993  024052  000401                        BR      8$                      ;SETUP TO TEST AGAIN
3994  024054  104013                7$:     ERROR   13                      ;TRE HAS AN OPEN GOING TO THE BUS
3995  024056  032737  041400  177570  8$:   BIT     #SW14!SW9!SW8,@#177570  ;ANY LOOPING BEEING DONE
3996  024064  001003                        BNE     21$                     ;YES,LOAD TRE NO MATTER WHAT
3997  024066  105737  001103                TSTB    $ERFLG                  ;WAS THERE AN ERROR
3998  024072  001010                        BNE     9$                      ;SKIP TRE CHECK
3999  024074  112777  000100  157262  21$:  MOVB    #TREB,@R.ICS1B          ;LOAD TRE
4000  024102  032777  001000  157230        BIT     #MXF,@RHCS2             ;DID ERROR CLEAR
4001  024110  001401                        BEQ     9$                      ;YES EXIT TEST
4002  024112  104050                        ERROR   50                      ;LOADING TRE DID NOT CLEAR ERROR
4003  024114  004737  006572          9$:   JSR     R7,CLEER                ;SEE IF ERRORS ARE CLEARED
4004  024120  004737  050202                JSR     R7,ERRTST
4005  024124                        FROG:
4006                                ;;**********************************************************************
4007                                ;*TEST 31        MCPE AND SC ERROR TET
4008                                        ;*THIS TEST CHECKS THAT MCPE CAN BE SET IN RHCS1
4009                                        ;*AND THAT MCPE SETS SC IN RHCS1.................
```

```
4010                                    ;;*****************************************************************************
4011  024124  000004                    TST31:  SCOPE
4012  024126  012777  000007  157204            MOV     #7,@RHCS2               ;SETUP UNIT NO.
4013  024134  012777  000010  157212            MOV     #ICPA,@RHMR1            ;INVERT CONTROL PARITY
4014  024142  013777  001162  157200            MOV     $REG0,@RHTDB            ;TRANSFER INFO TO TESTER
4015  024150  013777  001162  157172            MOV     $REG0,@RHTDB            ;DO IT FOR SECOND TIME
4016  024156  005037  003446                    CLR     BITCNT                  ;CLEAR BIT COUNTER
4017  024162  032777  000200  157140  18$:     BIT     #RDY,@RHCS1             ;IS RDY SET
4018  024170  001015                    BNE     MCPET                   ;BIT IS SET
4019  024172  005237  003446                    INC     BITCNT                  ;COUNT UP
4020  024176  001371                    BNE     18$                     ;NOT FINISHED COUNTING
4021  024200  005037  003446                    CLR     BITCNT                  ;GET READY TO DO IT AGAIN
4022  024204  032777  000200  157116  19$:     BIT     #RDY,@RHCS1             ;IS IT SET YET?
4023  024212  001004                    BNE     MCPET                   ;YES
4024  024214  005237  003446                    INC     BITCNT                  ;COUNT UP
4025  024220  001401                    BEQ     MCPET                   ;BIT IS NOT GOING TO SET
4026  024222  000770                    BR      19$
4027  024224                          MCPET:
4028  024224  017737  157100  003420            MOV     @RHCS1,CS1              ;SAVE RHCS1
4029  024232  017737  157074  003444            MOV     @RHWC,WC                ;SAVE WORD COUNT
4030  024240  017737  157070  003414            MOV     @RHBA,BA                ;SAVE BUS ADDRESS
4031  024246  005701                    TST     R1                      ;IS IT AN RH11
4032  024250  001406                    BEQ     87$                     ;NO IT'S A 70
4033  024252  005037  003416                    CLR     BAE                     ;CLEAR BAE
4034  024256  005037  003424                    CLR     CS3                     ;CLEAR CS3
4035  024262  000137  024302                    JMP     86$                     ;CONTINUE
4036  024266  017737  157066  003416  87$:     MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
4037  024274  017737  157062  003424            MOV     @RHCS3,CS3              ;SAVE RHCS3
4038  024302  017737  157032  003422  86$:     MOV     @RHCS2,CS2              ;SAVE CS2
4039  024310  017737  157026  003432            MOV     @RHST,DS1               ;SAVE TESTER STATUS
4040  024316  017737  157022  003436            MOV     @RHER,ER1               ;SAVE ERROR REGISTER
4041  024324  017737  157020  003442            MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
4042  024332  017737  157000  003440            MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
4043  024340  032777  000200  156762            BIT     #RDY,@RHCS1             ;IS READY SET
4044  024346  001003                    BNE     MPETST                  ;YES,TEST MCPE
4045  024350  104102                    ERROR   102                     ;READY IS NOT SET
4046  024352  004737  007224                    JSR     R7,WHYFO                ;ANY ERRORS SET
4047  024356  032777  020000  156744  MPETST: BIT     #MCPE,@RHCS1            ;IS MCPE SET
4048  024364  001425                    BEQ     1$
4049  024366  032777  100000  156734            BIT     #SC,@RHCS1              ;IS SC SET
4050  024374  001416                    BEQ     22$                     ;SC NOT SET
4051  024376  012737  040000  004124            MOV     #TRE,$CS1               ;GET READY TO TEST FOR SHORTS
4052  024404  012737  177400  004126            MOV     #MPE!MXF!PGE!NEM!NED!UPE!WCE!DLT,$CS2
4053  024412  012737  177777  004122            MOV     #-1,BEFORE
4054  024420  004737  007224                    JSR     R7,WHYFO                ;SEE IF ANY SHORTS
4055  024424  005037  004122                    CLR     BEFORE
4056  024430  000406                    BR      ERR30                   ;GET OUT OF TEST
4057  024432  104130                    22$:    ERROR   130                     ;MCPE ERROR OK BUT SC DID
4058                                                                            ;NOT SET SC HAS OPEN TO
4059                                                                            ;BUS OR MCPE GOING TO OR
4060                                                                            ;GATE FOR SC WAS NOT SEEN
4061  024434  000137  024446                    JMP     ERR30
4062  024440  104131                    1$:     ERROR   131                     ;MCPE DID NOT SET
4063  024442  004737  007224                    JSR     R7,WHYFO                ;WAS THERE ANOTHER ERROR
4064  024446  004737  006572            ERR30:  JSR     R7,CLEER                ;CLEAR ERRORS
4065  024452  004737  050202                    JSR     R7,ERRTST               ;WAS THERE AN ERROR
```

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4066
4067                                    ;;**********************  **************************************************
4068                                    ;*TEST 32        DOUBLE TRANSFER TEST,1 WORD FROM AN ADDRESS BASE 4
4069                                            ;*THIS TEST CHECKS THAT A ONE WORD TRANSFER
4070                                            ;*FROM AN ADDRESS DIVISIBLE BY 4 WILL NOT SET
4071                                            ;*DBL IN RHCS3......RH70 ONLY.................
4072                                    ;;**************************************************************************
4073  024456  000004                    TST32:  SCOPE
4074  024460  005701                            TST     R1                      ;IS IN AN RH11
4075  024462  100532                            BMI     TST33           ;;GET OUT OF TEST
4076  024464  012777  177777  156640            MOV     #-1,@RHWC               ;SET UP WC FOR ONE WORD
4077  024472  012777  004000  156634            MOV     #EVENAD,@RHBA           ;SETUP BUS ADDRESS
4078  024500  012777  000000  156652            MOV     #ZERO,@RHBAE            ;SETUP BUS ADDRESS EXTENSION
4079  024506  012777  000007  156624            MOV     #7,@RHCS2               ;DEVICE 7
4080  024514  012777  000061  156606            MOV     #WRITE0,@RHCS1          ;TELL IT TO WRITE0
4081  024522  005037  003446                    CLR     BITCNT                  ;CLEAR BIT COUNTER
4082  024526  032777  000200  156574  18$:     BIT     #RDY,@RHCS1             ;IS RDY SET
4083  024534  001015                            BNE     3$                      ;BIT IS SET
4084  024536  005237  003446                    INC     BITCNT                  ;COUNT UP
4085  024542  001371                            BNE     18$                     ;NOT FINISHED COUNTING
4086  024544  005037  003446                    CLR     BITCNT                  ;GET READY TO DO IT AGAIN
4087  024550  032777  000200  156552  19$:     BIT     #RDY,@RHCS1             ;IS IT SET YET?
4088  024556  001004                            BNE     3$                      ;YES
4089  024560  005237  003446                    INC     BITCNT                  ;COUNT UP
4090  024564  001401                            BEQ     3$                      ;BIT IS NOT GOING TO SET
4091  024566  000770                            BR      19$
4092  024570                            3$:
4093  024570  017737  156534  003420            MOV     @RHCS1,CS1              ;SAVE RHCS1
4094  024576  017737  156530  003444            MOV     @RHWC,WC                ;SAVE WORD COUNT
4095  024604  017737  156524  003414            MOV     @RHBA,BA                ;SAVE BUS ADDRESS
4096  024612  005701                            TST     R1                      ;IS IT AN RH11
4097  024614  001406                            BEQ     87$                     ;NO IT'S A 70
4098  024616  005037  003416                    CLR     BAE                     ;CLEAR BAE
4099  024622  005037  003424                    CLR     CS3                     ;CLEAR CS3
4100  024626  000137  024646                    JMP     86$                     ;CONTINUE
4101  024632  017737  156522  003416  87$:     MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
4102  024640  017737  156516  003424            MOV     @RHCS3,CS3              ;SAVE RHCS3
4103  024646  017737  156466  003422  86$:     MOV     @RHCS2,CS2              ;SAVE CS2
4104  024654  017737  156462  003432            MOV     @RHST,DS1               ;SAVE TESTER STATUS
4105  024662  017737  156456  003436            MOV     @RHER,ER1               ;SAVE ERROR REGISTER
4106  024670  017737  156454  003442            MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
4107  024676  017737  156434  003440            MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
4108  024704  032777  000200  156416            BIT     #RDY,@RHCS1             ;IS READY SET
4109  024712  001003                            BNE     1$                      ;RDY SET CONT. TEST
4110  024714  104102                            ERROR   102                     ;READY DID NOT SET
4111  024716  004737  007224                    JSR     R7,WHYFO                ;ANY ERRORS SET
4112  024722  032777  002000  156432  1$:      BIT     #DBL,@RHCS3             ;IS DOUBLE SET
4113  024730  001403                            BEQ     2$                      ;DBL SET
4114  024732  104125                            ERROR   125                     ;DBL DID SET ON A 1 WORD TRANSFER
4115  024734  004737  007224                    JSR     R7,WHYFO                ;TELL WHY NOT
4116  024740  004737  006572            2$:     JSR     R7,CLEER                ;CLEAR ERRORS
4117  024744  004737  050202                    JSR     R7,ERRTST
4118                                    ;;**************************************************************************
4119                                    ;*TEST 33        DOUBLES TEST FOR TWO WORD BASE 4 ADDRESS
4120                                            ;*THIS TEST CHECKS THAT DOUBLE WILL SET FOR A
4121                                            ;*TWO WORD TRANSFER STARTING FROM AN ADDRESS
```

```
                                          ;*DIVISABLE BY 4........RH70 ONLY.............
                                  ;;********************* ***********************************************
024750  000004                    TST33:  SCOPE
024752  005701                            TST     R1                            ;IS IT AN 11 OR A 70
024754  100524                            BMI     TST34                 ;;GET OUT OF TEST
024756  012777  177776  156346            MOV     #-2,@RHWC                     ;SETUP WORD COUNT FOR DOUBLE TRANSFER
024764  012777  004000  156342            MOV     #EVENAD,@RHBA                 ;CORRECT BA
024772  012777  000061  156330            MOV     #WRITEO,@RHCS1                ;TELL IT TO WRITE
025000  005037  003446                    CLR     BITCNT                        ;CLEAR BIT COUNTER
025004  032777  000200  156316    18$:    BIT     #RDY,@RHCS1                   ;IS RDY SET
025012  001015                            BNE     DBLWDS                        ;BIT IS SET
025014  005237  003446                    INC     BITCNT                        ;COUNT UP
025020  001371                            BNE     18$                           ;NOT FINISHED COUNTING
025022  005037  003446                    CLR     BITCNT                        ;GET READY TO DO IT AGAIN
025026  032777  000200  156274    19$:    BIT     #RDY,@RHCS1                   ;IS IT SET YET?
025034  001004                            BNE     DBLWDS                        ;YES
025036  005237  003446                    INC     BITCNT                        ;COUNT UP
025042  001401                            BEQ     DBLWDS                        ;BIT IS NOT GOING TO SET
025044  000770                            BR      19$
025046                            DBLWDS:
025046  017737  156256  003420            MOV     @RHCS1,CS1                    ;SAVE RHCS1
025054  017737  156252  003444            MOV     @RHWC,WC                      ;SAVE WORD COUNT
025062  017737  156246  003414            MOV     @RHBA,BA                      ;SAVE BUS ADDRESS
025070  005701                            TST     R1                            ;IS IT AN RH11
025072  001406                            BEQ     87$                           ;NO IT'S A 70
025074  005037  003416                    CLR     BAE                           ;CLEAR BAE
025100  005037  003424                    CLR     CS3                           ;CLEAR CS3
025104  000137  025124                    JMP     86$                           ;CONTINUE
025110  017737  156244  003416    87$:    MOV     @RHBAE,BAE                    ;SAVE BUS ADDRESS EXTENSION
025116  017737  156240  003424            MOV     @RHCS3,CS3                    ;SAVE RHCS3
025124  017737  156210  003422    86$:    MOV     @RHCS2,CS2                    ;SAVE CS2
025132  017737  156204  003432            MOV     @RHST,DS1                     ;SAVE TESTER STATUS
025140  017737  156200  003436            MOV     @RHER,ER1                     ;SAVE ERROR REGISTER
025146  017737  156176  003442            MOV     @RHTDB,TDR                    ;SAVE TESTER DATA REG.
025154  017737  156156  003440            MOV     @RHMR2,TC                     ;SAVE MR2 TESTER REG.
025162  032777  000200  156140            BIT     #RDY,@RHCS1                   ;IS READY SET
025170  001003                            BNE     FOOEY                         ;RDY IS SET
025172  104102                            ERROR   102                           ;RDY DID NOT SET
025174  004737  007224                    JSR     R7,WHYFO                      ;ANY ERRORS SET
025200  032777  002000  156154    FOOEY:  BIT     #DBL,@RHCS3                   ;IS DOUBLE SET
025206  001003                            BNE     ER1R                          ;DBL IS SET
025210  104127                            ERROR   127                           ;DBL DID NOT SET IN RHCS3
025212  004737  007224                    JSR     R7,WHYFO                      ;ANY OTHER ERROR SET
025216  004737  006572            ER1R:   JSR     R7,CLEER                      ;CLEAR ERRORS
025222  004737  050202                    JSR     R7,ERRTST
                                  ;;*****************************************************************
                                  ;*TEST 34        DOUBLE TEST ,3 WORD TRANSFER FROM A BASE 4 ADDRESS
                                          ;*THIS TEST CHECKS THAT DBL WILL NOT SET
                                          ;*IN RHCS3 AFTER A 3 WORD TRANSFER STARTING
                                          ;*FROM AN ADDRESS DIVISABLE BY 4
                                          ;*.............RH70 ONLY..................
                                  ;;*****************************************************************
025226  000004                    TST34:  SCOPE
025230  005701                            TST     R1                            ;IS IT AN 11 OR A 70
025232  100524                            BMI     TST35                 ;;GET OUT OF TEST
025234  012777  177775  156070            MOV     #-3,@RHWC                     ;SET UP FOR A 3 WORD TRANSFER
```

```
4178  025242  012777  004000  156064          MOV     #EVENAD,@RHBA           ;CORRECT BA
4179  025250  012777  000061  156052          MOV     #WRITE0,@RHCS1          ;TELL IT TO WRITE
4180  025256  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
4181  025262  032777  000200  156040  18$:    BIT     #RDY,@RHCS1            ;IS RDY SET
4182  025270  001015                          BNE     THREE                   ;BIT IS SET
4183  025272  005237  003446                  INC     BITCNT                  ;COUNT UP
4184  025276  001371                          BNE     18$                     ;NOT FINISHED COUNTING
4185  025300  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
4186  025304  032777  000200  156016  19$:    BIT     #RDY,@RHCS1            ;IS IT SET YET?
4187  025312  001004                          BNE     THREE                   ;YES
4188  025314  005237  003446                  INC     BITCNT                  ;COUNT UP
4189  025320  001401                          BEQ     THREE                   ;BIT IS NOT GOING TO SET
4190  025322  000770                          BR      19$
4191  025324                          THREE:
4192  025324  017737  156000  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
4193  025332  017737  155774  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
4194  025340  017737  155770  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
4195  025346  005701                          TST     R1                      ;IS IT AN RH11
4196  025350  001406                          BEQ     87$                     ;NO IT'S A 70
4197  025352  005037  003416                  CLR     BAE                     ;CLEAR BAE
4198  025356  005037  003424                  CLR     CS3                     ;CLEAR CS3
4199  025362  000137  025402                  JMP     86$                     ;CONTINUE
4200  025366  017737  155766  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
4201  025374  017737  155762  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
4202  025402  017737  155732  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
4203  025410  017737  155726  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
4204  025416  017737  155722  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
4205  025424  017737  155720  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
4206  025432  017737  155700  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
4207  025440  032777  000200  155662          BIT     #RDY,@RHCS1            ;IS READY SET
4208  025446  001003                          BNE     ERRIP                   ;RDY IS SET
4209  025450  104102                          ERROR   102                     ;RDY DID NOT SET
4210  025452  004737  007224                  JSR     R7,WHYFO                ;ANY ERRORS SET
4211  025456  032777  002000  155676  ERRIP:  BIT     #DBL,@RHCS3            ;IS DOUBLE SET
4212  025464  001403                          BEQ     ERPIP                   ;DBL IS SET
4213  025466  104126                          ERROR   126                     ;DOUBLE SET ON A 3 WORD TRANSFER
4214  025470  004737  007224                  JSR     R7,WHYFO                ;SEE IF ANY ERROR BITS ARE SET
4215  025474  004737  006572          ERPIP:  JSR     R7,CLEER                ;CLEAR ERRORS
4216  025500  004737  050202                  JSR     R7,ERRTST
4217                                  ;;**********************************************************************
4218                                  ;*TEST 35        DOUBLE TEST ,4 WORDS FROM A BASE 4 ADDRESS
4219                                          ;*THIS TEST CHECKS THAT DBL WILL SET IN RHCS3
4220                                          ;*AFTER A 4 WORD TRANSFER STARTING WITH AN
4221                                          ;*ADDRESS DIVISABLE BY 4**********************
4222                                          ;*.............RH70 ONLY.........................
4223                                  ;;**********************************************************************
4224  025504  000004                  TST35:  SCOPE
4225  025506  005701                          TST     R1                      ;IS IT AN 11 OR A 70
4226  025510  100524                          BMI     TST36           ;;GET OUT OF TEST
4227  025512  012777  177774  155612          MOV     #-4,@RHWC               ;SET UP FOR 4 WORD TRANSFER
4228  025520  012777  004000  155606          MOV     #EVENAD,@RHBA           ;CORRECT BA
4229  025526  012777  000061  155574          MOV     #WRITE0,@RHCS1          ;TELL IT TO WRITE
4230  025534  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
4231  025540  032777  000200  155562  18$:    BIT     #RDY,@RHCS1            ;IS RDY SET
4232  025546  001015                          BNE     DBLED                   ;BIT IS SET
4233  025550  005237  003446                  INC     BITCNT                  ;COUNT UP
```

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4234  025554  001371                          BNE     18$                     ;NOT FINISHED COUNTING
4235  025556  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
4236  025562  032777  000200  155540  19$:    BIT     #RDY,@RHCS1             ;IS IT SET YET?
4237  025570  001004                          BNE     DBLED                   ;YES
4238  025572  005237  003446                  INC     BITCNT                  ;COUNT UP
4239  025576  001401                          BEQ     DBLED                   ;BIT IS NOT GOING TO SET
4240  025600  000770                          BR      19$
4241  025602                          DBLED:
4242  025602  017737  155522  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
4243  025610  017737  155516  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
4244  025616  017737  155512  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
4245  025624  005701                          TST     R1                      ;IS IT AN RH11
4246  025626  001406                          BEQ     87$                     ;NO IT'S A 70
4247  025630  005037  003416                  CLR     BAE                     ;CLEAR BAE
4248  025634  005037  003424                  CLR     CS3                     ;CLEAR CS3
4249  025640  000137  025660                  JMP     86$                     ;CONTINUE
4250  025644  017737  155510  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
4251  025652  017737  155504  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
4252  025660  017737  155454  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
4253  025666  017737  155450  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
4254  025674  017737  155444  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
4255  025702  017737  155442  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
4256  025710  017737  155422  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
4257  025716  032777  000200  155404          BIT     #RDY,@RHCS1             ;IS READY SET
4258  025724  001003                          BNE     DAYAMS                  ;RDY IS SET
4259  025726  104102                          ERROR   102                     ;RDY DID NOT SET
4260  025730  004737  007224                  JSR     R7,WHYFO                ;WHAT ERRORS ARE SET
4261  025734  032777  002000  155420  DAYAMS: BIT     #DBL,@RHCS3             ;IS DOUBLE SET
4262  025742  001003                          BNE     ERR29                   ;TEST IS OK
4263  025744  104124                          ERROR   124                     ;DOUBLE DID NOT SET AFTER A 4 WORD
4264  025746  004737  007224                  JSR     R7,WHYFO                ;SEE IF ANY ERROR ARE SET
4265  025752  004737  006572          ERR29:  JSR     R7,CLEER                ;CLEAR ERRORS
4266  025756  004737  050202                  JSR     R7,ERRTST
4267
4268
4269                                  ;;**************************************************************************
4270                                  ;*TEST 36        DOUBLE TEST 1WORD TRANSFER READ
4271                                          ;*THESE TEST CHECK DBL IN RHCS3 WITHREAD FWD AND REV
4272                                          ;*WRITE FWD AND REV AND WITH BAI SET IN RHCS2
4273                                          ;*OPERATION BEING PREFORMED WILL BE PRINTED OUT
4274                                          ;*IN ERROR MESSAGE.
4275                                          ;*.................RH70 ONLY.....................
4276                                  ;;**************************************************************************
4277  025762  000004                  TST36:  SCOPE
4278  025764  005701                          TST     R1                      ;IS IN AN RH11
4279  025766  100532                          BMI     TST37           ;;GET OUT OF TEST
4280  025770  012777  177777  155334          MOV     #-1,@RHWC               ;SET UP WC FOR ONE WORD
4281  025776  012777  004000  155330          MOV     #EVENAD,@RHBA           ;SETUP BUS ADDRESS
4282  026004  012777  000000  155346          MOV     #ZERO,@RHBAE            ;SETUP BUS ADDRESS EXTENSION
4283  026012  012777  000007  155320          MOV     #7,@RHCS2               ;DEVICE 7
4284  026020  012777  000071  155302          MOV     #READ0,@RHCS1           ;TELL IT TO READ0
4285  026026  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
4286  026032  032777  000200  155270  18$:    BIT     #RDY,@RHCS1             ;IS RDY SET
4287  026040  001015                          BNE     3$                      ;BIT IS SET
4288  026042  005237  003446                  INC     BITCNT                  ;COUNT UP
4289  026046  001371                          BNE     18$                     ;NOT FINISHED COUNTING
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4290  026050  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
4291  026054  032777  000200  155246  19$:    BIT     #RDY,@RHCS1             ;IS IT SET YET?
4292  026062  001004                          BNE     3$                      ;YES
4293  026064  005237  003446                  INC     BITCNT                  ;COUNT UP
4294  026070  001401                          BEQ     3$                      ;BIT IS NOT GOING TO SET
4295  026072  000770                          BR      19$
4296  026074                          3$:
4297  026074  017737  155230  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
4298  026102  017737  155224  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
4299  026110  017737  155220  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
4300  026116  005701                          TST     R1                      ;IS IT AN RH11
4301  026120  001406                          BEQ     87$                     ;NO IT'S A 70
4302  026122  005037  003416                  CLR     BAE                     ;CLEAR BAE
4303  026126  005037  003424                  CLR     CS3                     ;CLEAR CS3
4304  026132  000137  026152                  JMP     86$                     ;CONTINUE
4305  026136  017737  155216  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
4306  026144  017737  155212  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
4307  026152  017737  155162  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
4308  026160  017737  155156  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
4309  026166  017737  155152  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
4310  026174  017737  155150  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
4311  026202  017737  155130  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
4312  026210  032777  000200  155112          BIT     #RDY,@RHCS1             ;IS READY SET
4313  026216  001003                          BNE     1$                      ;RDY SET CONT. TEST
4314  026220  104102                          ERROR   102                     ;READY DID NOT SET
4315  026222  004737  007224                  JSR     R7,WHYFO                ;ANY ERRORS SET
4316  026226  032777  002000  155126  1$:     BIT     #DBL,@RHCS3             ;IS DOUBLE SET
4317  026234  001403                          BEQ     2$                      ;DBL SET
4318  026236  104154                          ERROR   154                     ;DBL DID SET ON A 1 WORD TRANSFER
4319  026240  004737  007224                  JSR     R7,WHYFO                ;TELL WHY NOT
4320  026244  004737  006572          2$:     JSR     R7,CLEER                ;CLEAR ERRORS
4321  026250  004737  050202                  JSR     R7,ERRTST
4322                                  ;;*****************************************************************
4323                                  ;*TEST 37        DOUBLE TEST WITH 2 WORD TRANSFER AND BAI SET
4324                                          ;*THESE TEST CHECK DBL IN RHCS3 WITHREAD FWD AND REV
4325                                          ;*WRITE FWD AND REV AND WITH BAI SET IN RHCS2
4326                                          ;*OPERATION BEING PREFORMED WILL BE PRINTED OUT
4327                                          ;*IN ERROR MESSAGE.
4328                                          ;*.................RH70 ONLY.....................
4329                                  ;;*****************************************************************
4330  026254  000004                  TST37:  SCOPE
4331  026256  005701                          TST     R1                      ;IS IN AN RH11
4332  026260  100532                          BMI     TST40           ;;GET OUT OF TEST
4333  026262  012777  177776  155042          MOV     #-2,@RHWC               ;SET UP WC FOR TWO WORD
4334  026270  012777  004000  155036          MOV     #EVENAD,@RHBA           ;SETUP BUS ADDRESS
4335  026276  012777  000000  155054          MOV     #ZERO,@RHBAE            ;SETUP BUS ADDRESS EXTENSION
4336  026304  012777  000017  155026          MOV     #7!BAI,@RHCS2           ;DEVICE 7
4337  026312  012777  000061  155010          MOV     #WRITE0,@RHCS1          ;TELL IT TO WRITE0
4338  026320  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
4339  026324  032777  000200  154776  18$:    BIT     #RDY,@RHCS1             ;IS RDY SET
4340  026332  001015                          BNE     3$                      ;BIT IS SET
4341  026334  005237  003446                  INC     BITCNT                  ;COUNT UP
4342  026340  001371                          BNE     18$                     ;NOT FINISHED COUNTING
4343  026342  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
4344  026346  032777  000200  154754  19$:    BIT     #RDY,@RHCS1             ;IS IT SET YET?
4345  026354  001004                          BNE     3$                      ;YES
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4346  026356  005237  003446                    INC     BITCNT                  ;COUNT UP
4347  026362  001401                            BEQ     3$                      ;BIT IS NOT GOING TO SET
4348  026364  000770                            BR      19$
4349  026366                                3$:
4350  026366  017737  154736  003420            MOV     @RHCS1,CS1              ;SAVE RHCS1
4351  026374  017737  154732  003444            MOV     @RHWC,WC                ;SAVE WORD COUNT
4352  026402  017737  154726  003414            MOV     @RHBA,BA                ;SAVE BUS ADDRESS
4353  026410  005701                            TST     R1                      ;IS IT AN RH11
4354  026412  001406                            BEQ     87$                     ;NO IT'S A 70
4355  026414  005037  003416                    CLR     BAE                     ;CLEAR BAE
4356  026420  005037  003424                    CLR     CS3                     ;CLEAR CS3
4357  026424  000137  026444                    JMP     86$                     ;CONTINUE
4358  026430  017737  154724  003416    87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
4359  026436  017737  154720  003424            MOV     @RHCS3,CS3              ;SAVE RHCS3
4360  026444  017737  154670  003422    86$:    MOV     @RHCS2,CS2              ;SAVE CS2
4361  026452  017737  154664  003432            MOV     @RHST,DS1               ;SAVE TESTER STATUS
4362  026460  017737  154660  003436            MOV     @RHER,ER1               ;SAVE ERROR REGISTER
4363  026466  017737  154656  003442            MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
4364  026474  017737  154636  003440            MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
4365  026502  032777  000200  154620            BIT     #RDY,@RHCS1             ;IS READY SET
4366  026510  001003                            BNE     1$                      ;RDY SET CONT. TEST
4367  026512  104102                            ERROR   102                     ;READY DID NOT SET
4368  026514  004737  007224                    JSR     R7,WHYFO                ;ANY ERRORS SET
4369  026520  032777  002000  154634    1$:     BIT     #DBL,@RHCS3             ;IS DOUBLE SET
4370  026526  001403                            BEQ     2$                      ;DBL SET
4371  026530  104153                            ERROR   153                     ;DBL DID SET ON A 2 WORD TRANSFER
4372  026532  004737  007224                    JSR     R7,WHYFO                ;TELL WHY NOT
4373  026536  004737  006572            2$:     JSR     R7,CLEER                ;CLEAR ERRORS
4374  026542  004737  050202                    JSR     R7,ERRTST
4375                                ;;**********************************************************************
4376                                ;*TEST 40        DBL TEST 2 WORD TRANSFER WITH BAI AND WRITE REV
4377                                        ;*THESE TEST CHECK DBL IN RHCS3 WITHREAD FWD AND REV
4378                                        ;*WRITE FWD AND REV AND WITH BAI SET IN RHCS2
4379                                        ;*OPERATION BEING PREFORMED WILL BE PRINTED OUT
4380                                        ;*IN ERROR MESSAGE.
4381                                        ;*.................RH70 ONLY.....................
4382                                ;;**********************************************************************
4383  026546  000004                TST40:  SCOPE
4384  026550  005701                            TST     R1                      ;IS IN AN RH11
4385  026552  100532                            BMI     TST41           ;;GET OUT OF TEST
4386  026554  012777  177776  154550            MOV     #-2,@RHWC               ;SET UP WC FOR TWO WORD
4387  026562  012777  004000  154544            MOV     #EVENAD,@RHBA           ;SETUP BUS ADDRESS
4388  026570  012777  000000  154562            MOV     #ZERO,@RHBAE            ;SETUP BUS ADDRESS EXTENSION
4389  026576  012777  000017  154534            MOV     #7!BAI,@RHCS2           ;DEVICE 7
4390  026604  012777  000067  154516            MOV     #WRITE6,@RHCS1          ;TELL IT TO WRITE6
4391  026612  005037  003446                    CLR     BITCNT                  ;CLEAR BIT COUNTER
4392  026616  032777  000200  154504    18$:    BIT     #RDY,@RHCS1             ;IS RDY SET
4393  026624  001015                            BNE     3$                      ;BIT IS SET
4394  026626  005237  003446                    INC     BITCNT                  ;COUNT UP
4395  026632  001371                            BNE     18$                     ;NOT FINISHED COUNTING
4396  026634  005037  003446                    CLR     BITCNT                  ;GET READY TO DO IT AGAIN
4397  026640  032777  000200  154462    19$:    BIT     #RDY,@RHCS1             ;IS IT SET YET?
4398  026646  001004                            BNE     3$                      ;YES
4399  026650  005237  003446                    INC     BITCNT                  ;COUNT UP
4400  026654  001401                            BEQ     3$                      ;BIT IS NOT GOING TO SET
4401  026656  000770                            BR      19$
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```
4402  026660
4403  026660  017737  154444  003420  3$:     MOV     @RHCS1,CS1              ;SAVE RHCS1
4404  026666  017737  154440  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
4405  026674  017737  154434  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
4406  026702  005701                          TST     R1                      ;IS IT AN RH11
4407  026704  001406                          BEQ     87$                     ;NO IT'S A 70
4408  026706  005037  003416                  CLR     BAE                     ;CLEAR BAE
4409  026712  005037  003424                  CLR     CS3                     ;CLEAR CS3
4410  026716  000137  026736                  JMP     86$                     ;CONTINUE
4411  026722  017737  154432  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
4412  026730  017737  154426  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
4413  026736  017737  154376  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
4414  026744  017737  154372  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
4415  026752  017737  154366  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
4416  026760  017737  154364  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
4417  026766  017737  154344  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
4418  026774  032777  000200  154326          BIT     #RDY,@RHCS1             ;IS READY SET
4419  027002  001003                          BNE     1$                      ;RDY SET CONT. TEST
4420  027004  104102                          ERROR   102                     ;READY DID NOT SET
4421  027006  004737  007224                  JSR     R7,WHYFO                ;ANY ERRORS SET
4422  027012  032777  002000  154342  1$:     BIT     #DBL,@RHCS3             ;IS DOUBLE SET
4423  027020  001403                          BEQ     2$                      ;DBL SET
4424  027022  104155                          ERROR   155                     ;DBL DID SET ON A 2 WORD TRANSFER
4425  027024  004737  007224                  JSR     R7,WHYFO                ;TELL WHY NOT
4426  027030  004737  006572          2$:     JSR     R7,CLEER                ;CLEAR ERRORS
4427  027034  004737  050202                  JSR     R7,ERRTST
4428                                  ;;**********************************************************************
4429                                  ;*TEST 41        DBL TEST 2 WORD TRANSFER ODD ADD.
4430                                          ;*THESE TEST CHECK DBL IN RHCS3 WITHREAD FWD AND REV
4431                                          ;*WRITE FWD AND REV AND WITH BAI SET IN RHCS2
4432                                          ;*OPERATION BEING PREFORMED WILL BE PRINTED OUT
4433                                          ;*IN ERROR MESSAGE.
4434                                          ;*.................RH70 ONLY.....................
4435                                  ;;**********************************************************************
4436  027040  000004                  TST41:  SCOPE
4437  027042  005701                          TST     R1                      ;IS IN AN RH11
4438  027044  100532                          BMI     TST42           ;;GET OUT OF TEST
4439  027046  012777  177776  154256          MOV     #-2,@RHWC               ;SET UP WC FOR TWO WORD
4440  027054  012777  004002  154252          MOV     #ODDAD,@RHBA            ;SETUP BUS ADDRESS
4441  027062  012777  000000  154270          MOV     #ZERO,@RHBAE            ;SETUP BUS ADDRESS EXTENSION
4442  027070  012777  000007  154242          MOV     #7,@RHCS2               ;DEVICE 7
4443  027076  012777  000061  154224          MOV     #WRITE0,@RHCS1          ;TELL IT TO WRITE0
4444  027104  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
4445  027110  032777  000200  154212  18$:    BIT     #RDY,@RHCS1             ;IS RDY SET
4446  027116  001015                          BNE     3$                      ;BIT IS SET
4447  027120  005237  003446                  INC     BITCNT                  ;COUNT UP
4448  027124  001371                          BNE     18$                     ;NOT FINISHED COUNTING
4449  027126  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
4450  027132  032777  000200  154170  19$:    BIT     #RDY,@RHCS1             ;IS IT SET YET?
4451  027140  001004                          BNE     3$                      ;YES
4452  027142  005237  003446                  INC     BITCNT                  ;COUNT UP
4453  027146  001401                          BEQ     3$                      ;BIT IS NOT GOING TO SET
4454  027150  000770                          BR      19$
4455  027152                          3$:
4456  027152  017737  154152  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
4457  027160  017737  154146  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
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4458  027166  017737  154142  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
4459  027174  005701                          TST     R1                      ;IS IT AN RH11
4460  027176  001406                          BEQ     87$                     ;NO IT'S A 70
4461  027200  005037  003416                  CLR     BAE                     ;CLEAR BAE
4462  027204  005037  003424                  CLR     CS3                     ;CLEAR CS3
4463  027210  000137  027230                  JMP     86$                     ;CONTINUE
4464  027214  017737  154140  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
4465  027222  017737  154134  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
4466  027230  017737  154104  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
4467  027236  017737  154100  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
4468  027244  017737  154074  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
4469  027252  017737  154072  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
4470  027260  017737  154052  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
4471  027266  032777  000200  154034          BIT     #RDY,@RHCS1             ;IS READY SET
4472  027274  001003                          BNE     1$                      ;RDY SET CONT. TEST
4473  027276  104102                          ERROR   102                     ;READY DID NOT SET
4474  027300  004737  007224                  JSR     R7,WHYFO                ;ANY ERRORS SET
4475  027304  032777  002000  154050  1$:     BIT     #DBL,@RHCS3             ;IS DOUBLE SET
4476  027312  001403                          BEQ     2$                      ;DBL SET
4477  027314  104156                          ERROR   156                     ;DBL DID SET ON A 2 WORD TRANSFER
4478  027316  004737  007224                  JSR     R7,WHYFO                ;TELL WHY NOT
4479  027322  004737  006572          2$:     JSR     R7,CLEER                ;CLEAR ERRORS
4480  027326  004737  050202                  JSR     R7,ERRTST
4481                                  ;;**************************************************************
4482                                  ;*TEST 42        DBL TEST EVEN ADD. WRITE FWD
4483                                          ;*THESE TEST CHECK DBL IN RHCS3 WITHREAD FWD AND REV
4484                                          ;*WRITE FWD AND REV AND WITH BAI SET IN RHCS2
4485                                          ;*OPERATION BEING PREFORMED WILL BE PRINTED OUT
4486                                          ;*IN ERROR MESSAGE.
4487                                          ;*.................RH70 ONLY.....................
4488                                  ;;**************************************************************
4489  027332  000004                  TST42:  SCOPE
4490  027334  005701                          TST     R1                      ;IS IN AN RH11
4491  027336  100532                          BMI     TST43           ;;GET OUT OF TEST
4492  027340  012777  177776  153764          MOV     #-2,@RHWC               ;SET UP WC FOR TWO WORD
4493  027346  012777  004000  153760          MOV     #EVENAD,@RHBA           ;SETUP BUS ADDRESS
4494  027354  012777  000000  153776          MOV     #ZERO,@RHBAE            ;SETUP BUS ADDRESS EXTENSION
4495  027362  012777  000007  153750          MOV     #7,@RHCS2               ;DEVICE 7
4496  027370  012777  000067  153732          MOV     #WRITE6,@RHCS1          ;TELL IT TO WRITE6
4497  027376  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
4498  027402  032777  000200  153720  18$:    BIT     #RDY,@RHCS1             ;IS RDY SET
4499  027410  001015                          BNE     3$                      ;BIT IS SET
4500  027412  005237  003446                  INC     BITCNT                  ;COUNT UP
4501  027416  001371                          BNE     18$                     ;NOT FINISHED COUNTING
4502  027420  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
4503  027424  032777  000200  153676  19$:    BIT     #RDY,@RHCS1             ;IS IT SET YET?
4504  027432  001004                          BNE     3$                      ;YES
4505  027434  005237  003446                  INC     BITCNT                  ;COUNT UP
4506  027440  001401                          BEQ     3$                      ;BIT IS NOT GOING TO SET
4507  027442  000770                          BR      19$
4508  027444                          3$:
4509  027444  017737  153660  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
4510  027452  017737  153654  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
4511  027460  017737  153650  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
4512  027466  005701                          TST     R1                      ;IS IT AN RH11
4513  027470  001406                          BEQ     87$                     ;NO IT'S A 70
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 4514  027472  005037  003416                  CLR     BAE                     ;CLEAR BAE
 4515  027476  005037  003424                  CLR     CS3                     ;CLEAR CS3
 4516  027502  000137  027522                  JMP     86$                     ;CONTINUE
 4517  027506  017737  153646  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
 4518  027514  017737  153642  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
 4519  027522  017737  153612  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
 4520  027530  017737  153606  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
 4521  027536  017737  153602  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
 4522  027544  017737  153600  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
 4523  027552  017737  153560  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
 4524  027560  032777  000200  153542          BIT     #RDY,@RHCS1             ;IS READY SET
 4525  027566  001003                          BNE     1$                      ;RDY SET CONT. TEST
 4526  027570  104102                          ERROR   102                     ;READY DID NOT SET
 4527  027572  004737  007224                  JSR     R7,WHYFO                ;ANY ERRORS SET
 4528  027576  032777  002000  153556  1$:     BIT     #DBL,@RHCS3             ;IS DOUBLE SET
 4529  027604  001403                          BEQ     2$                      ;DBL SET
 4530  027606  104157                          ERROR   157                     ;DBL DID SET ON A 2 WORD TRANSFER
 4531  027610  004737  007224                  JSR     R7,WHYFO                ;TELL WHY NOT
 4532  027614  004737  006572          2$:     JSR     R7,CLEER                ;CLEAR ERRORS
 4533  027620  004737  050202                  JSR     R7,ERRTST
 4534                                  ;;**************************************************************
 4535                                  ;*TEST 43        DBL TEST 2 WORD ODD ADD. WRITE REV
 4536                                          ;*THESE TEST CHECK DBL IN RHCS3 WITHREAD FWD AND REV
 4537                                          ;*WRITE FWD AND REV AND WITH BAI SET IN RHCS2
 4538                                          ;*OPERATION BEING PREFORMED WILL BE PRINTED OUT
 4539                                          ;*IN ERROR MESSAGE.
 4540                                          ;*.................RH70 ONLY.....................
 4541                                  ;;**************************************************************
 4542  027624  000004                  TST43:  SCOPE
 4543  027626  005701                          TST     R1                      ;IS IN AN RH11
 4544  027630  100532                          BMI     TST44           ;;GET OUT OF TEST
 4545  027632  012777  177776  153472          MOV     #-2,@RHWC               ;SET UP WC FOR TWO WORD
 4546  027640  012777  004002  153466          MOV     #ODDAD,@RHBA            ;SETUP BUS ADDRESS
 4547  027646  012777  000000  153504          MOV     #ZERO,@RHBAE            ;SETUP BUS ADDRESS EXTENSION
 4548  027654  012777  000007  153456          MOV     #7,@RHCS2               ;DEVICE 7
 4549  027662  012777  000067  153440          MOV     #WRITE6,@RHCS1          ;TELL IT TO WRITE6
 4550  027670  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
 4551  027674  032777  000200  153426  18$:    BIT     #RDY,@RHCS1             ;IS RDY SET
 4552  027702  001015                          BNE     3$                      ;BIT IS SET
 4553  027704  005237  003446                  INC     BITCNT                  ;COUNT UP
 4554  027710  001371                          BNE     18$                     ;NOT FINISHED COUNTING
 4555  027712  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
 4556  027716  032777  000200  153404  19$:    BIT     #RDY,@RHCS1             ;IS IT SET YET?
 4557  027724  001004                          BNE     3$                      ;YES
 4558  027726  005237  003446                  INC     BITCNT                  ;COUNT 'EM
 4559  027732  001401                          BEQ     3$                      ;BIT IS NOT GOING TO SET
 4560  027734  000770                          BR      19$
 4561  027736                          3$:
 4562  027736  017737  153366  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
 4563  027744  017737  153362  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
 4564  027752  017737  153356  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
 4565  027760  005701                          TST     R1                      ;IS IT AN RH11
 4566  027762  001406                          BEQ     87$                     ;NO IT'S A 70
 4567  027764  005037  003416                  CLR     BAE                     ;CLEAR BAE
 4568  027770  005037  003424                  CLR     CS3                     ;CLEAR CS3
 4569  027774  000137  030014                  JMP     86$                     ;CONTINUE
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 4570  030000  017737  153354  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
 4571  030006  017737  153350  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
 4572  030014  017737  153320  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
 4573  030022  017737  153314  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
 4574  030030  017737  153310  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
 4575  030036  017737  153306  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
 4576  030044  017737  153266  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
 4577  030052  032777  000200  153250          BIT     #RDY,@RHCS1             ;IS READY SET
 4578  030060  001003                          BNE     1$                      ;RDY SET CONT. TEST
 4579  030062  104102                          ERROR   102                     ;READY DID NOT SET
 4580  030064  004737  007224                  JSR     R7,WHYFO                ;ANY ERRORS SET
 4581  030070  032777  002000  153264  1$:     BIT     #DBL,@RHCS3             ;IS DOUBLE SET
 4582  030076  001003                          BNE     2$                      ;DBL SET
 4583  030100  104160                          ERROR   160                     ;DBL DIDN'T SET ON A 2 WORD TRANSFER
 4584  030102  004737  007224                  JSR     R7,WHYFO                ;TELL WHY NOT
 4585  030106  004737  006572          2$:     JSR     R7,CLEER                ;CLEAR ERRORS
 4586  030112  004737  050202                  JSR     R7,ERRTST
 4587                                  ;;**************************************************************
 4588                                  ;*TEST 44        DBL TEST 3 WORD ODD ADD. WRITE REV
 4589                                          ;*THESE TEST CHECK DBL IN RHCS3 WITHREAD FWD AND REV
 4590                                          ;*WRITE FWD AND REV AND WITH BAI SET IN RHCS2
 4591                                          ;*OPERATION BEING PREFORMED WILL BE PRINTED OUT
 4592                                          ;*IN ERROR MESSAGE.
 4593                                          ;*.................RH70 ONLY.....................
 4594                                  ;;**************************************************************
 4595  030116  000004                  TST44:  SCOPE
 4596  030120  005701                          TST     R1                      ;IS IN AN RH11
 4597  030122  100532                          BMI     TST45           ;;GET OUT OF TEST
 4598  030124  012777  177775  153200          MOV     #-3,@RHWC               ;SET UP WC FOR THREE WORD
 4599  030132  012777  004002  153174          MOV     #ODDAD,@RHBA            ;SETUP BUS ADDRESS
 4600  030140  012777  000000  153212          MOV     #ZERO,@RHBAE            ;SETUP BUS ADDRESS EXTENSION
 4601  030146  012777  000007  153164          MOV     #7,@RHCS2               ;DEVICE 7
 4602  030154  012777  000067  153146          MOV     #WRITE6,@RHCS1          ;TELL IT TO WRITE6
 4603  030162  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
 4604  030166  032777  000200  153134  18$:     BIT     #RDY,@RHCS1             ;IS RDY SET
 4605  030174  001015                          BNE     3$                      ;BIT IS SET
 4606  030176  005237  003446                  INC     BITCNT                  ;COUNT UP
 4607  030202  001371                          BNE     18$                     ;NOT FINISHED COUNTING
 4608  030204  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
 4609  030210  032777  000200  153112  19$:     BIT     #RDY,@RHCS1             ;IS IT SET YET?
 4610  030216  001004                          BNE     3$                      ;YES
 4611  030220  005237  003446                  INC     BITCNT                  ;COUNT UP
 4612  030224  001401                          BEQ     3$                      ;BIT IS NOT GOING TO SET
 4613  030226  000770                          BR      19$
 4614  030230                          3$:
 4615  030230  017737  153074  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
 4616  030236  017737  153070  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
 4617  030244  017737  153064  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
 4618  030252  005701                          TST     R1                      ;IS IT AN RH11
 4619  030254  001406                          BEQ     87$                     ;NO IT'S A 70
 4620  030256  005037  003416                  CLR     BAE                     ;CLEAR BAE
 4621  030262  005037  003424                  CLR     CS3                     ;CLEAR CS3
 4622  030266  000137  030306                  JMP     86$                     ;CONTINUE
 4623  030272  017737  153062  003416  87$:     MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
 4624  030300  017737  153056  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
 4625  030306  017737  153026  003422  86$:     MOV     @RHCS2,CS2              ;SAVE CS2
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4626  030314  017737  153022  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
4627  030322  017737  153016  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
4628  030330  017737  153014  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
4629  030336  017737  152774  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
4630  030344  032777  000200  152756          BIT     #RDY,@RHCS1             ;IS READY SET
4631  030352  001003                          BNE     1$                      ;RDY SET CONT. TEST
4632  030354  104102                          ERROR   102                     ;READY DID NOT SET
4633  030356  004737  007224                  JSR     R7,WHYFO                ;ANY ERRORS SET
4634  030362  032777  002000  152772  1$:     BIT     #DBL,@RHCS3             ;IS DOUBLE SET
4635  030370  001403                          BEQ     2$                      ;DBL SET
4636  030372  104161                          ERROR   161                     ;DBL DID SET ON A 3 WORD TRANSFER
4637  030374  004737  007224                  JSR     R7,WHYFO                ;TELL WHY NOT
4638  030400  004737  006572          2$:     JSR     R7,CLEER                ;CLEAR ERRORS
4639  030404  004737  050202                  JSR     R7,ERRTST
4640                                  ;;**************************************************************************
4641                                  ;*TEST 45        DBL TEST 2 WORD READ FWD
4642                                          ;*THESE TEST CHECK DBL IN RHCS3 WITHREAD FWD AND REV
4643                                          ;*WRITE FWD AND REV AND WITH BAI SET IN RHCS2
4644                                          ;*OPERATION BEING PREFORMED WILL BE PRINTED OUT
4645                                          ;*IN ERROR MESSAGE.
4646                                          ;*.................RH70 ONLY.....................
4647                                  ;;**************************************************************************
4648  030410  000004                  TST45:  SCOPE
4649  030412  005701                          TST     R1                      ;IS IN AN RH11
4650  030414  100532                          BMI     TST46           ;;GET OUT OF TEST
4651  030416  012777  177776  152706          MOV     #-2,@RHWC               ;SET UP WC FOR TWO WORD
4652  030424  012777  004000  152702          MOV     #EVENAD,@RHBA           ;SETUP BUS ADDRESS
4653  030432  012777  000000  152720          MOV     #ZERO,@RHBAE            ;SETUP BUS ADDRESS EXTENSION
4654  030440  012777  000007  152672          MOV     #7,@RHCS2               ;DEVICE 7
4655  030446  012777  000071  152654          MOV     #READ0,@RHCS1           ;TELL IT TO READ0
4656  030454  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
4657  030460  032777  000200  152642  18$:     BIT     #RDY,@RHCS1             ;IS RDY SET
4658  030466  001015                          BNE     3$                      ;BIT IS SET
4659  030470  005237  003446                  INC     BITCNT                  ;COUNT UP
4660  030474  001371                          BNE     18$                     ;NOT FINISHED COUNTING
4661  030476  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
4662  030502  032777  000200  152620  19$:     BIT     #RDY,@RHCS1             ;IS IT SET YET?
4663  030510  001004                          BNE     3$                      ;YES
4664  030512  005237  003446                  INC     BITCNT                  ;COUNT UP
4665  030516  001401                          BEQ     3$                      ;BIT IS NOT GOING TO SET
4666  030520  000770                          BR      19$
4667  030522                          3$:
4668  030522  017737  152602  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
4669  030530  017737  152576  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
4670  030536  017737  152572  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
4671  030544  005701                          TST     R1                      ;IS IT AN RH11
4672  030546  001406                          BEQ     87$                     ;NO IT'S A 70
4673  030550  005037  003416                  CLR     BAE                     ;CLEAR BAE
4674  030554  005037  003424                  CLR     CS3                     ;CLEAR CS3
4675  030560  000137  030600                  JMP     86$                     ;CONTINUE
4676  030564  017737  152570  003416  87$:     MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
4677  030572  017737  152564  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
4678  030600  017737  152534  003422  86$:     MOV     @RHCS2,CS2              ;SAVE CS2
4679  030606  017737  152530  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
4680  030614  017737  152524  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
4681  030622  017737  152522  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
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4682  030630  017737  152502  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
4683  030636  032777  000200  152464          BIT     #RDY,@RHCS1             ;IS READY SET
4684  030644  001003                          BNE     1$                      ;RDY SET CONT. TEST
4685  030646  104102                          ERROR   102                     ;READY DID NOT SET
4686  030650  004737  007224                  JSR     R7,WHYFO                ;ANY ERRORS SET
4687  030654  032777  002000  152500  1$:     BIT     #DBL,@RHCS3             ;IS DOUBLE SET
4688  030662  001003                          BNE     2$                      ;DBL SET
4689  030664  104162                          ERROR   162                     ;DBL DIDN'T SET ON A 2 WORD TRANSFER
4690  030666  004737  007224                  JSR     R7,WHYFO                ;TELL WHY NOT
4691  030672  004737  006572          2$:     JSR     R7,CLEER                ;CLEAR ERRORS
4692  030676  004737  050202                  JSR     R7,ERRTST
4693                                  ;;**********************************************************************
4694                                  ;*TEST 46        DBL TEST 2 WORD ODD ADD. READ FWD
4695                                          ;*THESE TEST CHECK DBL IN RHCS3 WITHREAD FWD AND REV
4696                                          ;*WRITE FWD AND REV AND WITH BAI SET IN RHCS2
4697                                          ;*OPERATION BEING PREFORMED WILL BE PRINTED OUT
4698                                          ;*IN ERROR MESSAGE.
4699                                          ;*.................RH70 ONLY.....................
4700                                  ;;**********************************************************************
4701  030702  000004                  TST46:  SCOPE
4702  030704  005701                          TST     R1                      ;IS IN AN RH11
4703  030706  100532                          BMI     TST47           ;;GET OUT OF TEST
4704  030710  012777  177776  152414          MOV     #-2,@RHWC               ;SET UP WC FOR TWO WORD
4705  030716  012777  004002  152410          MOV     #ODDAD,@RHBA            ;SETUP BUS ADDRESS
4706  030724  012777  000000  152426          MOV     #ZERO,@RHBAE            ;SETUP BUS ADDRESS EXTENSION
4707  030732  012777  000007  152400          MOV     #7,@RHCS2               ;DEVICE 7
4708  030740  012777  000071  152362          MOV     #READ0,@RHCS1           ;TELL IT TO READ0
4709  030746  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
4710  030752  032777  000200  152350  18$:     BIT     #RDY,@RHCS1             ;IS RDY SET
4711  030760  001015                          BNE     3$                      ;BIT IS SET
4712  030762  005237  003446                  INC     BITCNT                  ;COUNT UP
4713  030766  001371                          BNE     18$                     ;NOT FINISHED COUNTING
4714  030770  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
4715  030774  032777  000200  152326  19$:     BIT     #RDY,@RHCS1             ;IS IT SET YET?
4716  031002  001004                          BNE     3$                      ;YES
4717  031004  005237  003446                  INC     BITCNT                  ;COUNT UP
4718  031010  001401                          BEQ     3$                      ;BIT IS NOT GOING TO SET
4719  031012  000770                          BR      19$
4720  031014                          3$:
4721  031014  017737  152310  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
4722  031022  017737  152304  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
4723  031030  017737  152300  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
4724  031036  005701                          TST     R1                      ;IS IT AN RH11
4725  031040  001406                          BEQ     87$                     ;NO IT'S A 70
4726  031042  005037  003416                  CLR     BAE                     ;CLEAR BAE
4727  031046  005037  003424                  CLR     CS3                     ;CLEAR CS3
4728  031052  000137  031072                  JMP     86$                     ;CONTINUE
4729  031056  017737  152276  003416  87$:     MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
4730  031064  017737  152272  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
4731  031072  017737  152242  003422  86$:     MOV     @RHCS2,CS2              ;SAVE CS2
4732  031100  017737  152236  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
4733  031106  017737  152232  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
4734  031114  017737  152230  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
4735  031122  017737  152210  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
4736  031130  032777  000200  152172          BIT     #RDY,@RHCS1             ;IS READY SET
4737  031136  001003                          BNE     1$                      ;RDY SET CONT. TEST
```

```
                        ERROR   102                     ;READY DID NOT SET
                        JSR     R7,WHYFO                ;ANY ERRORS SET
                1$:     BIT     #DBL,@RHCS3             ;IS DOUBLE SET
                        BEQ     2$                      ;DBL SET
                        ERROR   163                     ;DBL DID SET ON A 2 WORD TRANSFER
                        JSR     R7,WHYFO                ;TELL WHY NOT
                2$:     JSR     R7,CLEER                ;CLEAR ERRORS
                        JSR     R7,ERRTST
                ;;**********************************************************************
                ;*TEST 47        DBL TEST 2 WORD EVEN ADD. READ REV
                        ;*THESE TEST CHECK DBL IN RHCS3 WITHREAD FWD AND REV
                        ;*WRITE FWD AND REV AND WITH BAI SET IN RHCS2
                        ;*OPERATION BEING PREFORMED WILL BE PRINTED OUT
                        ;*IN ERROR MESSAGE.
                        ;*.................RH70 ONLY.....................
                ;;**********************************************************************
                TST47:  SCOPE
                        TST     R1                      ;IS IN AN RH11
                        BMI     TST50           ;;GET OUT OF TEST
                        MOV     #-2,@RHWC               ;SET UP WC FOR TWO WORD
                        MOV     #EVENAD,@RHBA           ;SETUP BUS ADDRESS
                        MOV     #ZERO,@RHBAE            ;SETUP BUS ADDRESS EXTENSION
                        MOV     #7,@RHCS2               ;DEVICE 7
                        MOV     #READ6,@RHCS1           ;TELL IT TO READ6
                        CLR     BITCNT                  ;CLEAR BIT COUNTER
                18$:    BIT     #RDY,@RHCS1             ;IS RDY SET
                        BNE     3$                      ;BIT IS SET
                        INC     BITCNT                  ;COUNT UP
                        BNE     18$                     ;NOT FINISHED COUNTING
                        CLR     BITCNT                  ;GET READY TO DO IT AGAIN
                19$:    BIT     #RDY,@RHCS1             ;IS IT SET YET?
                        BNE     3$                      ;YES
                        INC     BITCNT                  ;COUNT UP
                        BEQ     3$                      ;BIT IS NOT GOING TO SET
                        BR      19$
                3$:
                        MOV     @RHCS1,CS1              ;SAVE RHCS1
                        MOV     @RHWC,WC                ;SAVE WORD COUNT
                        MOV     @RHBA,BA                ;SAVE BUS ADDRESS
                        TST     R1                      ;IS IT AN RH11
                        BEQ     87$                     ;NO IT'S A 70
                        CLR     BAE                     ;CLEAR BAE
                        CLR     CS3                     ;CLEAR CS3
                        JMP     86$                     ;CONTINUE
                87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
                        MOV     @RHCS3,CS3              ;SAVE RHCS3
                86$:    MOV     @RHCS2,CS2              ;SAVE CS2
                        MOV     @RHST,DS1               ;SAVE TESTER STATUS
                        MOV     @RHER,ER1               ;SAVE ERROR REGISTER
                        MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
                        MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
                        BIT     #RDY,@RHCS1             ;IS READY SET
                        BNE     1$                      ;RDY SET CONT. TEST
                        ERROR   102                     ;READY DID NOT SET
                        JSR     R7,WHYFO                ;ANY ERRORS SET
                1$:     BIT     #DBL,@RHCS3             ;IS DOUBLE SET
```

```
 4794  031446  001403                          BEQ     2$                      ;DBL SET
 4795  031450  104164                          ERROR   164                     ;DBL DID SET ON A 2 WORD TRANSFER
 4796  031452  004737  007224                  JSR     R7,WHYFO                ;TELL WHY NOT
 4797  031456  004737  006572          2$:     JSR     R7,CLEER                ;CLEAR ERRORS
 4798  031462  004737  050202                  JSR     R7,ERRTST
 4799                                  ;;**********************************************************************
 4800                                  ;*TEST 50        DBL TEST 2 WORD ODD ADD. READ REV
 4801                                          ;*THESE TEST CHECK DBL IN RHCS3 WITHREAD FWD AND REV
 4802                                          ;*WRITE FWD AND REV AND WITH BAI SET IN RHCS2
 4803                                          ;*OPERATION BEING PREFORMED WILL BE PRINTED OUT
 4804                                          ;*IN ERROR MESSAGE.
 4805                                          ;*.................RH70 ONLY.....................
 4806                                  ;;**********************************************************************
 4807  031466  000004                  TST50:  SCOPE
 4808  031470  005701                          TST     R1                      ;IS IN AN RH11
 4809  031472  100532                          BMI     TST51           ;;GET OUT OF TEST
 4810  031474  012777  177776  151630          MOV     #-2,@RHWC               ;SET UP WC FOR TWO WORD
 4811  031502  012777  004002  151624          MOV     #ODDAD,@RHBA            ;SETUP BUS ADDRESS
 4812  031510  012777  000000  151642          MOV     #ZERO,@RHBAE            ;SETUP BUS ADDRESS EXTENSION
 4813  031516  012777  000007  151614          MOV     #7,@RHCS2               ;DEVICE 7
 4814  031524  012777  000077  151576          MOV     #READ6,@RHCS1           ;TELL IT TO READ6
 4815  031532  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
 4816  031536  032777  000200  151564  18$:     BIT     #RDY,@RHCS1             ;IS RDY SET
 4817  031544  001015                          BNE     3$                      ;BIT IS SET
 4818  031546  005237  003446                  INC     BITCNT                  ;COUNT UP
 4819  031552  001371                          BNE     18$                     ;NOT FINISHED COUNTING
 4820  031554  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
 4821  031560  032777  000200  151542  19$:     BIT     #RDY,@RHCS1             ;IS IT SET YET?
 4822  031566  001004                          BNE     3$                      ;YES
 4823  031570  005237  003446                  INC     BITCNT                  ;COUNT UP
 4824  031574  001401                          BEQ     3$                      ;BIT IS NOT GOING TO SET
 4825  031576  000770                          BR      19$
 4826  031600                          3$:
 4827  031600  017737  151524  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
 4828  031606  017737  151520  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
 4829  031614  017737  151514  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
 4830  031622  005701                          TST     R1                      ;IS IT AN RH11
 4831  031624  001406                          BEQ     87$                     ;NO IT'S A 70
 4832  031626  005037  003416                  CLR     BAE                     ;CLEAR BAE
 4833  031632  005037  003424                  CLR     CS3                     ;CLEAR CS3
 4834  031636  000137  031656                  JMP     86$                     ;CONTINUE
 4835  031642  017737  151512  003416  87$:     MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
 4836  031650  017737  151506  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
 4837  031656  017737  151456  003422  86$:     MOV     @RHCS2,CS2              ;SAVE CS2
 4838  031664  017737  151452  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
 4839  031672  017737  151446  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
 4840  031700  017737  151444  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
 4841  031706  017737  151424  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
 4842  031714  032777  000200  151406          BIT     #RDY,@RHCS1             ;IS READY SET
 4843  031722  001003                          BNE     1$                      ;RDY SET CONT. TEST
 4844  031724  104102                          ERROR   102                     ;READY DID NOT SET
 4845  031726  004737  007224                  JSR     R7,WHYFO                ;ANY ERRORS SET
 4846  031732  032777  002000  151422  1$:     BIT     #DBL,@RHCS3             ;IS DOUBLE SET
 4847  031740  001003                          BNE     2$                      ;DBL SET
 4848  031742  104165                          ERROR   165                     ;DBL DIDN'T SET ON A 2 WORD TRANSFER
 4849  031744  004737  007224                  JSR     R7,WHYFO                ;TELL WHY NOT
```

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4850  031750  004737  006572          2$:     JSR     R7,CLEER                ;CLEAR ERRORS
4851  031754  004737  050202                  JSR     R7,ERRTST
4852                                  ;;**********************************************************************
4853                                  ;*TEST 51        DBL TEST 3 WORD EVEN ADD. READ FWD
4854                                          ;*THESE TEST CHECK DBL IN RHCS3 WITHREAD FWD AND REV
4855                                          ;*WRITE FWD AND REV AND WITH BAI SET IN RHCS2
4856                                          ;*OPERATION BEING PREFORMED WILL BE PRINTED OUT
4857                                          ;*IN ERROR MESSAGE.
4858                                          ;*.................RH70 ONLY.....................
4859                                  ;;**********************************************************************
4860  031760  000004                  TST51:  SCOPE
4861  031762  005701                          TST     R1                      ;IS IN AN RH11
4862  031764  100532                          BMI     TST52           ;;GET OUT OF TEST
4863  031766  012777  177775  151336          MOV     #-3,@RHWC               ;SET UP WC FOR THREE WORD
4864  031774  012777  004000  151332          MOV     #EVENAD,@RHBA           ;SETUP BUS ADDRESS
4865  032002  012777  000000  151350          MOV     #ZERO,@RHBAE            ;SETUP BUS ADDRESS EXTENSION
4866  032010  012777  000007  151322          MOV     #7,@RHCS2               ;DEVICE 7
4867  032016  012777  000071  151304          MOV     #READ0,@RHCS1           ;TELL IT TO READ0
4868  032024  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
4869  032030  032777  000200  151272  18$:    BIT     #RDY,@RHCS1             ;IS RDY SET
4870  032036  001015                          BNE     3$                      ;BIT IS SET
4871  032040  005237  003446                  INC     BITCNT                  ;COUNT UP
4872  032044  001371                          BNE     18$                     ;NOT FINISHED COUNTING
4873  032046  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
4874  032052  032777  000200  151250  19$:    BIT     #RDY,@RHCS1             ;IS IT SET YET?
4875  032060  001004                          BNE     3$                      ;YES
4876  032062  005237  003446                  INC     BITCNT                  ;COUNT UP
4877  032066  001401                          BEQ     3$                      ;BIT IS NOT GOING TO SET
4878  032070  000770                          BR      19$
4879  032072                          3$:
4880  032072  017737  151232  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
4881  032100  017737  151226  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
4882  032106  017737  151222  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
4883  032114  005701                          TST     R1                      ;IS IT AN RH11
4884  032116  001406                          BEQ     87$                     ;NO IT'S A 70
4885  032120  005037  003416                  CLR     BAE                     ;CLEAR BAE
4886  032124  005037  003424                  CLR     CS3                     ;CLEAR CS3
4887  032130  000137  032150                  JMP     86$                     ;CONTINUE
4888  032134  017737  151220  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
4889  032142  017737  151214  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
4890  032150  017737  151164  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
4891  032156  017737  151160  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
4892  032164  017737  151154  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
4893  032172  017737  151152  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
4894  032200  017737  151132  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
4895  032206  032777  000200  151114          BIT     #RDY,@RHCS1             ;IS READY SET
4896  032214  001003                          BNE     1$                      ;RDY SET CONT. TEST
4897  032216  104102                          ERROR   102                     ;READY DID NOT SET
4898  032220  004737  007224                  JSR     R7,WHYFO                ;ANY ERRORS SET
4899  032224  032777  002000  151130  1$:     BIT     #DBL,@RHCS3             ;IS DOUBLE SET
4900  032232  001403                          BEQ     2$                      ;DBL SET
4901  032234  104166                          ERROR   166                     ;DBL DID SET ON A 3 WORD TRANSFER
4902  032236  004737  007224                  JSR     R7,WHYFO                ;TELL WHY NOT
4903  032242  004737  006572          2$:     JSR     R7,CLEER                ;CLEAR ERRORS
4904  032246  004737  050202                  JSR     R7,ERRTST
4905                                  ;;**********************************************************************
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                                        ;*TEST 52       DBL TEST 3 WORD EVEN ADD. READ REV
                                                ;*THESE TEST CHECK DBL IN RHCS3 WITHREAD FWD AND REV
                                                ;*WRITE FWD AND REV AND WITH BAI SET IN RHCS2
                                                ;*OPERATION BEING PREFORMED WILL BE PRINTED OUT
                                                ;*IN ERROR MESSAGE.
                                                ;*.................RH70 ONLY.....................
                                        ;;**************************************************************
032252  000004                          TST52:  SCOPE
032254  005701                                  TST     R1                      ;IS IN AN RH11
032256  100532                                  BMI     TST53           ;;GET OUT OF TEST
032260  012777  177775  151044                  MOV     #-3,@RHWC               ;SET UP WC FOR THREE WORD
032266  012777  004000  151040                  MOV     #EVENAD,@RHBA           ;SETUP BUS ADDRESS
032274  012777  000000  151056                  MOV     #ZERO,@RHBAE            ;SETUP BUS ADDRESS EXTENSION
032302  012777  000007  151030                  MOV     #7,@RHCS2               ;DEVICE 7
032310  012777  000077  151012                  MOV     #READ6,@RHCS1           ;TELL IT TO READ6
032316  005037  003446                          CLR     BITCNT                  ;CLEAR BIT COUNTER
032322  032777  000200  151000  18$:    BIT     #RDY,@RHCS1             ;IS RDY SET
032330  001015                                  BNE     3$                      ;BIT IS SET
032332  005237  003446                          INC     BITCNT                  ;COUNT UP
032336  001371                                  BNE     18$                     ;NOT FINISHED COUNTING
032340  005037  003446                          CLR     BITCNT                  ;GET READY TO DO IT AGAIN
032344  032777  000200  150756  19$:    BIT     #RDY,@RHCS1             ;IS IT SET YET?
032352  001004                                  BNE     3$                      ;YES
032354  005237  003446                          INC     BITCNT                  ;COUNT UP
032360  001401                                  BEQ     3$                      ;BIT IS NOT GOING TO SET
032362  000770                                  BR      19$
032364                                  3$:
032364  017737  150740  003420                  MOV     @RHCS1,CS1              ;SAVE RHCS1
032372  017737  150734  003444                  MOV     @RHWC,WC                ;SAVE WORD COUNT
032400  017737  150730  003414                  MOV     @RHBA,BA                ;SAVE BUS ADDRESS
032406  005701                                  TST     R1                      ;IS IT AN RH11
032410  001406                                  BEQ     87$                     ;NO IT'S A 70
032412  005037  003416                          CLR     BAE                     ;CLEAR BAE
032416  005037  003424                          CLR     CS3                     ;CLEAR CS3
032422  000137  032442                          JMP     86$                     ;CONTINUE
032426  017737  150726  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
032434  017737  150722  003424                  MOV     @RHCS3,CS3              ;SAVE RHCS3
032442  017737  150672  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
032450  017737  150666  003432                  MOV     @RHST,DS1               ;SAVE TESTER STATUS
032456  017737  150662  003436                  MOV     @RHER,ER1               ;SAVE ERROR REGISTER
032464  017737  150660  003442                  MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
032472  017737  150640  003440                  MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
032500  032777  000200  150622                  BIT     #RDY,@RHCS1             ;IS READY SET
032506  001003                                  BNE     1$                      ;RDY SET CONT. TEST
032510  104102                                  ERROR   102                     ;READY DID NOT SET
032512  004737  007224                          JSR     R7,WHYFO                ;ANY ERRORS SET
032516  032777  002000  150636  1$:     BIT     #DBL,@RHCS3             ;IS DOUBLE SET
032524  001003                                  BNE     2$                      ;DBL SET
032526  104167                                  ERROR   167                     ;DBL DIDN'T SET ON A 3 WORD TRANSFER
032530  004737  007224                          JSR     R7,WHYFO                ;TELL WHY NOT
032534  004737  006572          2$:     JSR     R7,CLEER                ;CLEAR ERRORS
032540  004737  050202                          JSR     R7,ERRTST
                                        ;;**************************************************************
                                        ;*TEST 53       WCE EW ERROR TEST
                                                ;*THIS TEST CHECKS THAT WCELO WILL SET IN
                                                ;*RHCS3 AND THAT WCE SETS IN RHCS1
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                                                ;*IT ALSO CHECKS THAT WCEHI DOES NOT SET
                                                ;*WITH WCELO IN RHCS3.................
                                                ;*............RH70 ONLY.................
                                        ;;*****************************************************************
032544  000004                        TST53:  SCOPE
032546  012737  000001  001212                MOV     #1,$TIMES       ;;DO 1 ITERATION
032554  005701                                TST     R1                      ;IS IT AN RH11
032556  001402                                BEQ     1$              ;IT'S AN RH70
032560  000137  033330                        JMP     FANG            ;IT'S AN RH11, EXIT TEST
032564  012777  000007  150546        1$:     MOV     #7,@RHCS2               ;SET DEVICE 7
032572  012777  000000  150560                MOV     #ZERO,@RHBAE            ;SETUP BUS ADDRESS EXT.
032600  012777  004000  150526                MOV     #EVENAD,@RHBA           ;SETUP BUS ADDRESS
032606  012777  177776  150516                MOV     #-2,@RHWC               ;FOR TWO WORD TRANSFER
032614  012777  000061  150506                MOV     #WRITE0,@RHCS1          ;TELL IT TO WRITE
032622  005037  003446                        CLR     BITCNT                  ;CLEAR BIT COUNTER
032626  032777  000200  150474  18$:     BIT     #RDY,@RHCS1             ;IS RDY SET
032634  001015                                BNE     MITE                    ;BIT IS SET
032636  005237  003446                        INC     BITCNT                  ;COUNT UP
032642  001371                                BNE     18$                     ;NOT FINISHED COUNTING
032644  005037  003446                        CLR     BITCNT                  ;GET READY TO DO IT AGAIN
032650  032777  000200  150452  19$:     BIT     #RDY,@RHCS1             ;IS IT SET YET?
032656  001004                                BNE     MITE                    ;YES
032660  005237  003446                        INC     BITCNT                  ;COUNT UP
032664  001401                                BEQ     MITE                    ;BIT IS NOT GOING TO SET
032666  000770                                BR      19$
032670                                  MITE:
032670  017737  150434  003420                MOV     @RHCS1,CS1              ;SAVE RHCS1
032676  017737  150430  003444                MOV     @RHWC,WC                ;SAVE WORD COUNT
032704  017737  150424  003414                MOV     @RHBA,BA                ;SAVE BUS ADDRESS
032712  005701                                TST     R1                      ;IS IT AN RH11
032714  001406                                BEQ     87$                     ;NO IT'S A 70
032716  005037  003416                        CLR     BAE                     ;CLEAR BAE
032722  005037  003424                        CLR     CS3                     ;CLEAR CS3
032726  000137  032746                        JMP     86$                     ;CONTINUE
032732  017737  150422  003416  87$:     MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
032740  017737  150416  003424                MOV     @RHCS3,CS3              ;SAVE RHCS3
032746  017737  150366  003422  86$:     MOV     @RHCS2,CS2              ;SAVE CS2
032754  017737  150362  003432                MOV     @RHST,DS1               ;SAVE TESTER STATUS
032762  017737  150356  003436                MOV     @RHER,ER1               ;SAVE ERROR REGISTER
032770  017737  150354  003442                MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
032776  017737  150334  003440                MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
033004  032777  000200  150316                BIT     #RDY,@RHCS1             ;IS READY SET
033012  001003                                BNE     VOUS                    ;RDY IS SET
033014  104102                                ERROR   102                     ;RDY DID NOT SET
033016  004737  007224                        JSR     R7,WHYFO                ;ANY ERRORS SET
033022  005137  004000                VOUS:   COM     EVENAD                  ;INVERT BITS FOR WCELO
033026  012777  004000  150300                MOV     #EVENAD,@RHBA           ;FIX BUS ADDRESS
033034  012777  177776  150270                MOV     #-2,@RHWC               ;FIX WORD COUNT
033042  012777  000051  150260                MOV     #WRCH0,@RHCS1           ;TELL IT TO WRITE CHECK
033050  005037  003446                        CLR     BITCNT                  ;CLEAR BIT COUNTER
033054  032777  000200  150246  18$:     BIT     #RDY,@RHCS1             ;IS RDY SET
033062  001015                                BNE     FAST                    ;BIT IS SET
033064  005237  003446                        INC     BITCNT                  ;COUNT UP
033070  001371                                BNE     18$                     ;NOT FINISHED COUNTING
033072  005037  003446                        CLR     BITCNT                  ;GET READY TO DO IT AGAIN
033076  032777  000200  150224  19$:     BIT     #RDY,@RHCS1             ;IS IT SET YET?
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5018  033104  001004                          BNE     FAST                    ;YES
5019  033106  005237  003446                  INC     BITCNT                  ;COUNT UP
5020  033112  001401                          BEQ     FAST                    ;BIT IS NOT GOING TO SET
5021  033114  000770                          BR      19$
5022  033116                          FAST:
5023  033116  017737  150206  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
5024  033124  017737  150202  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
5025  033132  017737  150176  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
5026  033140  005701                          TST     R1                      ;IS IT AN RH11
5027  033142  001406                          BEQ     87$                     ;NO IT'S A 70
5028  033144  005037  003416                  CLR     BAE                     ;CLEAR BAE
5029  033150  005037  003424                  CLR     CS3                     ;CLEAR CS3
5030  033154  000137  033174                  JMP     86$                     ;CONTINUE
5031  033160  017737  150174  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
5032  033166  017737  150170  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
5033  033174  017737  150140  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
5034  033202  017737  150134  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
5035  033210  017737  150130  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
5036  033216  017737  150126  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
5037  033224  017737  150106  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
5038  033232  032777  000200  150070          BIT     #RDY,@RHCS1             ;IS READY SET
5039  033240  001003                          BNE     SUPER                   ;RDY IS SET
5040  033242  104102                          ERROR   102                     ;RDY DID NOT SET
5041  033244  004737  007224                  JSR     R7,WHYFO                ;ANY ERRORS SET
5042  033250  032777  004000  150104  SUPER:  BIT     #WCELO,@RHCS3           ;IS WCELO SET
5043  033256  001006                          BNE     RITEON                  ;WCELO IS SET
5044  033260  104132                          ERROR   132                     ;WCELO DID NOT SET IN RHCS3
5045  033262  004737  007224                  JSR     R7,WHYFO                ;ANY ERRORS SET
5046  033266  105737  001103                  TSTB    $ERFLG                  ;WAS THERE AN ERROR
5047  033272  001005                          BNE     TWANG                   ;YES
5048  033274  032777  010000  150060  RITEON: BIT     #WCEHI,@RHCS3           ;IS WCEHI SET
5049  033302  001406                          BEQ     TWANGY                  ;WCEHI DID NOT SET
5050  033304  104133                          ERROR   133                     ;WCEHI SET WITH WCELO
5051  033306  032777  040000  150024  TWANG:  BIT     #WCE,@RHCS2             ;DID WCE SET IN CS2
5052  033314  001001                          BNE     TWANGY                  ;YES,IT SHOULD BE
5053  033316  104134                          ERROR   134                     ;WCE DID NOT SET IN RHCS2
5054  033320  004737  006572          TWANGY: JSR     R7,CLEER                ;CLEAR ERRORS
5055  033324  004737  050202                  JSR     R7,ERRTST
5056  033330                          FANG:
5057                                  ;;**************************************************************************
5058                                  ;*TEST 54        WCE OW ERROR TEST (WCEHI)
5059                                          ;*THIS TEST CHECKS THAT WCEHI SETS IN RHCS3
5060                                          ;*AND THAT WCE SETS IN RHCS1 ,IT ALSO TESTS
5061                                          ;*THAT WCELO DOES NOT SET WITH WCEHI.......
5062                                          ;*.............RH70 ONLY.....................
5063                                  ;;**************************************************************************
5064  033330  000004                  TST54:  SCOPE
5065  033332  005701                          TST     R1                      ;IS IT AN 11 OR A 70
5066  033334  001402                          BEQ     1$              ;IT'S AN RH70
5067  033336  000137  034134                  JMP     FANGY           ;IT'S AN RH11, EXIT TEST
5068  033342  012777  000007  147770  1$:     MOV     #7,@RHCS2               ;SET DEVICE 7
5069  033350  012777  177776  147754          MOV     #-2,@RHWC               ;TWO WORD TRANSFER
5070  033356  012777  004000  147750          MOV     #EVENAD,@RHBA           ;SETUP BUS ADDRESS
5071  033364  013737  004002  004000          MOV     ODDAD,EVENAD                    ;DUP ODDAD
5072  033372  012777  000061  147730          MOV     #WRITE0,@RHCS1          ;TELL IT TO WRITE
5073  033400  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
```

```
5074  033404  032777  000200  147716  18$:    BIT     #RDY,@RHCS1             ;IS RDY SET
5075  033412  001015                          BNE     WCEOWT                  ;BIT IS SET
5076  033414  005237  003446                  INC     BITCNT                  ;COUNT UP
5077  033420  001371                          BNE     18$                     ;NOT FINISHED COUNTING
5078  033422  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
5079  033426  032777  000200  147674  19$:    BIT     #RDY,@RHCS1             ;IS IT SET YET?
5080  033434  001004                          BNE     WCEOWT                  ;YES
5081  033436  005237  003446                  INC     BITCNT                  ;COUNT UP
5082  033442  001401                          BEQ     WCEOWT                  ;BIT IS NOT GOING TO SET
5083  033444  000770                          BR      19$
5084  033446                          WCEOWT:
5085  033446  017737  147656  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
5086  033454  017737  147652  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
5087  033462  017737  147646  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
5088  033470  005701                          TST     R1                      ;IS IT AN RH11
5089  033472  001406                          BEQ     87$                     ;NO IT'S A 70
5090  033474  005037  003416                  CLR     BAE                     ;CLEAR BAE
5091  033500  005037  003424                  CLR     CS3                     ;CLEAR CS3
5092  033504  000137  033524                  JMP     86$                     ;CONTINUE
5093  033510  017737  147644  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
5094  033516  017737  147640  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
5095  033524  017737  147610  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
5096  033532  017737  147604  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
5097  033540  017737  147600  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
5098  033546  017737  147576  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
5099  033554  017737  147556  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
5100  033562  032777  000200  147540          BIT     #RDY,@RHCS1             ;IS READY SET
5101  033570  001003                          BNE     BEAU                    ;RDY IS SET
5102  033572  104102                          ERROR   102                     ;RDY DID NOT SET
5103  033574  004737  007224                  JSR     R7,WHYFO                ;ANY    ERRORS SET
5104  033600  052777  000040  147532  BEAU:   BIS     #40,    @RHCS2          ;DO A CONTROLLER CLEAR
5105  033606  005037  003446                  CLR     BITCNT                  ;SET UP FOR DELAY
5106  033612  005237  003446          17$:    INC     BITCNT                  ;COUNT UP
5107  033616  001375                          BNE     17$
5108  033620  012777  000007  147512          MOV     #7,     @RHCS2          ;SELECT UNIT #7
5109  033626  005137  004002                  COM     ODDAD                   ;REVERSE BITS IN ODDAD
5110  033632  012777  004000  147474          MOV     #EVENAD,@RHBA           ;CORRECT BUS ADDRESS
5111  033640  012777  177776  147464          MOV     #-2,@RHWC               ;CORRECT WC
5112  033646  012777  000051  147454          MOV     #WRCH0,@RHCS1           ;TELL IT TO WRITE CHECK
5113  033654  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
5114  033660  032777  000200  147442  18$:    BIT     #RDY,@RHCS1             ;IS RDY SET
5115  033666  001015                          BNE     WCEERR                  ;BIT IS SET
5116  033670  005237  003446                  INC     BITCNT                  ;COUNT UP
5117  033674  001371                          BNE     18$                     ;NOT FINISHED COUNTING
5118  033676  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
5119  033702  032777  000200  147420  19$:    BIT     #RDY,@RHCS1             ;IS IT SET YET?
5120  033710  001004                          BNE     WCEERR                  ;YES
5121  033712  005237  003446                  INC     BITCNT                  ;COUNT UP
5122  033716  001401                          BEQ     WCEERR                  ;BIT IS NOT GOING TO SET
5123  033720  000770                          BR      19$
5124  033722                          WCEERR:
5125  033722  017737  147402  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
5126  033730  017737  147376  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
5127  033736  017737  147372  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
5128  033744  005701                          TST     R1                      ;IS IT AN RH11
5129  033746  001406                          BEQ     87$                     ;NO IT'S A 70
```

```
5130  033750  005037  003416                  CLR     BAE                     ;CLEAR BAE
5131  033754  005037  003424                  CLR     CS3                     ;CLEAR CS3
5132  033760  000137  034000                  JMP     86$                     ;CONTINUE
5133  033764  017737  147370  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
5134  033772  017737  147364  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
5135  034000  017737  147334  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
5136  034006  017737  147330  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
5137  034014  017737  147324  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
5138  034022  017737  147322  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
5139  034030  017737  147302  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
5140  034036  032777  000200  147264          BIT     #RDY,@RHCS1             ;IS READY SET
5141  034044  001003                          BNE     ERTIP                   ;RDY IS SET
5142  034046  104102                          ERROR   102                     ;RDY DID NOT SET
5143  034050  004737  007224                  JSR     R7,WHYFO                ;ANY ERRORS SET
5144  034054  032777  010000  147300  ERTIP:  BIT     #WCEHI,@RHCS3           ;IS WCEHI SET
5145  034062  001006                          BNE     BUSH                    ;WCEHI IS SET
5146  034064  104135                          ERROR   135                     ;WCEHI DID NOT SET IN RHCS3
5147  034066  004737  007224                  JSR     R7,WHYFO                ;ANY OTHER ERRORS SET
5148  034072  105737  001103                  TSTB    $ERFLG                  ;WAS THERE AN ERROR
5149  034076  001012                          BNE     LEAGUE                  ;YES
5150  034100  032777  004000  147254  BUSH:   BIT     #WCELO,@RHCS3           ;IS WCELO SET
5151  034106  001406                          BEQ     LEAGUE                  ;NO,WCELO IS OK
5152  034110  104137                          ERROR   137                     ;WCELO SET WITH WCEHI
5153  034112  032777  040000  147220  LEFOUT: BIT     #WCE,@RHCS2             ;DID WCE SET
5154  034120  001001                          BNE     LEAGUE                  ;WCE IS SET IN RHCS2
5155  034122  104136                          ERROR   136                     ;WCE DID NOT SET IN RHCS2
5156  034124  004737  006572          LEAGUE: JSR     R7,CLEER                ;CLEAR ERRORS
5157  034130  004737  050202                  JSR     R7,ERRTST
5158  034134                          FANGY:
5159                                  ;;**********************************************************************
5160                                  ;*TEST 55        INTERUPT ENABLE TEST
5161                                          ;*THIS TEST VERIFYS THAT IE WILL SET IN RHCS1
5162                                          ;*AND IT WILL CAUSE AN INTERUPT WHEN RDY IS SET
5163                                  ;;**********************************************************************
5164  034134  000004                  TST55:  SCOPE
5165  034136  012777  000007  147174          MOV     #7,@RHCS2               ;SETUP UNIT NUMBER
5166  034144  012777  004000  147162          MOV     #EVENAD,@RHBA           ;SETUP BUS ADDRESS
5167  034152  005701                          TST     R1                      ;RH11 OR RH70 ?
5168  034154  100403                          BMI     READY                   ;ITS AN RH11
5169  034156  012777  000000  147174          MOV     #ZERO,@RHBAE            ;ZERO THE BAE
5170  034164  012777  034446  147214  READY: MOV     #IETST,@VECADD          ;SET UP VECTOR ADDRESS
5171  034172  012737  000340  177776          MOV     #340,PS                 ;SET PRIORTY 7
5172  034200  012777  177777  147124          MOV     #-1,@RHWC               ;SET FOR ONE WORD
5173  034206  012777  000161  147114          MOV     #WRITEO!IE,@RHCS1               ;TELL IT TO WRITE
5174  034214  032777  000100  147106          BIT     #IE,@RHCS1              ;IS IE SET
5175  034222  001001                          BNE     2$                      ;YES CONTINUE TEST
5176  034224  104174                          ERROR   174                     ;IE WILL NOT SET
5177  034226  005037  177776          2$:     CLR     @#177776
5178  034232  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
5179  034236  032777  000200  147064  18$:    BIT     #RDY,@RHCS1             ;IS RDY SET
5180  034244  001015                          BNE     TSTIE                   ;BIT IS SET
5181  034246  005237  003446                  INC     BITCNT                  ;COUNT UP
5182  034252  001371                          BNE     18$                     ;NOT FINISHED COUNTING
5183  034254  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
5184  034260  032777  000200  147042  19$:    BIT     #RDY,@RHCS1             ;IS IT SET YET?
5185  034266  001004                          BNE     TSTIE                   ;YES
```

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5186  034270  005237  003446          INC     BITCNT                  ;COUNT UP
5187  034274  001401                  BEQ     TSTIE                   ;BIT IS NOT GOING TO SET
5188  034276  000770                  BR      19$
5189  034300                  TSTIE:
5190  034300  017737  147024  003420  MOV     @RHCS1,CS1              ;SAVE RHCS1
5191  034306  017737  147020  003444  MOV     @RHWC,WC                ;SAVE WORD COUNT
5192  034314  017737  147014  003414  MOV     @RHBA,BA                ;SAVE BUS ADDRESS
5193  034322  005701                  TST     R1                      ;IS IT AN RH11
5194  034324  001406                  BEQ     87$                     ;NO IT'S A 70
5195  034326  005037  003416          CLR     BAE                     ;CLEAR BAE
5196  034332  005037  003424          CLR     CS3                     ;CLEAR CS3
5197  034336  000137  034356          JMP     86$                     ;CONTINUE
5198  034342  017737  147012  003416  87$:    MOV     @RHBAE,BAE      ;SAVE BUS ADDRESS EXTENSION
5199  034350  017737  147006  003424          MOV     @RHCS3,CS3      ;SAVE RHCS3
5200  034356  017737  146756  003422  86$:    MOV     @RHCS2,CS2      ;SAVE CS2
5201  034364  017737  146752  003432          MOV     @RHST,DS1       ;SAVE TESTER STATUS
5202  034372  017737  146746  003436          MOV     @RHER,ER1       ;SAVE ERROR REGISTER
5203  034400  017737  146744  003442          MOV     @RHTDB,TDR      ;SAVE TESTER DATA REG.
5204  034406  017737  146724  003440          MOV     @RHMR2,TC       ;SAVE MR2 TESTER REG.
5205  034414  032777  000200  146706          BIT     #RDY,@RHCS1     ;IS READY SET ?
5206  034422  001003                  BNE     1$                      ;YES
5207  034424  104102                  ERROR   102                     ;READY DID NOT SET
5208  034426  000137  034460          JMP     SPLIT                   ;EXIT TEST
5209  034432  105737  001103          1$:     TSTB    $ERFLG          ;WAS IE SET
5210  034436  001010                  BNE     SPLIT                   ;NO,EXIT TEST
5211  034440  104173                  ERROR   173                     ;RDY DID NOT CAUSE AN INTERUPT
5212  034442  000137  034460          JMP     SPLIT                   ;EXIT TEST
5213  034446  022626          IETST:  CMP     (SP)+,(SP)+             ;CORRECT STACK
```

```
 5214  034450  105737  001103            TSTB    $ERFLG                  ;DID IE SET
 5215  034454  001401                    BEQ     SPLIT                   ;YES,EXIT TEST
 5216  034456  104175                    ERROR   175                     ;IE HAS OPEN GOING TO BUS
 5217  034460  004737  006572  SPLIT:    JSR     R7,CLEER                ;CLEAR ERRORS
 5218  034464  004737  050202            JSR     R7,ERRTST
```

```
5219                                    ;;*****************************************************************
5220                                    ;*TEST 56       READ OPERATIONAL TEST (NORMAL) #1
5221                                            ;*THESE TESTS VERIFY ALL READ AND WRITE CODES
5222                                            ;*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
5223                                            ;*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
5224                                            ;*NO ERRORS SHOULD OCCUR
5225
5226                                    ;;*****************************************************************
5227  034470  000004                   TST56:  SCOPE
5228  034472  012777  000007  146640           MOV     #7,@RHCS2               ;SETUP UNIT SEVEN
5229  034500  012777  177777  146624           MOV     #-1,@RHWC               ;FOR ONE WORD
5230  034506  012777  004100  146620           MOV     #RBUF,@RHBA             ;SRTUP BA
5231  034514  012737  000000  004100           MOV     #ZERO,RBUF              ;SETUP DATA
5232  034522  012777  125252  146620           MOV     #0AB,@RHTDB             ;SETUP TESTER DB
5233  034530  005701                           TST     R1                      ;IS IT AN 11 OR A 70
5234  034532  100403                           BMI     1$                      ;IT'S AN RH11
5235  034534  012777  000000  146616           MOV     #ZERO,@RHBAE            ;ZERO BAE
5236  034542  012777  000071  146560   1$:     MOV     #READ0,@RHCS1           ;TELL IT TO READ0
5237  034550  005037  003446                   CLR     BITCNT                  ;CLEAR BIT COUNTER
5238  034554  032777  000200  146546   18$:    BIT     #RDY,@RHCS1             ;IS RDY SET
5239  034562  001015                           BNE     2$                      ;BIT IS SET
5240  034564  005237  003446                   INC     BITCNT                  ;COUNT UP
5241  034570  001371                           BNE     18$                     ;NOT FINISHED COUNTING
5242  034572  005037  003446                   CLR     BITCNT                  ;GET READY TO DO IT AGAIN
5243  034576  032777  000200  146524   19$:    BIT     #RDY,@RHCS1             ;IS IT SET YET?
5244  034604  001004                           BNE     2$                      ;YES
5245  034606  005237  003446                   INC     BITCNT                  ;COUNT UP
5246  034612  001401                           BEQ     2$                      ;BIT IS NOT GOING TO SET
5247  034614  000770                           BR      19$
5248  034616                           2$:
5249  034616  017737  146506  003420           MOV     @RHCS1,CS1              ;SAVE RHCS1
5250  034624  017737  146502  003444           MOV     @RHWC,WC                ;SAVE WORD COUNT
5251  034632  017737  146476  003414           MOV     @RHBA,BA                ;SAVE BUS ADDRESS
5252  034640  005701                           TST     R1                      ;IS IT AN RH11
5253  034642  001406                           BEQ     87$                     ;NO IT'S A 70
5254  034644  005037  003416                   CLR     BAE                     ;CLEAR BAE
5255  034650  005037  003424                   CLR     CS3                     ;CLEAR CS3
5256  034654  000137  034674                   JMP     86$                     ;CONTINUE
5257  034660  017737  146474  003416   87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
5258  034666  017737  146470  003424           MOV     @RHCS3,CS3              ;SAVE RHCS3
5259  034674  017737  146440  003422   86$:    MOV     @RHCS2,CS2              ;SAVE CS2
5260  034702  017737  146434  003432           MOV     @RHST,DS1               ;SAVE TESTER STATUS
5261  034710  017737  146430  003436           MOV     @RHER,ER1               ;SAVE ERROR REGISTER
5262  034716  017737  146426  003442           MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
5263  034724  017737  146406  003440           MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
5264  034732  017737  146412  001162           MOV     @RHTDB,$REG0                    ;GET DATA
5265  034740  032777  000200  146362           BIT     #RDY,@RHCS1             ;IS OR SET
5266  034746  001003                           BNE     3$                      ;YES RDY IS SET
5267  034750  104102                           ERROR   102                     ;READY DID NOT SET
5268  034752  004737  007224                   JSR     R7,WHYFO                ;ARE ANY ERRORS SET
5269  034756  023777  004100  146364   3$:     CMP     RBUF,@RHTDB             ;DID INFO GET WRITTEN OR READ
5270  034764  001407                           BEQ     4$                      ;INFO GOT LOADED
5271  034766  005737  004100                   TST     RBUF                    ;DOES RBUF = 0
5272  034772  001403                           BEQ     5$                      ;YES INFO DID NOT LOAD
5273  034774  104147                           ERROR   147                     ;ALL BITS DID NOT LOAD DURING
5274                                                                           ;AN READ0 OPERATION
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5275  034776  000137  035004                JMP     4$                      ;EXIT TEST
5276  035002  104150                5$:     ERROR   150                     ;READO OPERATION DID NOT WORK
5277                                                                        ;NO BITS WHERE LOADED TO RBUF
5278  035004  004737  007224        4$:     JSR     R7,WHYFO                ;ANY ERRORS SET
5279  035010  105737  001103                TSTB    $ERFLG                  ;ANY ERRORS ?
5280  035014  001402                        BEQ     6$                      ;NO,EXIT TEST
5281  035016  104146                        ERROR   146                     ;PRINT REGISTERS
5282  035020  104170                        ERROR   170
5283  035022  004737  006572        6$:     JSR     R7,CLEER                ;CLEAR ERRORS
5284  035026  004737  050202                JSR     R7,ERRTST
5285                                        ;;**************************************************************************
5286                                        ;*TEST 57        RH OPERATIONAL WRITE TEST #1
5287                                                ;*THESE TESTS VERIFY ALL READ AND WRITE CODES
5288                                                ;*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
5289                                                ;*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
5290                                                ;*NO ERRORS SHOULD OCCUR
5291
5292                                        ;;**************************************************************************
5293  035032  000004                TST57:  SCOPE
5294  035034  012777  000007  146276        MOV     #7,@RHCS2               ;SETUP UNIT SEVEN
5295  035042  012737  125252  004000        MOV     #OAB,EVENAD             ;SETUP INFORMATION
5296  035050  012777  000003  146276        MOV     #DMD!MCLK,@RHMR1                ;SETUP DIAG. MODE
5297  035056  012777  177777  146246        MOV     #-1,@RHWC               ;FOR ONE WORD
5298  035064  005701                        TST     R1                      ;IS IT A 11 OR 70
5299  035066  100403                        BMI     1$                      ;IT'S AN 11
5300  035070  012777  000000  146262        MOV     #ZERO,@RHBAE            ;ZERO BAE
5301  035075  012777  004000  146230  1$:   MOV     #EVENAD,@RHBA           ;SETUP BA
5302  035104  012777  000061  146216        MOV     #WRITEO,@RHCS1          ;TELL IT TO WRITETO
5303  035112  012777  000001  146234        MOV     #DMD,@RHMR1             ;MANIPULATE CLOCK
5304  035120  005037  003446                CLR     BITCNT                  ;CLEAR LOOP COUNTER
5305  035124  005237  003446          2$:   INC     BITCNT                  ;INCREMENT LOOP COUNTER
5306  035130  022737  000015  003446        CMP     #15,BITCNT              ;IS IT THIRD LOOP FOR 5USEC WAIT
5307  035136  001372                        BNE     2$                      ;NO LOOP AGAIN
5308  035140  012777  000003  146206        MOV     #DMD!MCLK,@RHMR1                ;START CHANGING CLOCK
5309  035146  012777  000001  146200        MOV     #DMD,@RHMR1             ;CHANGE CLOCK AGAIN
5310  035154  012777  000003  146172        MOV     #DMD!MCLK,@RHMR1                ;CHANGE CLOCK AGAIN
5311  035162  012777  000001  146164        MOV     #DMD,@RHMR1             ;CHANGE CLOCK AGAIN
5312  035170  012777  000000  146156        MOV     #ZERO,@RHMR1            ;GET OUT OF DIAG MODE
5313  035176  005037  003446                CLR     BITCNT                  ;CLEAR BIT COUNTER
5314  035202  032777  000200  146120  18$:   BIT     #RDY,@RHCS1             ;IS RDY SET
5315  035210  001015                        BNE     7$                      ;BIT IS SET
5316  035212  005237  003446                INC     BITCNT                  ;COUNT UP
5317  035216  001371                        BNE     18$                     ;NOT FINISHED COUNTING
5318  035220  005037  003446                CLR     BITCNT                  ;GET READY TO DO IT AGAIN
5319  035224  032777  000200  146076  19$:   BIT     #RDY,@RHCS1             ;IS IT SET YET?
5320  035232  001004                        BNE     7$                      ;YES
5321  035234  005237  003446                INC     BITCNT                  ;COUNT UP
5322  035240  001401                        BEQ     7$                      ;BIT IS NOT GOING TO SET
5323  035242  000770                        BR      19$
5324  035244                          7$:
5325  035244  017737  146060  003420        MOV     @RHCS1,CS1              ;SAVE RHCS1
5326  035252  017737  146054  003444        MOV     @RHWC,WC                ;SAVE WORD COUNT
5327  035260  017737  146050  003414        MOV     @RHBA,BA                ;SAVE BUS ADDRESS
5328  035266  005701                        TST     R1                      ;IS IT AN RH11
5329  035270  001406                        BEQ     87$                     ;NO IT'S A 70
5330  035272  005037  003416                CLR     BAE                     ;CLEAR BAE
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 5331  035276  005037  003424                      CLR     CS3                     ;CLEAR CS3
 5332  035302  000137  035322                      JMP     86$                     ;CONTINUE
 5333  035306  017737  146046  003416  87$:        MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
 5334  035314  017737  146042  003424              MOV     @RHCS3,CS3              ;SAVE RHCS3
 5335  035322  017737  146012  003422  86$:        MOV     @RHCS2,CS2              ;SAVE CS2
 5336  035330  017737  146006  003432              MOV     @RHST,DS1               ;SAVE TESTER STATUS
 5337  035336  017737  146002  003436              MOV     @RHER,ER1               ;SAVE ERROR REGISTER
 5338  035344  017737  146000  003442              MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
 5339  035352  017737  145760  003440              MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
 5340  035360  017737  145764  001162              MOV     @RHTDB,$REG0                    ;GET DATA
 5341  035366  032777  000200  145734              BIT     #RDY,@RHCS1             ;IS READY SET
 5342  035374  001001                              BNE     8$                      ;YES,CONTINUE TEST
 5343  035376  104102                              ERROR   102                     ;READY DID NOT SET
 5344  035400  022777  177777  145724  8$:        CMP     #-1,@RHWC               ;DID WC INCREMENT
 5345  035406  001001                              BNE     3$                      ;YES,CONT TEST
 5346  035410  104140                              ERROR   140                     ;WRITETO OPERATION DID NOT INC WC
 5347  035412  022777  004002  145714  3$:        CMP     #ODDAD,@RHBA            ;DID BA INCREMENT
 5348  035420  001401                              BEQ     4$                      ;YES CONT TEST
 5349  035422  104141                              ERROR   141                     ;BA DID NOT INCREMENT AFTER AN WRITETO OPERATION
 5350  035424  023777  004000  145716  4$:        CMP     EVENAD,@RHTDB           ;DID INFO WRITETO TESTER
 5351  035432  001401                              BEQ     5$                      ;YES,CONT
 5352  035434  104142                              ERROR   142                     ;INFO DID NOT WRITETO TESTER
 5353  035436  004737  007224              5$:     JSR     R7,WHYFO                ;ARE ANY ERROR BITS SET
 5354  035442  105737  001103                      TSTB    $ERFLG                  ;WAS THER AN ERROR
 5355  035446  001402                              BEQ     6$                      ;NO EXIT TEST
 5356  035450  104146                              ERROR   146                     ;THESE ARE THE CONTENTS OF ALL RH70 REG.
 5357  035452  104170                              ERROR   170                     ;THIS IS TO COMMPLETE ERROR PRINTOUT
 5358  035454  004737  006572              6$:     JSR     R7,CLEER                ;CLEER ERRORS IF ANY
 5359  035460  004737  050202                      JSR     R7,ERRTST
 5360                                      ;;**************************************************************************
 5361                                      ;*TEST 60        READ OPERATIONAL TEST (NORMAL) #2
 5362                                              ;*THESE TESTS VERIFY ALL READ AND WRITE CODES
 5363                                              ;*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
 5364                                              ;*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
 5365                                              ;*NO ERRORS SHOULD OCCUR
 5366
 5367                                      ;;**************************************************************************
 5368  035464  000004              TST60:  SCOPE
 5369  035466  012777  000007  145644              MOV     #7,@RHCS2               ;SETUP UNIT SEVEN
 5370  035474  012777  177777  145630              MOV     #-1,@RHWC               ;FOR ONE WORD
 5371  035502  012777  004100  145624              MOV     #RBUF,@RHBA             ;SRTUP BA
 5372  035510  012737  000000  004100              MOV     #ZERO,RBUF              ;SETUP DATA
 5373  035516  012777  125252  145624              MOV     #0AB,@RHTDB             ;SETUP TESTER DB
 5374  035524  005701                              TST     R1                      ;IS IT AN 11 OR A 70
 5375  035526  100403                              BMI     1$                      ;IT'S AN RH11
 5376  035530  012777  000000  145622              MOV     #ZERO,@RHBAE            ;ZERO BAE
 5377  035536  012777  000073  145564  1$:        MOV     #READ2,@RHCS1           ;TELL IT TO READ2
 5378  035544  005037  003446                      CLR     BITCNT                  ;CLEAR BIT COUNTER
 5379  035550  032777  000200  145552  18$:       BIT     #RDY,@RHCS1             ;IS RDY SET
 5380  035556  001015                              BNE     2$                      ;BIT IS SET
 5381  035560  005237  003446                      INC     BITCNT                  ;COUNT UP
 5382  035564  001371                              BNE     18$                     ;NOT FINISHED COUNTING
 5383  035566  005037  003446                      CLR     BITCNT                  ;GET READY TO DO IT AGAIN
 5384  035572  032777  000200  145530  19$:       BIT     #RDY,@RHCS1             ;IS IT SET YET?
 5385  035600  001004                              BNE     2$                      ;YES
 5386  035602  005237  003446                      INC     BITCNT                  ;COUNT UP
```

```
                                        BEQ     2$                      ;BIT IS NOT GOING TO SET
                                        BR      19$
                                2$:
                                        MOV     @RHCS1,CS1              ;SAVE RHCS1
                                        MOV     @RHWC,WC                ;SAVE WORD COUNT
                                        MOV     @RHBA,BA                ;SAVE BUS ADDRESS
                                        TST     R1                      ;IS IT AN RH11
                                        BEQ     87$                     ;NO IT'S A 70
                                        CLR     BAE                     ;CLEAR BAE
                                        CLR     CS3                     ;CLEAR CS3
                                        JMP     86$                     ;CONTINUE
                                87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
                                        MOV     @RHCS3,CS3              ;SAVE RHCS3
                                86$:    MOV     @RHCS2,CS2              ;SAVE CS2
                                        MOV     @RHST,DS1               ;SAVE TESTER STATUS
                                        MOV     @RHER,ER1               ;SAVE ERROR REGISTER
                                        MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
                                        MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
                                        MOV     @RHTDB,$REG0                    ;GET DATA
                                        BIT     #RDY,@RHCS1             ;IS OR SET
                                        BNE     3$                      ;YES RDY IS SET
                                        ERROR   102                     ;READY DID NOT SET
                                        JSR     R7,WHYFO                ;ARE ANY ERRORS SET
                                3$:     CMP     RBUF,@RHTDB             ;DID INFO GET WRITTEN OR READ
                                        BEQ     4$                      ;INFO GOT LOADED
                                        TST     RBUF                    ;DOES RBUF = 0
                                        BEQ     5$                      ;YES INFO DID NOT LOAD
                                        ERROR   147                     ;ALL BITS DID NOT LOAD DURING
                                                                        ;AN READ2 OPERATION
                                        JMP     4$                      ;EXIT TEST
                                5$:     ERROR   150                     ;READ2 OPERATION DID NOT WORK
                                                                        ;NO BITS WHERE LOADED TO RBUF
                                4$:     JSR     R7,WHYFO                ;ANY ERRORS SET
                                        TSTB    $ERFLG                  ;ANY ERRORS ?
                                        BEQ     6$                      ;NO,EXIT TEST
                                        ERROR   146                     ;PRINT REGISTERS
                                        ERROR   170
                                6$:     JSR     R7,CLEER                ;CLEAR ERRORS
                                        JSR     R7,ERRTST
                                ;;**************************************************************************
                                ;*TEST 61        READ OPERATIONAL TEST #1
                                        ;*THESE TESTS VERIFY ALL READ AND WRITE CODES
                                        ;*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
                                        ;*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
                                        ;*NO ERRORS SHOULD OCCUR

                                ;;**************************************************************************
                                TST61:  SCOPE
                                        MOV     #7,@RHCS2               ;SETUP UNIT SEVEN
                                        MOV     #AB,@RHTDB              ;SETUP INFORMATION
                                        MOV     #DMD!MCLK,@RHMR1                ;SETUP DIAG. MODE
                                        MOV     #-1,@RHWC               ;FOR ONE WORD
                                        TST     R1                      ;IS IT A 11 OR 70
                                        BMI     1$                      ;IT'S AN 11
                                        MOV     #ZERO,@RHBAE            ;ZERO BAE
                                1$:     MOV     #EVENAD,@RHBA           ;SETUP BA
```

```
5443  036100  012777  000071  145222          MOV     #READ0,@RHCS1           ;TELL IT TO READFROM
5444  036106  012777  000001  145240          MOV     #DMD,@RHMR1             ;MANIPULATE CLOCK
5445  036114  005037  003446                  CLR     BITCNT                  ;CLEAR LOOP COUNTER
5446  036120  005237  003446          2$:     INC     BITCNT                  ;INCREMENT LOOP COUNTER
5447  036124  022737  000015  003446          CMP     #15,BITCNT              ;IS IT THIRD LOOP FOR 5USEC WAIT
5448  036132  001372                          BNE     2$                      ;NO LOOP AGAIN
5449  036134  012777  000003  145212          MOV     #DMD!MCLK,@RHMR1                ;START CHANGING CLOCK
5450  036142  012777  000001  145204          MOV     #DMD,@RHMR1             ;CHANGE CLOCK AGAIN
5451  036150  012777  000003  145176          MOV     #DMD!MCLK,@RHMR1                ;CHANGE CLOCK AGAIN
5452  036156  012777  000001  145170          MOV     #DMD,@RHMR1             ;CHANGE CLOCK AGAIN
5453  036164  012777  000000  145162          MOV     #ZERO,@RHMR1            ;GET OUT OF DIAG MODE
5454  036172  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
5455  036176  032777  000200  145124  18$:    BIT     #RDY,@RHCS1             ;IS RDY SET
5456  036204  001015                          BNE     7$                      ;BIT IS SET
5457  036206  005237  003446                  INC     BITCNT                  ;COUNT UP
5458  036212  001371                          BNE     18$                     ;NOT FINISHED COUNTING
5459  036214  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
5460  036220  032777  000200  145102  19$:    BIT     #RDY,@RHCS1             ;IS IT SET YET?
5461  036226  001004                          BNE     7$                      ;YES
5462  036230  005237  003446                  INC     BITCNT                  ;COUNT UP
5463  036234  001401                          BEQ     7$                      ;BIT IS NOT GOING TO SET
5464  036236  000770                          BR      19$
5465  036240                          7$:
5466  036240  017737  145064  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
5467  036246  017737  145060  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
5468  036254  017737  145054  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
5469  036262  005701                          TST     R1                      ;IS IT AN RH11
5470  036264  001406                          BEQ     87$                     ;NO IT'S A 70
5471  036266  005037  003416                  CLR     BAE                     ;CLEAR BAE
5472  036272  005037  003424                  CLR     CS3                     ;CLEAR CS3
5473  036276  000137  036316                  JMP     86$                     ;CONTINUE
5474  036302  017737  145052  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
5475  036310  017737  145046  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
5476  036316  017737  145016  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
5477  036324  017737  145012  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
5478  036332  017737  145006  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
5479  036340  017737  145004  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
5480  036346  017737  144764  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
5481  036354  017737  144770  001162          MOV     @RHTDB,$REG0                    ;GET DATA
5482  036362  032777  000200  144740          BIT     #RDY,@RHCS1             ;IS READY SET
5483  036370  001001                          BNE     8$                      ;YES,CONTINUE TEST
5484  036372  104102                          ERROR   102                     ;READY DID NOT SET
5485  036374  022777  177777  144730  8$:     CMP     #-1,@RHWC               ;DID WC INCREMENT
5486  036402  001001                          BNE     3$                      ;YES,CONT TEST
5487  036404  104143                          ERROR   143                     ;READFROM OPERATION DID NOT INC WC
5488  036406  022777  004002  144720  3$:     CMP     #ODDAD,@RHBA            ;DID BA INCREMENT
5489  036414  001401                          BEQ     4$                      ;YES CONT TEST
5490  036416  104144                          ERROR   144                     ;BA DID NOT INCREMENT AFTER AN READFROM OPERATIO
5491  036420  023777  004000  144722  4$:     CMP     EVENAD,@RHTDB           ;DID INFO READFROM TESTER
5492  036426  001401                          BEQ     5$                      ;YES,CONT
5493  036430  104145                          ERROR   145                     ;INFO DID NOT READFROM TESTER
5494  036432  004737  00722%          5$:     JSR     R7,WHYFO                ;ARE ANY ERROR BITS SET
5495  036436  105737  001103                  TSTB    $ERFLG                  ;WAS THER AN ERROR
5496  036442  001402                          BEQ     6$                      ;NO EXIT TEST
5497  036444  104146                          ERROR   146                     ;THESE ARE THE CONTENTS OF ALL RH70 REG.
5498  036446  104170                          ERROR   170                     ;THIS IS TO COMMPLETE ERROR PRINTOUT
```

```
                                        6$:     JSR     R7,CLEER                ;CLEER ERRORS IF ANY
                                                JSR     R7,ERRTST
                                        ;;**************************************************************************
                                        ;*TEST 62        READ OPERATIONAL TEST (NORMAL) #3
                                                ;*THESE TESTS VERIFY ALL READ AND WRITE CODES
                                                ;*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
                                                ;*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
                                                ;*NO ERRORS SHOULD OCCUR

                                        ;;**************************************************************************
                                        TST62:  SCOPE
                                                MOV     #7,@RHCS2               ;SETUP UNIT SEVEN
                                                MOV     #-1,@RHWC               ;FOR ONE WORD
                                                MOV     #RBUF,@RHBA             ;SRTUP BA
                                                MOV     #ZERO,RBUF              ;SETUP DATA
                                                MOV     #0AB,@RHTDB             ;SETUP TESTER DB
                                                TST     R1                      ;IS IT AN 11 OR A 70
                                                BMI     1$                      ;IT'S AN RH11
                                                MOV     #ZERO,@RHBAE            ;ZERO BAE
                                        1$:     MOV     #READ4,@RHCS1           ;TELL IT TO READ4
                                                CLR     BITCNT                  ;CLEAR BIT COUNTER
                                        18$:    BIT     #RDY,@RHCS1             ;IS RDY SET
                                                BNE     2$                      ;BIT IS SET
                                                INC     BITCNT                  ;COUNT UP
                                                BNE     18$                     ;NOT FINISHED COUNTING
                                                CLR     BITCNT                  ;GET READY TO DO IT AGAIN
                                        19$:    BIT     #RDY,@RHCS1             ;IS IT SET YET?
                                                BNE     2$                      ;YES
                                                INC     BITCNT                  ;COUNT UP
                                                BEQ     2$                      ;BIT IS NOT GOING TO SET
                                                BR      19$
                                        2$:
                                                MOV     @RHCS1,CS1              ;SAVE RHCS1
                                                MOV     @RHWC,WC                ;SAVE WORD COUNT
                                                MOV     @RHBA,BA                ;SAVE BUS ADDRESS
                                                TST     R1                      ;IS IT AN RH11
                                                BEQ     87$                     ;NO IT'S A 70
                                                CLR     BAE                     ;CLEAR BAE
                                                CLR     CS3                     ;CLEAR CS3
                                                JMP     86$                     ;CONTINUE
                                        87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
                                                MOV     @RHCS3,CS3              ;SAVE RHCS3
                                        86$:    MOV     @RHCS2,CS2              ;SAVE CS2
                                                MOV     @RHST,DS1               ;SAVE TESTER STATUS
                                                MOV     @RHER,ER1               ;SAVE ERROR REGISTER
                                                MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
                                                MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
                                                MOV     @RHTDB,$REG0                    ;GET DATA
                                                BIT     #RDY,@RHCS1             ;IS OR SET
                                                BNE     3$                      ;YES RDY IS SET
                                                ERROR   102                     ;READY DID NOT SET
                                                JSR     R7,WHYFO                ;ARE ANY ERRORS SET
                                        3$:     CMP     RBUF,@RHTDB             ;DID INFO GET WRITTEN OR READ
                                                BEQ     4$                      ;INFO GOT LOADED
                                                TST     RBUF                    ;DOES RBUF = 0
                                                BEQ     5$                      ;YES INFO DID NOT LOAD
```

```
5555  036764  104147                    ERROR   147                     ;ALL BITS DID NOT LOAD DURING
5556                                                                    ;AN READ4 OPERATION
5557  036766  000137  036774            JMP     4$                      ;EXIT TEST
5558  036772  104150              5$:   ERROR   150                     ;READ4 OPERATION DID NOT WORK
5559                                                                    ;NO BITS WHERE LOADED TO RBUF
5560  036774  004737  007224      4$:   JSR     R7,WHYFO                ;ANY ERRORS SET
5561  037000  105737  001103            TSTB    $ERFLG                  ;ANY ERRORS ?
5562  037004  001402                    BEQ     6$                      ;NO,EXIT TEST
5563  037006  104146                    ERROR   146                     ;PRINT REGISTERS
5564  037010  104170                    ERROR   170
5565  037012  004737  006572      6$:   JSR     R7,CLEER                ;CLEAR ERRORS
5566  037016  004737  050202            JSR     R7,ERRTST
```

```
                        ;;*****************************************************************
                        ;*TEST 63       RH OPERATIONAL WRITE TEST #2
                                ;*THESE TESTS VERIFY ALL READ AND WRITE CODES
                                ;*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
                                ;*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
                                ;*NO ERRORS SHOULD OCCUR

                        ;;*****************************************************************
037022  000004          TST63:  SCOPE
```

```
5576  037024  012777  000007  144306          MOV     #7,@RHCS2               ;SETUP UNIT SEVEN
5577  037032  012737  125252  004000          MOV     #0AB,EVENAD             ;SETUP INFORMATION
5578  037040  012777  001003  144306          MOV     #DMD!MCLK!SLKM,@RHMR1           ;SETUP DIAG. MODE
5579  037046  012777  177777  144256          MOV     #-1,@RHWC               ;FOR ONE WORD
5580  037054  005701                          TST     R1                      ;IS IT A 11 OR 70
5581  037056  100403                          BMI     1$                      ;IT'S AN 11
5582  037060  012777  000000  144272          MOV     #ZERO,@RHBAE            ;ZERO BAE
5583  037066  012777  004000  144240  1$:     MOV     #EVENAD,@RHBA           ;SETUP BA
5584  037074  012777  000063  144226          MOV     #WRITE2,@RHCS1          ;TELL IT TO WRITETO
5585  037102  012777  001001  144244          MOV     #DMD!SLKM,@RHMR1                ;MANIPULATE CLOCK
5586  037110  005037  003446                  CLR     BITCNT                  ;CLEAR LOOP COUNTER
5587  037114  005237  003446          2$:     INC     BITCNT                  ;INCREMENT LOOP COUNTER
5588  037120  022737  000015  003446          CMP     #15,BITCNT              ;IS IT THIRD LOOP FOR 5USEC WAIT
5589  037126  001372                          BNE     2$                      ;NO LOOP AGAIN
5590  037130  012777  001003  144216          MOV     #DMD!MCLK!SLKM,@RHMR1           ;START CHANGING CLOCK
5591  037136  012777  001001  144210          MOV     #DMD!SLKM,@RHMR1                ;CHANGE CLOCK AGAIN
5592  037144  012777  001003  144202          MOV     #DMD!MCLK!SLKM,@RHMR1           ;CHANGE CLOCK AGAIN
5593  037152  012777  001001  144174          MOV     #DMD!SLKM,@RHMR1                ;CHANGE CLOCK AGAIN
5594  037160  012777  000000  144166          MOV     #ZERO,@RHMR1            ;GET OUT OF DIAG MODE
5595  037166  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
5596  037172  032777  000200  144130  18$:     BIT     #RDY,@RHCS1             ;IS RDY SET
5597  037200  001015                          BNE     7$                      ;BIT IS SET
5598  037202  005237  003446                  INC     BITCNT                  ;COUNT UP
5599  037206  001371                          BNE     18$                     ;NOT FINISHED COUNTING
5600  037210  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
5601  037214  032777  000200  144106  19$:     BIT     #RDY,@RHCS1             ;IS IT SET YET?
5602  037222  001004                          BNE     7$                      ;YES
5603  037224  005237  003446                  INC     BITCNT                  ;COUNT UP
5604  037230  001401                          BEQ     7$                      ;BIT IS NOT GOING TO SET
5605  037232  000770                          BR      19$
5606  037234                          7$:
5607  037234  017737  144070  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
5608  037242  017737  144064  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
5609  037250  017737  144060  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
5610  037256  005701                          TST     R1                      ;IS IT AN RH11
5611  037260  001406                          BEQ     87$                     ;NO IT'S A 70
5612  037262  005037  003416                  CLR     BAE                     ;CLEAR BAE
5613  037266  005037  003424                  CLR     CS3                     ;CLEAR CS3
5614  037272  000137  037312                  JMP     86$                     ;CONTINUE
5615  037276  017737  144056  003416  87$:     MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
5616  037304  017737  144052  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
5617  037312  017737  144022  003422  86$:     MOV     @RHCS2,CS2              ;SAVE CS2
5618  037320  017737  144016  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
5619  037326  017737  144012  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
5620  037334  017737  144010  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
5621  037342  017737  143770  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
5622  037350  017737  143774  001162          MOV     @RHTDB,$REG0                    ;GET DATA
5623  037356  032777  000200  143744          BIT     #RDY,@RHCS1             ;IS READY SET
5624  037364  001001                          BNE     8$                      ;YES,CONTINUE TEST
5625  037366  104102                          ERROR   102                     ;READY DID NOT SET
5626  037370  022777  177777  143734  8$:     CMP     #-1,@RHWC               ;DID WC INCREMENT
5627  037376  001001                          BNE     3$                      ;YES,CONT TEST
5628  037400  104140                          ERROR   140                     ;WRITETO OPERATION DID NOT INC WC
5629  037402  022777  004002  143724  3$:     CMP     #ODDAD,@RHBA            ;DID BA INCREMENT
5630  037410  001401                          BEQ     4$                      ;YES CONT TEST
5631  037412  104141                          ERROR   141                     ;BA DID NOT INCREMENT AFTER AN WRITETO OPERATION
```

```
5632  037414  023777  004000  143726  4$:     CMP     EVENAD,@RHTDB           ;DID INFO WRITETO TESTER
5633  037422  001401                          BEQ     5$                      ;YES,CONT
5634  037424  104142                          ERROR   142                     ;INFO DID NOT WRITETO TESTER
5635  037426  004737  007224          5$:     JSR     R7,WHYFO                ;ARE ANY ERROR BITS SET
5636  037432  105737  001103                  TSTB    $ERFLG                  ;WAS THER AN ERROR
5637  037436  001402                          BEQ     6$                      ;NO EXIT TEST
5638  037440  104146                          ERROR   146                     ;THESE ARE THE CONTENTS OF ALL RH70 REG.
5639  037442  104170                          ERROR   170                     ;THIS IS TO COMMPLETE ERROR PRINTOUT
5640  037444  004737  006572          6$:     JSR     R7,CLEER                ;CLEER ERRORS IF ANY
5641  037450  004737  050202                  JSR     R7,ERRTST
5642                                  ;;**********************************************************************
5643                                  ;*TEST 64        READ OPERATIONAL TEST (NORMAL) #4
5644                                          ;*THESE TESTS VERIFY ALL READ AND WRITE CODES
5645                                          ;*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
5646                                          ;*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
5647                                          ;*NO ERRORS SHOULD OCCUR
5648
5649                                  ;;**********************************************************************
5650  037454  000004                  TST64:  SCOPE
5651  037456  012777  000007  143654          MOV     #7,@RHCS2               ;SETUP UNIT SEVEN
5652  037464  012777  177777  143640          MOV     #-1,@RHWC               ;FOR ONE WORD
5653  037472  012777  004100  143634          MOV     #RBUF,@RHBA             ;SRTUP BA
5654  037500  012737  000000  004100          MOV     #ZERO,RBUF              ;SETUP DATA
5655  037506  012777  125252  143634          MOV     #0AB,@RHTDB             ;SETUP TESTER DB
5656  037514  005701                          TST     R1                      ;IS IT AN 11 OR A 70
5657  037516  100403                          BMI     1$                      ;IT'S AN RH11
5658  037520  012777  000000  143632          MOV     #ZERO,@RHBAE            ;ZERO BAE
5659  037526  012777  000077  143574  1$:     MOV     #READ6,@RHCS1           ;TELL IT TO READ6
5660  037534  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
5661  037540  032777  000200  143562  18$:    BIT     #RDY,@RHCS1             ;IS RDY SET
5662  037546  001015                          BNE     2$                      ;BIT IS SET
5663  037550  005237  003446                  INC     BITCNT                  ;COUNT UP
5664  037554  001371                          BNE     18$                     ;NOT FINISHED COUNTING
5665  037556  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
5666  037562  032777  000200  143540  19$:    BIT     #RDY,@RHCS1             ;IS IT SET YET?
5667  037570  001004                          BNE     2$                      ;YES
5668  037572  005237  003446                  INC     BITCNT                  ;COUNT UP
5669  037576  001401                          BEQ     2$                      ;BIT IS NOT GOING TO SET
5670  037600  000770                          BR      19$
5671  037602                          2$:
5672  037602  017737  143522  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
5673  037610  017737  143516  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
5674  037616  017737  143512  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
5675  037624  005701                          TST     R1                      ;IS IT AN RH11
5676  037626  001406                          BEQ     87$                     ;NO IT'S A 70
5677  037630  005037  003416                  CLR     BAE                     ;CLEAR BAE
5678  037634  005037  003424                  CLR     CS3                     ;CLEAR CS3
5679  037640  000137  037660                  JMP     86$                     ;CONTINUE
5680  037644  017737  143510  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
5681  037652  017737  143504  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
5682  037660  017737  143454  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
5683  037666  017737  143450  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
5684  037674  017737  143444  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
5685  037702  017737  143442  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
5686  037710  017737  143422  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
5687  037716  017737  143426  001162          MOV     @RHTDB,$REGO                    ;GET DATA
```

```
5688  037724  032777  000200  143376          BIT     #RDY,@RHCS1             ;IS OR SET
5689  037732  001003                          BNE     3$                      ;YES RDY IS SET
5690  037734  104102                          ERROR   102                     ;READY DID NOT SET
5691  037736  004737  007224                  JSR     R7,WHYFO                ;ARE ANY ERRORS SET
5692  037742  023777  004100  143400  3$:     CMP     RBUF,@RHTDB             ;DID INFO GET WRITTEN OR READ
5693  037750  001407                          BEQ     4$                      ;INFO GOT LOADED
5694  037752  005737  004100                  TST     RBUF                    ;DOES RBUF = 0
5695  037756  001403                          BEQ     5$                      ;YES INFO DID NOT LOAD
5696  037760  104115                          ERROR   115                     ;ALL BITS DID NOT LOAD DURING
5697                                                                          ;AN READ6 OPERATION
5698  037762  000137  037770                  JMP     4$                      ;EXIT TEST
5699  037766  104107                  5$:     ERROR   107                     ;READ6 OPERATION DID NOT WORK
5700                                                                          ;NO BITS WHERE LOADED TO RBUF
5701  037770  004737  007224          4$:     JSR     R7,WHYFO                ;ANY ERRORS SET
5702  037774  105737  001103                  TSTB    $ERFLG                  ;ANY ERRORS ?
5703  040000  001402                          BEQ     6$                      ;NO,EXIT TEST
5704  040002  104146                          ERROR   146                     ;PRINT REGISTERS
5705  040004  104170                          ERROR   170
5706  040006  004737  006572          6$:     JSR     R7,CLEER                ;CLEAR ERRORS
5707  040012  004737  050202                  JSR     R7,ERRTST
5708                                  ;;**********************************************************************
5709                                  ;*TEST 65        RH OPERATIONAL READ TEST #2
5710                                          ;*THESE TESTS VERIFY ALL READ AND WRITE CODES
5711                                          ;*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
5712                                          ;*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
5713                                          ;*NO ERRORS SHOULD OCCUR
5714
5715                                  ;;**********************************************************************
5716  040016  000004                  TST65:  SCOPE
5717  040020  012777  000007  143312          MOV     #7,@RHCS2               ;SETUP UNIT SEVEN
5718  040026  012777  052525  143314          MOV     #AB,@RHTDB              ;SETUP INFORMATION
5719  040034  012777  001003  143312          MOV     #DMD!MCLK!SLKM,@RHMR1           ;SETUP DIAG. MODE
5720  040042  012777  177777  143262          MOV     #-1,@RHWC               ;FOR ONE WORD
5721  040050  005701                          TST     R1                      ;IS IT A 11 OR 70
5722  040052  100403                          BMI     1$                      ;IT'S AN 11
5723  040054  012777  000000  143276          MOV     #ZERO,@RHBAE            ;ZERO BAE
5724  040062  012777  004000  143244  1$:     MOV     #EVENAD,@RHBA           ;SETUP BA
5725  040070  012777  000073  143232          MOV     #READ2,@RHCS1           ;TELL IT TO READFROM
5726  040076  012777  001001  143250          MOV     #DMD!SLKM,@RHMR1                ;MANIPULATE CLOCK
5727  040104  005037  003446                  CLR     BITCNT                  ;CLEAR LOOP COUNTER
5728  040110  005237  003446          2$:     INC     BITCNT                  ;INCREMENT LOOP COUNTER
5729  040114  022737  000015  003446          CMP     #15,BITCNT              ;IS IT THIRD LOOP FOR 5USEC WAIT
5730  040122  001372                          BNE     2$                      ;NO LOOP AGAIN
5731  040124  012777  001003  143222          MOV     #DMD!MCLK!SLKM,@RHMR1           ;START CHANGING CLOCK
5732  040132  012777  001001  143214          MOV     #DMD!SLKM,@RHMR1                ;CHANGE CLOCK AGAIN
5733  040140  012777  001003  143206          MOV     #DMD!MCLK!SLKM,@RHMR1           ;CHANGE CLOCK AGAIN
5734  040146  012777  001001  143200          MOV     #DMD!SLKM,@RHMR1                ;CHANGE CLOCK AGAIN
5735  040154  012777  000000  143172          MOV     #ZERO,@RHMR1            ;GET OUT OF DIAG MODE
5736  040162  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
5737  040166  032777  000200  143134  18$:     BIT     #RDY,@RHCS1             ;IS RDY SET
5738  040174  001015                          BNE     7$                      ;BIT IS SET
5739  040176  005237  003446                  INC     BITCNT                  ;COUNT UP
5740  040202  001371                          BNE     18$                     ;NOT FINISHED COUNTING
5741  040204  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
5742  040210  032777  000200  143112  19$:     BIT     #RDY,@RHCS1             ;IS IT SET YET?
5743  040216  001004                          BNE     7$                      ;YES
```

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5744  040220  005237  003446                    INC     BITCNT                  ;COUNT UP
5745  040224  001401                            BEQ     7$                      ;BIT IS NOT GOING TO SET
5746  040226  000770                            BR      19$
5747  040230                            7$:
5748  040230  017737  143074  003420            MOV     @RHCS1,CS1              ;SAVE RHCS1
5749  040236  017737  143070  003444            MOV     @RHWC,WC                ;SAVE WORD COUNT
5750  040244  017737  143064  003414            MOV     @RHBA,BA                ;SAVE BUS ADDRESS
5751  040252  005701                            TST     R1                      ;IS IT AN RH11
5752  040254  001406                            BEQ     87$                     ;NO IT'S A 70
5753  040256  005037  003416                    CLR     BAE                     ;CLEAR BAE
5754  040262  005037  003424                    CLR     CS3                     ;CLEAR CS3
5755  040266  000137  040306                    JMP     86$                     ;CONTINUE
5756  040272  017737  143062  003416    87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
5757  040300  017737  143056  003424            MOV     @RHCS3,CS3              ;SAVE RHCS3
5758  040306  017737  143026  003422    86$:    MOV     @RHCS2,CS2              ;SAVE CS2
5759  040314  017737  143022  003432            MOV     @RHST,DS1               ;SAVE TESTER STATUS
5760  040322  017737  143016  003436            MOV     @RHER,ER1               ;SAVE ERROR REGISTER
5761  040330  017737  143014  003442            MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
5762  040336  017737  142774  003440            MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
5763  040344  017737  143000  001162            MOV     @RHTDB,$REG0                    ;GET DATA
5764  040352  032777  000200  142750            BIT     #RDY,@RHCS1             ;IS READY SET
5765  040360  001001                            BNE     8$                      ;YES,CONTINUE TEST
5766  040362  104102                            ERROR   102                     ;READY DID NOT SET
5767  040364  022777  177777  142740    8$:     CMP     #-1,@RHWC               ;DID WC INCREMENT
5768  040372  001001                            BNE     3$                      ;YES,CONT TEST
5769  040374  104143                            ERROR   143                     ;READFROM OPERATION DID NOT INC WC
5770  040376  022777  004002  142730    3$:     CMP     #ODDAD,@RHBA            ;DID BA INCREMENT
5771  040404  001401                            BEQ     4$                      ;YES CONT TEST
5772  040406  104144                            ERROR   144                     ;BA DID NOT INCREMENT AFTER AN READFROM OPERATIO
5773  040410  023777  004000  142732    4$:     CMP     EVENAD,@RHTDB           ;DID INFO READFROM TESTER
5774  040416  001401                            BEQ     5$                      ;YES,CONT
5775  040420  104145                            ERROR   145                     ;INFO DID NOT READFROM TESTER
5776  040422  004737  007224            5$:     JSR     R7,WHYFO                ;ARE ANY ERROR BITS SET
5777  040426  105737  001103                    TSTB    $ERFLG                  ;WAS THER AN ERROR
5778  040432  001402                            BEQ     6$                      ;NO EXIT TEST
5779  040434  104146                            ERROR   146                     ;THESE ARE THE CONTENTS OF ALL RH70 REG.
5780  040436  104170                            ERROR   170                     ;THIS IS TO COMMPLETE ERROR PRINTOUT
5781  040440  004737  006572            6$:     JSR     R7,CLEER                ;CLEER ERRORS IF ANY
5782  040444  004737  050202                    JSR     R7,ERRTST
5783                                    ;;**********************************************************************
5784                                    ;*TEST 66        WRITE OPERATIONAL TEST (NORMAL) #1
5785                                            ;*THESE TESTS VERIFY ALL READ AND WRITE CODES
5786                                            ;*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
5787                                            ;*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
5788                                            ;*NO ERRORS SHOULD OCCUR
5789
5790                                    ;;**********************************************************************
5791  040450  000004                    TST66:  SCOPE
5792  040452  012777  000007  142660            MOV     #7,@RHCS2               ;SETUP UNIT SEVEN
5793  040460  012777  177777  142644            MOV     #-1,@RHWC               ;FOR ONE WORD
5794  040466  012777  004100  142640            MOV     #RBUF,@RHBA             ;SRTUP BA
5795  040474  012737  125252  004100            MOV     #0AB,RBUF               ;SETUP DATA
5796  040502  012777  000000  142640            MOV     #ZERO,@RHTDB            ;SETUP TESTER DB
5797  040510  005701                            TST     R1                      ;IS IT AN 11 OR A 70
5798  040512  100403                            BMI     1$                      ;IT'S AN RH11
5799  040514  012777  000000  142636            MOV     #ZERO,@RHBAE            ;ZERO BAE
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5800  040522  012777  000061  142600  1$:     MOV     #WRITE0,@RHCS1          ;TELL IT TO WRITE0
5801  040530  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
5802  040534  032777  000200  142566  18$:    BIT     #RDY,@RHCS1            ;IS RDY SET
5803  040542  001015                          BNE     2$                      ;BIT IS SET
5804  040544  005237  003446                  INC     BITCNT                  ;COUNT UP
5805  040550  001371                          BNE     18$                     ;NOT FINISHED COUNTING
5806  040552  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
5807  040556  032777  000200  142544  19$:    BIT     #RDY,@RHCS1            ;IS IT SET YET?
5808  040564  001004                          BNE     2$                      ;YES
5809  040566  005237  003446                  INC     BITCNT                  ;COUNT UP
5810  040572  001401                          BEQ     2$                      ;BIT IS NOT GOING TO SET
5811  040574  000770                          BR      19$
5812  040576                          2$:
5813  040576  017737  142526  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
5814  040604  017737  142522  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
5815  040612  017737  142516  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
5816  040620  005701                          TST     R1                      ;IS IT AN RH11
5817  040622  001406                          BEQ     87$                     ;NO IT'S A 70
5818  040624  005037  003416                  CLR     BAE                     ;CLEAR BAE
5819  040630  005037  003424                  CLR     CS3                     ;CLEAR CS3
5820  040634  000137  040654                  JMP     86$                     ;CONTINUE
5821  040640  017737  142514  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
5822  040646  017737  142510  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
5823  040654  017737  142460  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
5824  040662  017737  142454  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
5825  040670  017737  142450  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
5826  040676  017737  142446  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
5827  040704  017737  142426  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
5828  040712  017737  142432  001162          MOV     @RHTDB,$REG0                    ;GET DATA
5829  040720  032777  000200  142402          BIT     #RDY,@RHCS1             ;IS OR SET
5830  040726  001003                          BNE     3$                      ;YES RDY IS SET
5831  040730  104102                          ERROR   102                     ;READY DID NOT SET
5832  040732  004737  007224                  JSR     R7,WHYF0                ;ARE ANY ERRORS SET
5833  040736  023777  004100  142404  3$:     CMP     RBUF,@RHTDB             ;DID INFO GET WRITTEN OR READ
5834  040744  001407                          BEQ     4$                      ;INFO GOT LOADED
5835  040746  005777  142376                  TST     @RHTDB                  ;DOES @RHTDB = 0
5836  040752  001403                          BEQ     5$                      ;YES INFO DID NOT LOAD
5837  040754  104151                          ERROR   151                     ;ALL BITS DID NOT LOAD DURING
5838                                                                          ;AN WRITE0 OPERATION
5839  040756  000137  040764                  JMP     4$                      ;EXIT TEST
5840  040762  104152                  5$:     ERROR   152                     ;WRITE0 OPERATION DID NOT WORK
5841                                                                          ;NO BITS WHERE LOADED TO @RHTDB
5842  040764  004737  007224          4$:     JSR     R7,WHYF0                ;ANY ERRORS SET
5843  040770  105737  001103                  TSTB    $ERFLG                  ;ANY ERRORS ?
5844  040774  001402                          BEQ     6$                      ;NO,EXIT TEST
5845  040776  104146                          ERROR   146                     ;PRINT REGISTERS
5846  041000  104170                          ERROR   170
5847  041002  004737  006572          6$:     JSR     R7,CLEER                ;CLEAR ERRORS
5848  041006  004737  050202                  JSR     R7,ERRTST
5849                                  ;;**********************************************************************
5850                                  ;*TEST 67        RH OPERATIONAL WRITE TEST #3
5851                                          ;*THESE TESTS VERIFY ALL READ AND WRITE CODES
5852                                          ;*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
5853                                          ;*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
5854                                          ;*NO ERRORS SHOULD OCCUR
5855
```

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5856                                        ;;*****************************************************************
5857  041012  000004                        TST67:  SCOPE
5858  041014  012777  000007  142316                MOV     #7,@RHCS2               ;SETUP UNIT SEVEN
5859  041022  012737  125252  004000                MOV     #0AB,EVENAD             ;SETUP INFORMATION
5860  041030  012777  003003  142316                MOV     #DMD!MCLK!SLKM!ISLK,@RHMR1              ;SETUP DIAG. MODE
5861  041036  012777  177777  142266                MOV     #-1,@RHWC               ;FOR ONE WORD
5862  041044  005701                                TST     R1                      ;IS IT A 11 OR 70
5863  041046  100403                                BMI     1$                      ;IT'S AN 11
5864  041050  012777  000000  142302                MOV     #ZERO,@RHBAE            ;ZERO BAE
5865  041056  012777  004000  142250  1$:           MOV     #EVENAD,@RHBA           ;SETUP BA
5866  041064  012777  000065  142236                MOV     #WRITE4,@RHCS1          ;TELL IT TO WRITETO
5867  041072  012777  003001  142254                MOV     #DMD!SLKM!ISLK,@RHMR1           ;MANIPULATE CLOCK
5868  041100  005037  003446                        CLR     BITCNT                  ;CLEAR LOOP COUNTER
5869  041104  005237  003446          2$:           INC     BITCNT                  ;INCREMENT LOOP COUNTER
5870  041110  022737  000015  003446                CMP     #15,BITCNT              ;IS IT THIRD LOOP FOR 5USEC WAIT
5871  041116  001372                                BNE     2$                      ;NO LOOP AGAIN
5872  041120  012777  003003  142226                MOV     #DMD!MCLK!SLKM!ISLK,@RHMR1              ;START CHANGING CLOCK
5873  041126  012777  003001  142220                MOV     #DMD!SLKM!ISLK,@RHMR1           ;CHANGE CLOCK AGAIN
5874  041134  012777  003003  142212                MOV     #DMD!MCLK!SLKM!ISLK,@RHMR1              ;CHANGE CLOCK AGAIN
5875  041142  012777  003001  142204                MOV     #DMD!SLKM!ISLK,@RHMR1           ;CHANGE CLOCK AGAIN
5876  041150  012777  000000  142176                MOV     #ZERO,@RHMR1            ;GET OUT OF DIAG MODE
5877  041156  005037  003446                        CLR     BITCNT                  ;CLEAR BIT COUNTER
5878  041162  032777  000200  142140  18$:          BIT     #RDY,@RHCS1             ;IS RDY SET
5879  041170  001015                                BNE     7$                      ;BIT IS SET
5880  041172  005237  003446                        INC     BITCNT                  ;COUNT UP
5881  041176  001371                                BNE     18$                     ;NOT FINISHED COUNTING
5882  041200  005037  003446                        CLR     BITCNT                  ;GET READY TO DO IT AGAIN
5883  041204  032777  000200  142116  19$:          BIT     #RDY,@RHCS1             ;IS IT SET YET?
5884  041212  001004                                BNE     7$                      ;YES
5885  041214  005237  003446                        INC     BITCNT                  ;COUNT UP
5886  041220  001401                                BEQ     7$                      ;BIT IS NOT GOING TO SET
5887  041222  000770                                BR      19$
5888  041224                        7$:
5889  041224  017737  142100  003420                MOV     @RHCS1,CS1              ;SAVE RHCS1
5890  041232  017737  142074  003444                MOV     @RHWC,WC                ;SAVE WORD COUNT
5891  041240  017737  142070  003414                MOV     @RHBA,BA                ;SAVE BUS ADDRESS
5892  041246  005701                                TST     R1                      ;IS IT AN RH11
5893  041250  001406                                BEQ     87$                     ;NO IT'S A 70
5894  041252  005037  003416                        CLR     BAE                     ;CLEAR BAE
5895  041256  005037  003424                        CLR     CS3                     ;CLEAR CS3
5896  041262  000137  041302                        JMP     86$                     ;CONTINUE
5897  041266  017737  142066  003416  87$:          MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
5898  041274  017737  142062  003424                MOV     @RHCS3,CS3              ;SAVE RHCS3
5899  041302  017737  142032  003422  86$:          MOV     @RHCS2,CS2              ;SAVE CS2
5900  041310  017737  142026  003432                MOV     @RHST,DS1               ;SAVE TESTER STATUS
5901  041316  017737  142022  003436                MOV     @RHER,ER1               ;SAVE ERROR REGISTER
5902  041324  017737  142020  003442                MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
5903  041332  017737  142000  003440                MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
5904  041340  017737  142004  001162                MOV     @RHTDB,$REG0                    ;GET DATA
5905  041346  032777  000200  141754                BIT     #RDY,@RHCS1             ;IS READY SET
5906  041354  001001                                BNE     8$                      ;YES,CONTINUE TEST
5907  041356  104102                                ERROR   102                     ;READY DID NOT SET
5908  041360  022777  177777  141744  8$:           CMP     #-1,@RHWC               ;DID WC INCREMENT
5909  041366  001001                                BNE     3$                      ;YES,CONT TEST
5910  041370  104140                                ERROR   140                     ;WRITETO OPERATION DID NOT INC WC
5911  041372  022777  004002  141734  3$:           CMP     #ODDAD,@RHBA            ;DID BA INCREMENT
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5912  041400  001401                          BEQ     4$                      ;YES CONT TEST
5913  041402  104141                          ERROR   141                     ;BA DID NOT INCREMENT AFTER AN WRITETO OPERATION
5914  041404  023777  004000  141736  4$:     CMP     EVENAD,@RHTDB           ;DID INFO WRITETO TESTER
5915  041412  001401                          BEQ     5$                      ;YES,CONT
5916  041414  104142                          ERROR   142                     ;INFO DID NOT WRITETO TESTER
5917  041416  004737  007224          5$:     JSR     R7,WHYFO                ;ARE ANY ERROR BITS SET
5918  041422  105737  001103                  TSTB    $ERFLG                  ;WAS THER AN ERROR
5919  041426  001402                          BEQ     6$                      ;NO EXIT TEST
5920  041430  104146                          ERROR   146                     ;THESE ARE THE CONTENTS OF ALL RH70 REG.
5921  041432  104170                          ERROR   170                     ;THIS IS TO COMMPLETE ERROR PRINTOUT
5922  041434  004737  006572          6$:     JSR     R7,CLEER                ;CLEER ERRORS IF ANY
5923  041440  004737  050202                  JSR     R7,ERRTST
5924                                  ;;**********************************************************************
5925                                  ;*TEST 70        WRITE OPERATIONAL TEST (NORMAL) #2
5926                                          ;*THESE TESTS VERIFY ALL READ AND WRITE CODES
5927                                          ;*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
5928                                          ;*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
5929                                          ;*NO ERRORS SHOULD OCCUR
5930
5931                                  ;;**********************************************************************
5932  041444  000004                  TST70:  SCOPE
5933  041446  012777  000007  141664          MOV     #7,@RHCS2               ;SETUP UNIT SEVEN
5934  041454  012777  177777  141650          MOV     #-1,@RHWC               ;FOR ONE WORD
5935  041462  012777  004100  141644          MOV     #RBUF,@RHBA             ;SRTUP BA
5936  041470  012737  125252  004100          MOV     #0AB,RBUF               ;SETUP DATA
5937  041476  012777  000000  141644          MOV     #ZERO,@RHTDB            ;SETUP TESTER DB
5938  041504  005701                          TST     R1                      ;IS IT AN 11 OR A 70
5939  041506  100403                          BMI     1$                      ;IT'S AN RH11
5940  041510  012777  000000  141642          MOV     #ZERO,@RHBAE            ;ZERO BAE
5941  041516  012777  000063  141604  1$:     MOV     #WRITE2,@RHCS1          ;TELL IT TO WRITE2
5942  041524  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
5943  041530  032777  000200  141572  18$:    BIT     #RDY,@RHCS1             ;IS RDY SET
5944  041536  001015                          BNE     2$                      ;BIT IS SET
5945  041540  005237  003446                  INC     BITCNT                  ;COUNT UP
5946  041544  001371                          BNE     18$                     ;NOT FINISHED COUNTING
5947  041546  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
5948  041552  032777  000200  141550  19$:    BIT     #RDY,@RHCS1             ;IS IT SET YET?
5949  041560  001004                          BNE     2$                      ;YES
5950  041562  005237  003446                  INC     BITCNT                  ;COUNT UP
5951  041566  001401                          BEQ     2$                      ;BIT IS NOT GOING TO SET
5952  041570  000770                          BR      19$
5953  041572                          2$:
5954  041572  017737  141532  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
5955  041600  017737  141526  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
5956  041606  017737  141522  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
5957  041614  005701                          TST     R1                      ;IS IT AN RH11
5958  041616  001406                          BEQ     87$                     ;NO IT'S A 70
5959  041620  005037  003416                  CLR     BAE                     ;CLEAR BAE
5960  041624  005037  003424                  CLR     CS3                     ;CLEAR CS3
5961  041630  000137  041650                  JMP     86$                     ;CONTINUE
5962  041634  017737  141520  003416  87$:     MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
5963  041642  017737  141514  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
5964  041650  017737  141464  003422  86$:     MOV     @RHCS2,CS2              ;SAVE CS2
5965  041656  017737  141460  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
5966  041664  017737  141454  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
5967  041672  017737  141452  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
```

```
5968  041700  017737  141432  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
5969  041706  017737  141436  001162          MOV     @RHTDB,$REGO                    ;GET DATA
5970  041714  032777  000200  141406          BIT     #RDY,@RHCS1             ;IS OR SET
5971  041722  001003                          BNE     3$                      ;YES RDY IS SET
5972  041724  104102                          ERROR   102                     ;READY DID NOT SET
5973  041726  004737  007224                  JSR     R7,WHYFO                ;ARE ANY ERRORS SET
5974  041732  023777  004100  141410  3$:     CMP     RBUF,@RHTDB             ;DID INFO GET WRITTEN OR READ
5975  041740  001407                          BEQ     4$                      ;INFO GOT LOADED
5976  041742  005777  141402                  TST     @RHTDB                  ;DOES @RHTDB = 0
5977  041746  001403                          BEQ     5$                      ;YES INFO DID NOT LOAD
5978  041750  104151                          ERROR   151                     ;ALL BITS DID NOT LOAD DURING
5979                                                                          ;AN WRITE2 OPERATION
5980  041752  000137  041760                  JMP     4$                      ;EXIT TEST
5981  041756  104152                  5$:     ERROR   152                     ;WRITE2 OPERATION DID NOT WORK
5982                                                                          ;NO BITS WHERE LOADED TO @RHTDB
5983  041760  004737  007224          4$:     JSR     R7,WHYFO                ;ANY ERRORS SET
5984  041764  105737  001103                  TSTB    $ERFLG                  ;ANY ERRORS ?
5985  041770  001402                          BEQ     6$                      ;NO,EXIT TEST
5986  041772  104146                          ERROR   146                     ;PRINT REGISTERS
5987  041774  104170                          ERROR   170
5988  041776  004737  006572          6$:     JSR     R7,CLEER                ;CLEAR ERRORS
5989  042002  004737  050202                  JSR     R7,ERRTST
5990                                  ;;**********************************************************************
5991                                  ;*TEST 71        RH OPERATIONAL READ TEST #3
5992                                          ;*THESE TESTS VERIFY ALL READ AND WRITE CODES
5993                                          ;*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
5994                                          ;*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
5995                                          ;*NO ERRORS SHOULD OCCUR
5996
5997                                  ;;**********************************************************************
5998  042006  000004                  TST71:  SCOPE
5999  042010  012777  000007  141322          MOV     #7,@RHCS2               ;SETUP UNIT SEVEN
6000  042016  012777  052525  141324          MOV     #AB,@RHTDB              ;SETUP INFORMATION
6001  042024  012777  003003  141322          MOV     #DMD!SLKM!ISLK!MCLK,@RHMR1              ;SETUP DIAG. MODE
6002  042032  012777  177777  141272          MOV     #-1,@RHWC               ;FOR ONE WORD
6003  042040  005701                          TST     R1                      ;IS IT A 11 OR 70
6004  042042  100403                          BMI     1$                      ;IT'S AN 11
6005  042044  012777  000000  141306          MOV     #ZERO,@RHBAE            ;ZERO BAE
6006  042052  012777  004000  141254  1$:     MOV     #EVENAD,@RHBA           ;SETUP BA
6007  042060  012777  000075  141242          MOV     #READ4,@RHCS1           ;TELL IT TO READFROM
6008  042066  012777  003001  141260          MOV     #DMD!SLKM!ISLK,@RHMR1           ;MANIPULATE CLOCK
6009  042074  005037  003446                  CLR     BITCNT                  ;CLEAR LOOP COUNTER
6010  042100  005237  003446          2$:     INC     BITCNT                  ;INCREMENT LOOP COUNTER
6011  042104  022737  000015  003446          CMP     #15,BITCNT              ;IS IT THIRD LOOP FOR 5USEC WAIT
6012  042112  001372                          BNE     2$                      ;NO LOOP AGAIN
6013  042114  012777  003003  141232          MOV     #DMD!SLKM!ISLK!MCLK,@RHMR1              ;START CHANGING CLOCK
6014  042122  012777  003001  141224          MOV     #DMD!SLKM!ISLK,@RHMR1           ;CHANGE CLOCK AGAIN
6015  042130  012777  003003  141216          MOV     #DMD!SLKM!ISLK!MCLK,@RHMR1              ;CHANGE CLOCK AGAIN
6016  042136  012777  003001  141210          MOV     #DMD!SLKM!ISLK,@RHMR1           ;CHANGE CLOCK AGAIN
6017  042144  012777  000000  141202          MOV     #ZERO,@RHMR1            ;GET OUT OF DIAG MODE
6018  042152  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
6019  042156  032777  000200  141144  18$:     BIT     #RDY,@RHCS1             ;IS RDY SET
6020  042164  001015                          BNE     7$                      ;BIT IS SET
6021  042166  005237  003446                  INC     BITCNT                  ;COUNT UP
6022  042172  001371                          BNE     18$                     ;NOT FINISHED COUNTING
6023  042174  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
```

```
6024  042200  032777  000200  141122  19$:    BIT     #RDY,@RHCS1             ;IS IT SET YET?
6025  042206  001004                          BNE     7$                      ;YES
6026  042210  005237  003446                  INC     BITCNT                  ;COUNT UP
6027  042214  001401                          BEQ     7$                      ;BIT IS NOT GOING TO SET
6028  042216  000770                          BR      19$
6029  042220                          7$:
6030  042220  017737  141104  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
6031  042226  017737  141100  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
6032  042234  017737  141074  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
6033  042242  005701                          TST     R1                      ;IS IT AN RH11
6034  042244  001406                          BEQ     87$                     ;NO IT'S A 70
6035  042246  005037  003416                  CLR     BAE                     ;CLEAR BAE
6036  042252  005037  003424                  CLR     CS3                     ;CLEAR CS3
6037  042256  000137  042276                  JMP     86$                     ;CONTINUE
6038  042262  017737  141072  003416  87$:     MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
6039  042270  017737  141066  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
6040  042276  017737  141036  003422  86$:     MOV     @RHCS2,CS2              ;SAVE CS2
6041  042304  017737  141032  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
6042  042312  017737  141026  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
6043  042320  017737  141024  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
6044  042326  017737  141004  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
6045  042334  017737  141010  001162          MOV     @RHTDB,$REG0                    ;GET DATA
6046  042342  032777  000200  140760          BIT     #RDY,@RHCS1             ;IS READY SET
6047  042350  001001                          BNE     8$                      ;YES,CONTINUE TEST
6048  042352  104102                          ERROR   102                     ;READY DID NOT SET
6049  042354  022777  177777  140750  8$:     CMP     #-1,@RHWC               ;DID WC INCREMENT
6050  042362  001001                          BNE     3$                      ;YES,CONT TEST
6051  042364  104143                          ERROR   143                     ;READFROM OPERATION DID NOT INC WC
6052  042366  022777  004002  140740  3$:     CMP     #ODDAD,@RHBA            ;DID BA INCREMENT
6053  042374  001401                          BEQ     4$                      ;YES CONT TEST
6054  042376  104144                          ERROR   144                     ;BA DID NOT INCREMENT AFTER AN READFROM OPERATIO
6055  042400  023777  004000  140742  4$:     CMP     EVENAD,@RHTDB           ;DID INFO READFROM TESTER
6056  042406  001401                          BEQ     5$                      ;YES,CONT
6057  042410  104145                          ERROR   145                     ;INFO DID NOT READFROM TESTER
6058  042412  004737  007224          5$:     JSR     R7,WHYFO                ;ARE ANY ERROR BITS SET
6059  042416  105737  001103                  TSTB    $ERFLG                  ;WAS THER AN ERROR
6060  042422  001402                          BEQ     6$                      ;NO EXIT TEST
6061  042424  104146                          ERROR   146                     ;THESE ARE THE CONTENTS OF ALL RH70 REG.
6062  042426  104170                          ERROR   170                     ;THIS IS TO COMMPLETE ERROR PRINTOUT
6063  042430  004737  006572          6$:     JSR     R7,CLEER                ;CLEER ERRORS IF ANY
6064  042434  004737  050202                  JSR     R7,ERRTST
```

```
                        ;;*****************************************************************
                        ;*TEST 72        WRITE OPERATIONAL TEST (NORMAL) #3
                                ;*THESE TESTS VERIFY ALL READ AND WRITE CODES
                                ;*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
                                ;*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
                                ;*NO ERRORS SHOULD OCCUR

                        ;;*****************************************************************
042440  000004           TS.72:  SCOPE
042442  012777  000007  140670        MOV     #7,@RHCS2               ;SETUP UNIT SEVEN
042450  012777  177777  140654        MOV     #-1,@RHWC               ;FOR ONE WORD
042456  012777  004100  140650        MOV     #RBUF,@RHBA             ;SRTUP BA
042464  012737  125252  004100        MOV     #0AB,RBUF               ;SETUP DATA
042472  012777  000000  140650        MOV     #ZERO,@RHTDB            ;SETUP TESTER DB
042500  005701                        TST     R1                      ;IS IT AN 11 OR A 70
042502  100403                        BMI     1$                      ;IT'S AN RH11
042504  012777  000000  140646        MOV     #ZERO,@RHBAE            ;ZERO BAE
042512  012777  000065  140610  1$:   MOV     #WRITE4,@RHCS1          ;TELL IT TO WRITE4
042520  005037  003446                CLR     BITCNT                  ;CLEAR BIT COUNTER
042524  032777  000200  140576  18$:  BIT     #RDY,@RHCS1             ;IS RDY SET
042532  001015                        BNE     2$                      ;BIT IS SET
042534  005237  003446                INC     BITCNT                  ;COUNT UP
042540  001371                        BNE     18$                     ;NOT FINISHED COUNTING
042542  005037  003446                CLR     BITCNT                  ;GET READY TO DO IT AGAIN
042546  032777  000200  140554  19$:  BIT     #RDY,@RHCS1             ;IS IT SET YET?
042554  001004                        BNE     2$                      ;YES
042556  005237  003446                INC     BITCNT                  ;COUNT UP
042562  001401                        BEQ     2$                      ;BIT IS NOT GOING TO SET
042564  000770                        BR      19$
042566                          2$:
042566  017737  140536  003420        MOV     @RHCS1,CS1              ;SAVE RHCS1
042574  017737  140532  003444        MOV     @RHWC,WC                ;SAVE WORD COUNT
042602  017737  140526  003414        MOV     @RHBA,BA                ;SAVE BUS ADDRESS
042610  005701                        TST     R1                      ;IS IT AN RH11
042612  001406                        BEQ     87$                     ;NO IT'S A 70
042614  005037  003416                CLR     BAE                     ;CLEAR BAE
042620  005037  003424                CLR     CS3                     ;CLEAR CS3
042624  000137  042644                JMP     86$                     ;CONTINUE
042630  017737  140524  003416  87$:  MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
042636  017737  140520  003424        MOV     @RHCS3,CS3              ;SAVE RHCS3
042644  017737  140470  003422  86$:  MOV     @RHCS2,CS2              ;SAVE CS2
042652  017737  140464  003432        MOV     @RHST,DS1               ;SAVE TESTER STATUS
042660  017737  140460  003436        MOV     @RHER,ER1               ;SAVE ERROR REGISTER
042666  017737  140456  003442        MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
042674  017737  140436  003440        MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
042702  017737  140442  001162        MOV     @RHTDB,$REG0                    ;GET DATA
042710  032777  000200  140412        BIT     #RDY,@RHCS1             ;IS OR SET
042716  001003                        BNE     3$                      ;YES RDY IS SET
042720  104102                        ERROR   102                     ;READY DID NOT SET
042722  004737  007224                JSR     R7,WHYFO                ;ARE ANY ERRORS SET
042726  023777  004100  140414  3$:   CMP     RBUF,@RHTDB             ;DID INFO GET WRITTEN OR READ
042734  001407                        BEQ     4$                      ;INFO GOT LOADED
042736  005777  140406                TST     @RHTDB                  ;DOES @RHTDB = 0
042742  001403                        BEQ     5$                      ;YES INFO DID NOT LOAD
042744  104151                        ERROR   151                     ;ALL BITS DID NOT LOAD DURING
                                                                        ;AN WRITE4 OPERATION
```

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6121  042746  000137  042754                    JMP     4$                      ;EXIT TEST
6122  042752  104152                    5$:     ERROR   152                     ;WRITE4 OPERATION DID NOT WORK
6123                                              ;NO BITS WHERE LOADED TO @RHTDB
6124  042754  004737  007224            4$:     JSR     R7,WHYFO                ;ANY ERRORS SET
6125  042760  105737  001103                    TSTB    $ERFLG                  ;ANY ERRORS ?
6126  042764  001402                            BEQ     6$                      ;NO,EXIT TEST
6127  042766  104146                            ERROR   146                     ;PRINT REGISTERS
6128  042770  104170                            ERROR   170
6129  042772  004737  006572            6$:     JSR     R7,CLEER                ;CLEAR ERRORS
6130  042776  004737  050202                    JSR     R7,ERRTST
6131                                            ;;*****************************************************************
6132                                            ;*TEST 73        RH OPERATIONAL WRITE TEST #4
6133                                            ;*THESE TESTS VERIFY ALL READ AND WRITE CODES
6134                                            ;*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
6135                                            ;*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
6136                                            ;*NO ERRORS SHOULD OCCUR
6137
6138                                            ;;*****************************************************************
6139  043002  000004                    TST73:  SCOPE
6140  043004  012777  000007  140326            MOV     #7,@RHCS2               ;SETUP UNIT SEVEN
6141  043012  012737  125252  004000            MOV     #0AB,EVENAD             ;SETUP INFORMATION
6142  043020  012777  000003  140326            MOV     #DMD!MCLK,@RHMR1                ;SETUP DIAG. MODE
6143  043026  012777  177777  140276            MOV     #-1,@RHWC               ;FOR ONE WORD
6144  043034  005701                            TST     R1                      ;IS IT A 11 OR 70
6145  043036  100403                            BMI     1$                      ;IT'S AN 11
6146  043040  012777  000000  140312            MOV     #ZERO,@RHBAE            ;ZERO BAE
6147  043046  012777  004000  140260    1$:     MOV     #EVENAD,@RHBA           ;SETUP BA
6148  043054  012777  000067  140246            MOV     #WRITE6,@RHCS1          ;TELL IT TO WRITETO
6149  043062  012777  000001  140264            MOV     #DMD,@RHMR1             ;MANIPULATE CLOCK
6150  043070  005037  003446                    CLR     BITCNT                  ;CLEAR LOOP COUNTER
6151  043074  005237  003446            2$:     INC     BITCNT                  ;INCREMENT LOOP COUNTER
6152  043100  022737  000015  003446            CMP     #15,BITCNT              ;IS IT THIRD LOOP FOR 5USEC WAIT
6153  043106  001372                            BNE     2$                      ;NO LOOP AGAIN
6154  043110  012777  000003  140236            MOV     #DMD!MCLK,@RHMR1                ;START CHANGING CLOCK
6155  043116  012777  000001  140230            MOV     #DMD,@RHMR1             ;CHANGE CLOCK AGAIN
6156  043124  012777  000003  140222            MOV     #DMD!MCLK,@RHMR1                ;CHANGE CLOCK AGAIN
6157  043132  012777  000001  140214            MOV     #DMD,@RHMR1             ;CHANGE CLOCK AGAIN
6158  043140  012777  000000  140206            MOV     #ZERO,@RHMR1            ;GET OUT OF DIAG MODE
6159  043146  005037  003446                    CLR     BITCNT                  ;CLEAR BIT COUNTER
6160  043152  032777  000200  140150  18$:     BIT     #RDY,@RHCS1             ;IS RDY SET
6161  043160  001015                            BNE     7$                      ;BIT IS SET
6162  043162  005237  003446                    INC     BITCNT                  ;COUNT UP
6163  043166  001371                            BNE     18$                     ;NOT FINISHED COUNTING
6164  043170  005037  003446                    CLR     BITCNT                  ;GET READY TO DO IT AGAIN
6165  043174  032777  000200  140126  19$:     BIT     #RDY,@RHCS1             ;IS IT SET YET?
6166  043202  001004                            BNE     7$                      ;YES
6167  043204  005237  003446                    INC     BITCNT                  ;COUNT UP
6168  043210  001401                            BEQ     7$                      ;BIT IS NOT GOING TO SET
6169  043212  000770                            BR      19$
6170  043214                            7$:
6171  043214  017737  140110  003420            MOV     @RHCS1,CS1              ;SAVE RHCS1
6172  043222  017737  140104  003444            MOV     @RHWC,WC                ;SAVE WORD COUNT
6173  043230  017737  140100  003414            MOV     @RHBA,BA                ;SAVE BUS ADDRESS
6174  043236  005701                            TST     R1                      ;IS IT AN RH11
6175  043240  001406                            BEQ     87$                     ;NO IT'S A 70
6176  043242  005037  003416                    CLR     BAE                     ;CLEAR BAE
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6177  043246  005037  003424                    CLR     CS3                     ;CLEAR CS3
6178  043252  000137  043272                    JMP     86$                     ;CONTINUE
6179  043256  017737  140076  003416  87$:      MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
6180  043264  017737  140072  003424            MOV     @RHCS3,CS3              ;SAVE RHCS3
6181  043272  017737  140042  003422  86$:      MOV     @RHCS2,CS2              ;SAVE CS2
6182  043300  017737  140036  003432            MOV     @RHST,DS1               ;SAVE TESTER STATUS
6183  043306  017737  140032  003436            MOV     @RHER,ER1               ;SAVE ERROR REGISTER
6184  043314  017737  140030  003442            MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
6185  043322  017737  140010  003440            MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
6186  043330  017737  140014  001162            MOV     @RHTDB,$REG0                    ;GET DATA
6187  043336  032777  000200  137764            BIT     #RDY,@RHCS1             ;IS READY SET
6188  043344  001001                            BNE     8$                      ;YES,CONTINUE TEST
6189  043346  104102                            ERROR   102                     ;READY DID NOT SET
6190  043350  022777  177777  137754  8$:       CMP     #-1,@RHWC               ;DID WC INCREMENT
6191  043356  001001                            BNE     3$                      ;YES,CONT TEST
6192  043360  104140                            ERROR   140                     ;WRITETO OPERATION DID NOT INC WC
6193  043362  022777  003776  137744  3$:       CMP     #EVENAD-2,@RHBA         ;DID BA INCREMENT
6194  043370  001401                            BEQ     4$                      ;YES CONT TEST
6195  043372  104141                            ERROR   141                     ;BA DID NOT INCREMENT AFTER AN WRITETO OPERATION
6196  043374  023777  004000  137746  4$:       CMP     EVENAD,@RHTDB           ;DID INFO WRITETO TESTER
6197  043402  001401                            BEQ     5$                      ;YES,CONT
6198  043404  104142                            ERROR   142                     ;INFO DID NOT WRITETO TESTER
6199  043406  004737  007224            5$:     JSR     R7,WHYFO                ;ARE ANY ERROR BITS SET
6200  043412  105737  001103                    TSTB    $ERFLG                  ;WAS THER AN ERROR
6201  043416  001402                            BEQ     6$                      ;NO EXIT TEST
6202  043420  104146                            ERROR   146                     ;THESE ARE THE CONTENTS OF ALL RH70 REG.
6203  043422  104170                            ERROR   170                     ;THIS IS TO COMMPLETE ERROR PRINTOUT
6204  043424  004737  006572            6$:     JSR     R7,CLEER                ;CLEER ERRORS IF ANY
6205  043430  004737  050202                    JSR     R7,ERRTST
6206                                    ;;**************************************************************************
6207                                    ;*TEST 74        WRITE OPERATIONAL TEST (NORMAL) #4
6208                                            ;*THESE TESTS VERIFY ALL READ AND WRITE CODES
6209                                            ;*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
6210                                            ;*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
6211                                            ;*NO ERRORS SHOULD OCCUR
6212
6213                                    ;;**************************************************************************
6214  043434  000004            TST74:  SCOPE
6215  043436  012777  000007  137674            MOV     #7,@RHCS2               ;SETUP UNIT SEVEN
6216  043444  012777  177777  137660            MOV     #-1,@RHWC               ;FOR ONE WORD
6217  043452  012777  004100  137654            MOV     #RBUF,@RHBA             ;SRTUP BA
6218  043460  012737  125252  004100            MOV     #0AB,RBUF               ;SETUP DATA
6219  043466  012777  000000  137654            MOV     #ZERO,@RHTDB            ;SETUP TESTER DB
6220  043474  005701                            TST     R1                      ;IS IT AN 11 OR A 70
6221  043476  100403                            BMI     1$                      ;IT'S AN RH11
6222  043500  012777  000000  137652            MOV     #ZERO,@RHBAE            ;ZERO BAE
6223  043506  012777  000067  137614  1$:       MOV     #WRITE6,@RHCS1          ;TELL IT TO WRITE6
6224  043514  005037  003446                    CLR     BITCNT                  ;CLEAR BIT COUNTER
6225  043520  032777  000200  137602  18$:      BIT     #RDY,@RHCS1             ;IS RDY SET
6226  043526  001015                            BNE     2$                      ;BIT IS SET
6227  043530  005237  003446                    INC     BITCNT                  ;COUNT UP
6228  043534  001371                            BNE     18$                     ;NOT FINISHED COUNTING
6229  043536  005037  003446                    CLR     BITCNT                  ;GET READY TO DO IT AGAIN
6230  043542  032777  000200  137560  19$:      BIT     #RDY,@RHCS1             ;IS IT SET YET?
6231  043550  001004                            BNE     2$                      ;YES
6232  043552  005237  003446                    INC     BITCNT                  ;COUNT UP
```

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6233  043556  001401                        BEQ     2$                      ;BIT IS NOT GOING TO SET
6234  043560  000770                        BR      19$
6235  043562                          2$:
6236  043562  017737  137542  003420        MOV     @RHCS1,CS1              ;SAVE RHCS1
6237  043570  017737  137536  003444        MOV     @RHWC,WC                ;SAVE WORD COUNT
6238  043576  017737  137532  003414        MOV     @RHBA,BA                ;SAVE BUS ADDRESS
6239  043604  005701                        TST     R1                      ;IS IT AN RH11
6240  043606  001406                        BEQ     87$                     ;NO IT'S A 70
6241  043610  005037  003416                CLR     BAE                     ;CLEAR BAE
6242  043614  005037  003424                CLR     CS3                     ;CLEAR CS3
6243  043620  000137  043640                JMP     86$                     ;CONTINUE
6244  043624  017737  137530  003416  87$:  MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
6245  043632  017737  137524  003424        MOV     @RHCS3,CS3              ;SAVE RHCS3
6246  043640  017737  137474  003422  86$:  MOV     @RHCS2,CS2              ;SAVE CS2
6247  043646  017737  137470  003432        MOV     @RHST,DS1               ;SAVE TESTER STATUS
6248  043654  017737  137464  003436        MOV     @RHER,ER1               ;SAVE ERROR REGISTER
6249  043662  017737  137462  003442        MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
6250  043670  017737  137442  003440        MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
6251  043676  017737  137446  001162        MOV     @RHTDB,$REG0                    ;GET DATA
6252  043704  032777  000200  137416        BIT     #RDY,@RHCS1             ;IS OR SET
6253  043712  001003                        BNE     3$                      ;YES RDY IS SET
6254  043714  104102                        ERROR   102                     ;READY DID NOT SET
6255  043716  004737  007224                JSR     R7,WHYFO                ;ARE ANY ERRORS SET
6256  043722  023777  004100  137420  3$:   CMP     RBUF,@RHTDB             ;DID INFO GET WRITTEN OR READ
6257  043730  001407                        BEQ     4$                      ;INFO GOT LOADED
6258  043732  005777  137412                TST     @RHTDB                  ;DOES @RHTDB = 0
6259  043736  001403                        BEQ     5$                      ;YES INFO DID NOT LOAD
6260  043740  104117                        ERROR   117                     ;ALL BITS DID NOT LOAD DURING
6261                                                                        ;AN WRITE6 OPERATION
6262  043742  000137  043750                JMP     4$                      ;EXIT TEST
6263  043746  104101                  5$:   ERROR   101                     ;WRITE6 OPERATION DID NOT WORK
6264                                                                        ;NO BITS WHERE LOADED TO @RHTDB
6265  043750  004737  007224            4$: JSR     R7,WHYFO                ;ANY ERRORS SET
6266  043754  105737  001103                TSTB    $ERFLG                  ;ANY ERRORS ?
6267  043760  001402                        BEQ     6$                      ;NO,EXIT TEST
6268  043762  104146                        ERROR   146                     ;PRINT REGISTERS
6269  043764  104170                        ERROR   170
6270  043766  004737  006572            6$: JSR     R7,CLEER                ;CLEAR ERRORS
6271  043772  004737  050202                JSR     R7,ERRTST
6272                                  ;;*****************************************************************
6273                                  ;*TEST 75        RH OPERATIONAL READ TEST #4
6274                                          ;*THESE TESTS VERIFY ALL READ AND WRITE CODES
6275                                          ;*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
6276                                          ;*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
6277                                          ;*NO ERRORS SHOULD OCCUR
6278
6279                                  ;;*****************************************************************
6280  043776  000004                  TST75:  SCOPE
6281  044000  012777  000007  137332        MOV     #7,@RHCS2               ;SETUP UNIT SEVEN
6282  044006  012777  052525  137334        MOV     #AB,@RHTDB              ;SETUP INFORMATION
6283  044014  012777  000003  137332        MOV     #DMD!MCLK,@RHMR1                ;SETUP DIAG. MODE
6284  044022  012777  177777  137302        MOV     #-1,@RHWC               ;FOR ONE WORD
6285  044030  005701                        TST     R1                      ;IS IT A 11 OR 70
6286  044032  100403                        BMI     1$                      ;IT'S AN 11
6287  044034  012777  000000  137316        MOV     #ZERO,@RHBAE            ;ZERO BAE
6288  044042  012777  004000  137264  1$:   MOV     #EVENAD,@RHBA           ;SETUP BA
```

```
6289  044050  012777  000077  137252          MOV     #READ6,@RHCS1           ;TELL IT TO READFROM
6290  044056  012777  000001  137270          MOV     #DMD,@RHMR1             ;MANIPULATE CLOCK
6291  044064  005037  003446                  CLR     BITCNT                  ;CLEAR LOOP COUNTER
6292  044070  005237  003446          2$:     INC     BITCNT                  ;INCREMENT LOOP COUNTER
6293  044074  022737  000015  003446          CMP     #15,BITCNT              ;IS IT THIRD LOOP FOR 5USEC WAIT
6294  044102  001372                          BNE     2$                      ;NO LOOP AGAIN
6295  044104  012777  000003  137242          MOV     #DMD!MCLK,@RHMR1                ;START CHANGING CLOCK
6296  044112  012777  000001  137234          MOV     #DMD,@RHMR1             ;CHANGE CLOCK AGAIN
6297  044120  012777  000003  137226          MOV     #DMD!MCLK,@RHMR1                ;CHANGE CLOCK AGAIN
6298  044126  012777  000001  137220          MOV     #DMD,@RHMR1             ;CHANGE CLOCK AGAIN
6299  044134  012777  000000  137212          MOV     #ZERO,@RHMR1            ;GET OUT OF DIAG MODE
6300  044142  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
6301  044146  032777  000200  137154  18$:     BIT     #RDY,@RHCS1             ;IS RDY SET
6302  044154  001015                          BNE     7$                      ;BIT IS SET
6303  044156  005237  003446                  INC     BITCNT                  ;COUNT UP
6304  044162  001371                          BNE     18$                     ;NOT FINISHED COUNTING
6305  044164  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
6306  044170  032777  000200  137132  19$:     BIT     #RDY,@RHCS1             ;IS IT SET YET?
6307  044176  001004                          BNE     7$                      ;YES
6308  044200  005237  003446                  INC     BITCNT                  ;COUNT UP
6309  044204  001401                          BEQ     7$                      ;BIT IS NOT GOING TO SET
6310  044206  000770                          BR      19$
6311  044210                          7$:
6312  044210  017737  137114  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
6313  044216  017737  137110  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
6314  044224  017737  137104  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
6315  044232  005701                          TST     R1                      ;IS IT AN RH11
6316  044234  001406                          BEQ     87$                     ;NO IT'S A 70
6317  044236  005037  003416                  CLR     BAE                     ;CLEAR BAE
6318  044242  005037  003424                  CLR     CS3                     ;CLEAR CS3
6319  044246  000137  044266                  JMP     86$                     ;CONTINUE
6320  044252  017737  137102  003416  87$:     MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
6321  044260  017737  137076  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
6322  044266  017737  137046  003422  86$:     MOV     @RHCS2,CS2              ;SAVE CS2
6323  044274  017737  137042  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
6324  044302  017737  137036  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
6325  044310  017737  137034  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
6326  044316  017737  137014  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
6327  044324  017737  137020  001162          MOV     @RHTDB,$REG0                    ;GET DATA
6328  044332  032777  000200  136770          BIT     #RDY,@RHCS1             ;IS READY SET
6329  044340  001001                          BNE     8$                      ;YES,CONTINUE TEST
6330  044342  104102                          ERROR   102                     ;READY DID NOT SET
6331  044344  022777  177777  136760  8$:     CMP     #-1,@RHWC               ;DID WC INCREMENT
6332  044352  001001                          BNE     3$                      ;YES,CONT TEST
6333  044354  104143                          ERROR   143                     ;READFROM OPERATION DID NOT INC WC
6334  044356  022777  003776  136750  3$:     CMP     #EVENAD-2,@RHBA         ;DID BA INCREMENT
6335  044364  001401                          BEQ     4$                      ;YES CONT TEST
6336  044366  104144                          ERROR   144                     ;BA DID NOT INCREMENT AFTER AN READFROM OPERATIO
6337  044370  023777  004000  136752  4$:     CMP     EVENAD,@RHTDB           ;DID INFO READFROM TESTER
6338  044376  001401                          BEQ     5$                      ;YES,CONT
6339  044400  104145                          ERROR   145                     ;INFO DID NOT READFROM TESTER
6340  044402  004737  007224          5$:     JSR     R7,WHYFO                ;ARE ANY ERROR BITS SET
6341  044406  105737  001103                  TSTB    $ERFLG                  ;WAS THER AN ERROR
6342  044412  001402                          BEQ     6$                      ;NO EXIT TEST
6343  044414  104146                          ERROR   146                     ;THESE ARE THE CONTENTS OF ALL RH70 REG.
6344  044416  104170                          ERROR   170                     ;THIS IS TO COMMPLETE ERROR PRINTOUT
```

```
6345  044420  004737  006572          6$:     JSR     R7,CLEER                ;CLEER ERRORS IF ANY
6346  044424  004737  050202                  JSR     R7,ERRTST
6347                                  ;;*****************************************************************
6348                                  ;*TEST 76        LARGE TRANSFER TEST
6349                                          ;THIS TEST DOES A 4K (OCTAL) WORD TRANSFER
6350                                          ;THE SECOND TIME THROUGH THE TEST SYNC CLOCK
6351                                          ;IS MARGINED TO MAKE SURE NO ERRORS OCCUR
6352                                  ;;*****************************************************************
6353  044430  000004                  TST76:  SCOPE
6354
6355
6356  044432  012777  000007  136700          MOV     #7,@RHCS2
6357  044440  005037  177776                  CLR     @#PSW
6358  044444  005037  003452                  CLR     PASS
6359  044450  005037  003450          BLITZ:  CLR     LOOCNT                  ;CLEAR THE LOOP COUNTER
6360  044454  005701                  IN:     TST     R1                      ;IS IT AN 11 OR 70
6361  044456  100403                          BMI     1$                      ;IT IS AN 11
6362  044460  012777  000000  136672          MOV     #ZERO,@RHBAE            ;IT'S A 70 ZERO THE BAE
6363  044466  012777  005000  136640  1$.     MOV     #5000,@RHBA             ;SET THE BUS ADDRESS
6364  044474  012777  174000  136630          MOV     #-4000,@RHWC
6365  044502  012777  050326  136676          MOV     #BLAST,@VECADD          ;USE IT IN INTERUPT MODE
6366
6367  044510  005701                          TST     R1
6368  044512  001412                          BEQ     BLIP
6369  044514  005737  003452                  TST     PASS
6370  044520  001407                          BEQ     BLIP
6371  044522  032737  000002  177570          BIT     #BIT1,@#177570
6372  044530  001571                          BEQ     BOTTOM
6373  044532  004737  047616                  JSR     R7,DUPORT
6374  044536  000434                          BR      RHNINT
6375  044540  012777  000161  136562  BLIP:   MOV     #WRITE0!IE,@RHCS1       ;SET INTERUPT AND TELL IT TO WRITE
6376
6377  044546  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
6378  044552  032777  000200  136550  18$:    BIT     #RDY,@RHCS1             ;IS RDY SET
6379  044560  001015                          BNE     2$                      ;BIT IS SET
6380  044562  005237  003446                  INC     BITCNT                  ;COUNT UP
6381  044566  001371                          BNE     18$                     ;NOT FINISHED COUNTING
6382  044570  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
6383  044574  032777  000200  136526  19$:    BIT     #RDY,@RHCS1             ;IS IT SET YET?
6384  044602  001004                          BNE     2$                      ;YES
6385  044604  005237  003446                  INC     BITCNT                  ;COUNT UP
6386  044610  001401                          BEQ     2$                      ;BIT IS NOT GOING TO SET
6387  044612  000770                          BR      19$
6388  044614                          2$:
6389  044614  032777  000200  136506          BIT     #RDY,@RHCS1             ;DID READY SET
6390  044622  001001                          BNE     25$                     ;YES READY SET
6391  044624  104102                          ERROR   102                     ;READY DID NOT SET
6392  044626  104205                  25$:    ERROR   205                     ;IT DID NOT INTERUPT
6393  044630                          RHNINT:
6394  044630  017737  136474  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
6395  044636  017737  136470  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
6396  044644  017737  136464  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
6397  044652  005701                          TST     R1                      ;IS IT AN RH11
6398  044654  001406                          BEQ     87$                     ;NO IT'S A 70
6399  044656  005037  003416                  CLR     BAE                     ;CLEAR BAE
6400  044662  005037  003424                  CLR     CS3                     ;CLEAR CS3
```

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 6401  044666  000137  044706                    JMP     86$                     ;CONTINUE
 6402  044672  017737  136462  003416  87$:      MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
 6403  044700  017737  136456  003424            MOV     @RHCS3,CS3              ;SAVE RHCS3
 6404  044706  017737  136426  003422  86$:      MOV     @RHCS2,CS2              ;SAVE CS2
 6405  044714  017737  136422  003432            MOV     @RHST,DS1               ;SAVE TESTER STATUS
 6406  044722  017737  136416  003436            MOV     @RHER,ER1               ;SAVE ERROR REGISTER
 6407  044730  017737  136414  003442            MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
 6408  044736  017737  136374  003440            MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
 6409  044744  032777  140000  136370  9$:       BIT     #ATA!ERR,@RHST          ;IS ATTEN OR ERROR SET
 6410  044752  001033                            BNE     3$                      ;YES THERE WAS A PROBLEM
 6411  044754  032777  000200  136346            BIT     #RDY,@RHCS1             ;DID RDY SET
 6412  044762  001001                            BNE     4$                      ;YES IT SET
 6413  044764  104102                            ERROR   102                     ;RDY DID NOT SET
 6414  044766  022777  015000  136340  4$:       CMP     #5000+<4*100*2>,@RHBA   ;DID BA INC PROPERLY
 6415  044774  001401                            BEQ     5$                      ;YES
 6416  044776  104203                            ERROR   203                     ;BA DID NOT INC PROPERLY
 6417  045000  023777  014776  136342  5$:       CMP     @#14776,@RHTDB  ;WAS CORRECT INFO WRITTEN
 6418  045006  001401                            BEQ     6$                      ;YES
 6419  045010  104204                            ERROR   204                     ;CORRECT INFO NOT IN RHTDB
 6420  045012  005777  136314            6$:     TST     @RHWC                   ;IS WC 0
 6421  045016  001401                            BEQ     7$                      ;YES
 6422  045020  104206                            ERROR   206                     ;RHWC IS NOT ZERO
 6423  045022  105737  001103            7$:     TSTB    $ERFLG                  ;WAS THERE ANY ERRORS
 6424  045026  001407                            BEQ     8$                      ;NO
 6425  045030  032777  002000  136272            BIT     #PSEL,@RHCS1
 6426  045036  001401                            BEQ     3$
 6427  045040  104207                            ERROR   207
 6428  045042  104146            3$:     ERROR   146                     ;OUTPUT THE REGISTERS
 6429  045044  104170                            ERROR   170
 6430  045046  005737  003450            8$:     TST     LOOCNT                  ;IS IT FIRST PASS IN TEST
 6431  045052  001007                            BNE     11$                     ;NO
 6432  045054  005237  003450                    INC     LOOCNT                  ;MAKE IT SECOND PASS
 6433  045060  012777  000017  136250            MOV     #SCLK!7,@RHMR2
 6434                                                                            ;SET THE SYNC CLOCK BIT AND 441 BLK SIZE
 6435  045066  000137  044454                    JMP     IN                      ;DO THE TEST AGAIN
 6436  045072  005037  003450            11$:    CLR     LOOCNT                  ;CLEAR THE COUNTER
 6437  045076  005737  003452                    TST     PASS
 6438  045102  001004                            BNE     BOTTOM
 6439  045104  005237  003452                    INC     PASS
 6440  045110  000137  044450                    JMP     BLITZ
 6441  045114  004737  007224            BOTTOM: JSR     R7,WHYFO                ;TO SEE WHY IT DIED
 6442  045120  004737  006572                    JSR     R7,CLEER                ;CLEAR THE REGISTERS
 6443  045124  004737  050202                    JSR     R7,ERRTST               ;UNDERLINE ERROR MESGES
 6444                                                                            ;IF NEEDED
 6445                                    ;;**************************************************************
 6446                                    ;*TEST 77        HERE IS WHERE I HANDLE 4 RH'S
 6447                                            ;*THIS IS THE ROUTINE THAT ALLOWS THE
 6448                                            ;*THE DIAGNOSTIC TO TEST FOUR RH'S
 6449                                    ;;**************************************************************
 6450  045130  000004                    TST77:  SCOPE
 6451
 6452  045132  005237  003376            ENDPAS: INC     DEVCNT                  ;INCREMENT THE DEVICE COUNT
 6453  045136  022737  000001  003376            CMP     #1,DEVCNT               ;IS IT DEVICE 2
 6454  045144  001552                            BEQ     CLEVER                  ;YES
 6455  045146  022737  000002  003376            CMP     #2,DEVCNT               ;IS IT DEVICE 3
 6456  045154  001002                            BNE     1$
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6457  045156  000137  045576                 JMP     ROTEEN                  ;YES
6458  045162  022737  000003  003376  1$:    CMP     #3,DEVCNT               ;IS IT DEVICE 4
6459  045170  001002                         BNE     2$                      ;NO,CONTINUE SEARCH
6460  045172  000137  045702                 JMP     IS                      ;YES
6461  045176  022737  000004  003376  2$:    CMP     #4,DEVCNT               ;HAVE WE TESTED ALL 4 RH'S
6462  045204  001470                         BEQ     RESTAT                  ;YES
6463  045206  104401  045214                 TYPE    ,65$            ;;TYPE ASCIZ STRING
6464  045212  000421                         BR      64$             ;;GET OVER THE ASCIZ
6465                                 ;;65$:  .ASCIZ  <15><12>/PROGRAM ERROR ON TESTING 4 RH'S/
6466  045256                         64$:
6467  045256  104401  045264                 TYPE    ,67$            ;;TYPE ASCIZ STRING
6468  045262  000426                         BR      66$             ;;GET OVER THE ASCIZ
6469                                 ;;67$:  .ASCIZ  <15><12>/RESTARTING TO TEST RH #1 AT BASE ADDRESS /
6470  045340                         66$:
6471  045340  013746  003366                 MOV     DEVIC1,-(SP)    ;;SAVE DEVIC1 FOR TYPEOUT
6472  045344  104402                         TYPOC                   ;;GO TYPE--OCTAL ASCII(ALL DIGITS)
6473  045346  013737  003366  003400         MOV     DEVIC1,DEVIC5           ;FOR REG. ADDRESS CREATION
6474  045354  012737  005246  003410         MOV     #GIGO,RETAIN            ;GET ADDRESS ERROR RETURN
6475  045362  000137  046006                 JMP     CORREG                  ;CORRECT REG. ADDRESSES
6476  045366  005037  003376         RESTAT: CLR     DEVCNT                  ;CLEAR DEVICE COUNTER
6477  045372  005726                         TST     (SP)+                   ;CORRECT STACK
6478  045374  013737  003366  003400         MOV     DEVIC1,DEVIC5           ;SET UP TO CREATE ADDRESSES
6479  045402  104401  045410                 TYPE    ,65$            ;;TYPE ASCIZ STRING
6480  045406  000421                         BR      64$             ;;GET OVER THE ASCIZ
6481                                 ;;65$:  .ASCIZ  <15><12>/TESTING RH #1 AT BASE ADDRESS /
6482  045452                         64$:
6483  045452  013746  003366                 MOV     DEVIC1,-(SP)    ;;SAVE DEVIC1 FOR TYPEOUT
6484  045456  104402                         TYPOC                   ;;GO TYPE--OCTAL ASCII(ALL DIGITS)
6485  045460  012737  005246  003410         MOV     #GIGO,RETAIN            ;SAVE RETURN ADDRESS
6486  045466  000137  046006                 JMP     CORREG                  ;GO CREATE ADDRESSES
6487  045472  005737  003370         CLEVER: TST     DEVIC2                  ;IS IT 0
6488  045476  001733                         BEQ     RESTAT                  ;YES,END PASS
6489  045500  013737  003370  003400         MOV     DEVIC2,DEVIC5           ;GET READY TO CONSTRUCT
6490  045506  012737  005422  003410         MOV     #GIGO1,RETAIN           ;SAVE RETURN ERROR ADDRESS
6491  045514  104401  045522                 TYPE    ,65$            ;;TYPE ASCIZ STRING
6492  045520  000421                         BR      64$             ;;GET OVER THE ASCIZ
6493                                 ;;65$:  .ASCIZ  <15><12>/TESTING RH #2 AT BASE ADDRESS /
6494  045564                         64$:
6495  045564  013746  003370                 MOV     DEVIC2,-(SP)    ;;SAVE DEVIC2 FOR TYPEOUT
6496  045570  104402                         TYPOC                   ;;GO TYPE--OCTAL ASCII(ALL DIGITS)
6497  045572  000137  046006                 JMP     CORREG                  ;CREATE REG. ADDRESSES
6498  045576  005737  003372         ROTEEN: TST     DEVIC3                  ;IS IT 0
6499  045602  001671                         BEQ     RESTAT          ;YES ,END PASS
6500  045604  013737  003372  003400         MOV     DEVIC3,DEVIC5           ;GET BASE ADDRESS
6501  045612  012737  005562  003410         MOV     #GIGO2,RETAIN           ;SAVE RETURN ADDRESS
6502  045620  104401  045626                 TYPE    ,65$            ;;TYPE ASCIZ STRING
6503  045624  000421                         BR      64$             ;;GET OVER THE ASCIZ
6504                                 ;;65$:  .ASCIZ  <15><12>/TESTING RH #3 AT BASE ADDRESS /
6505  045670                         64$:
6506  045670  013746  003372                 MOV     DEVIC3,-(SP)    ;;SAVE DEVIC3 FOR TYPEOUT
6507  045674  104402                         TYPOC                   ;;GO TYPE--OCTAL ASCII(ALL DIGITS)
6508  045676  000137  046006                 JMP     CORREG                  ;CORRECT REG. ADDRESSES
6509  045702  005737  003374         IS:     TST     DEVIC4                  ;IS IT 0
6510  045706  001627                         BEQ     RESTAT                  ;YES ,END PASS
6511  045710  013737  003374  003400         MOV     DEVIC4,DEVIC5           ;GET BASE ADDRESS
6512  045716  012737  005722  003410         MOV     #GIGO3,RETAIN           ;SAVE RETURN ADDRESS
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6513  045724  104401  045732            TYPE    ,65$            ;;TYPE ASCIZ STRING
6514  045730  000421                    BR      64$             ;;GET OVER THE ASCIZ
6515                                ;;65$:  .ASCIZ  <15><12>/TESTING RH #4 AT BASE ADDRESS /
6516  045774                        64$:
6517  045774  013746  003374            MOV     DEVIC4,-(SP)    ;;SAVE DEVIC4 FOR TYPEOUT
6518  046000  104402                    TYPOC                   ;;GO TYPE--OCTAL ASCII(ALL DIGITS)
6519  046002  000137  046006            JMP     CORREG          ;CORRECT REG. ADDRESSES
6520  046006  013737  003400  003402  CORREG: MOV   DEVIC5,OFF11           ;GET BASE ADDRESS
6521  046014  012702  003330            MOV     #RHCS1,R2               ;GET ADDRESS TO START STORING
6522  046020  013722  003402  BEHIND:  MOV     OFF11,(R2)+             ;STORE ADDRESS
6523  046024  022702  003360            CMP     #RHBAE,R2               ;WAS IT LAST ADDRESS
6524  046030  001405                    BEQ     AHEAD                   ;YES
6525  046032  062737  000002  003402    ADD     #TWO,OFF11              ;CREATE NEXT ADDRESS
6526  046040  000137  046020            JMP     BEHIND                  ;GO STORE IT
6527  046044  013737  003400  003402  AHEAD:  MOV     DEVIC5,@#OFF11
6528  046052  063737  003404  003402        ADD     REGEND,OFF11            ;SETUP BAE ADDRWESS
6529  046060  013737  003402  003360        MOV     OFF11,RHBAE             ;STORE ADDRESS
6530  046066  062737  000002  003402        ADD     #2,OFF11                ;SETUP CS3 ADDRESS
6531  046074  013737  003402  003362        MOV     OFF11,RHCS3             ;SAVE THE ADDRESS
6532  046102  013737  003330  003364        MOV     RHCS1,RHCS1B            ;SETUP HIGH BYTE
6533  046110  005237  003364                INC     RHCS1B                  ;FOR RHCS1
6534  046114  005037  001102                CLR     $TSTNM                  ;CLEAR TEST NUMBER
6535  046120  005237  001102                INC     $TSTNM                  ;SET TO TEST 1
6536  046124  012737  000001  001212        MOV     #1,$TIMES               ;FOR ONE ITERATION
6537  046132  005737  003376                TST     DEVCNT                  ;ARE WE AT END OF PASS
6538  046136  001402                        BEQ     $EOP                    ;YES DO END OF PASS
6539  046140  000137  006252                JMP     TSTADD                  ;NO,SEE IF RH IS PRESENT
6540                                .SBTTL  END OF PASS ROUTINE
6541
6542                                ;;**************************************************************************
6543                                ;*INCREMENT THE PASS NUMBER ($PASS)
6544                                ;*TYPE 'END PASS #XXXXX TOTAL NUMBER OF ERRORS SINCE LAST REPORT YYYYY''
6545                                ;*WHERE XXXXX AND YYYYY ARE DECIMAL NUMBERS
6546                                ;*IF THERES A MONITOR GO TO IT
6547                                ;*IF THERE ISN'T JUMP TO BEGIN2
6548
6549  046144                        $EOP:
6550  046144  000004                    SCOPE
6551  046146  005037  001102            CLR     $TSTNM          ;;ZERO THE TEST NUMBER
6552  046152  005037  001212            CLR     $TIMES          ;;ZERO THE NUMBER OF ITERATIONS
6553  046156  005237  001100            INC     $PASS           ;;INCREMENT THE PASS NUMBER
6554  046162  042737  100000  001100    BIC     #100000,$PASS   ;;DON'T ALLOW A NEG. NUMBER
6555  046170  005327                    DEC     (PC)+           ;;LOOP?
6556  046172  000001                $EOPCT: .WORD   1
6557  046174  003063                    BGT     $DOAGN          ;;YES
6558  046176  012737                    MOV     (PC)+,@(PC)+    ;;RESTORE COUNTER
6559  046200  000001                $ENDCT: .WORD   1
6560  046202  046172                    $EOPCT
6561  046204  104401  046212            TYPE    ,65$            ;;TYPE ASCIZ STRING
6562  046210  000407                    BR      64$             ;;GET OVER THE ASCIZ
6563                                ;;65$:  .ASCIZ  <12><15>/END PASS #/
6564  046230                        64$:
6565  046230  013746  001100            MOV     $PASS,-(SP)     ;;SAVE $PASS FOR TYPEOUT
6566                                                            ;;TYPE PASS NUMBER
6567  046234  104405                    TYPDS                   ;;GO TYPE--DECIMAL ASCII WITH SIGN
6568  046236  104401  046244            TYPE    ,67$            ;;TYPE ASCIZ STRING
```

```
6569  046242  000421                          BR      66$             ;;GET OVER THE ASCIZ
6570                                  ;;67$:  .ASCIZ  /  TOTAL ERRORS SINCE LAST REPORT /
6571  046306                          66$:
6572  046306  013746  001112                  MOV     $ERTTL,-(SP)    ;;SAVE $ERTTL FOR TYPEOUT
6573                                                                  ;;TOTAL NUMBER OF ERRORS
6574  046312  104405                          TYPDS                   ;;GO TYPE--DECIMAL ASCII WITH SIGN
6575  046314  104401  001223                  TYPE    ,$CRLF          ;;TYPE CARRIAGE RETURN, LINE FEED
6576  046320  005037  001112                  CLR     $ERTTL          ;;CLEAR ERROR TOTAL
6577  046324  013700  000042          $GET42: MOV     @#42,R0         ;;GET MONITOR ADDRESS
6578  046330  001405                          BEQ     $DOAGN          ;;BRANCH IF NO MONITOR
6579  046332  000005                          RESET                   ;;CLEAR THE WORLD
6580  046334  004710          $ENDAD: JSR     PC,(R0)         ;;GO TO MONITOR
6581  046336  000240                          NOP                     ;;SAVE ROOM
6582  046340  000240                          NOP                     ;;FOR
6583  046342  000240                          NOP                     ;;ACT11
6584  046344                          $DOAGN:
6585  046344  000137                          JMP     @(PC)+          ;;RETURN
6586  046346  004166          $RTNAD: .WORD   BEGIN2
6587  046350     377      377      000 $ENULL: .BYTE   -1,-1,0         ;;NULL CHARACTER STRING
6588            046354                  .EVEN
6589
6590                                  ;;**************************************************************
6591                                  ;THIS IS THE WATBIT PROGRAM
6592                                  ;;**************************************************************
6593
6594  046354  032737  020000  177570  WATBIT: BIT     #SW13,@#177570          ;SKIP ERROR PRINTOUT ?
6595  046362  001155                          BNE     RITURN                  ;YES
6596  046364  033737  000400  177570          BIT     BIT8,@#177570
6597  046372  001151                          BNE     RITURN
6598  046374  033737  000001  177570          BIT     BIT0,@#177570
6599  046402  001145                          BNE     RITURN
6600  046404  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
6601  046410  013737  001162  001202          MOV     $REG0,$TMP2             ;SAVE GOOD DATA IN $REG0
6602  046416  013737  001200  001204          MOV     $TMP1,$TMP3             ;SAVE CONTENTS OF BAD DATA
6603  046424  043737  001162  001204          BIC     $REG0,$TMP3             ;WHERE EXTRA BITS SET ?
6604  046432  005737  001204                  TST     $TMP3                   ;FIND OUT
6605  046436  001447                          BEQ     NEXTST                  ;NO,FIND OUT WHAT BITS WHERE NOT SET
6606  046440  104401  046446                  TYPE    ,65$            ;;TYPE ASCIZ STRING
6607  046444  000427                          BR      64$             ;;GET OVER THE ASCIZ
6608                                  ;;65$:  .ASCIZ  <15><12>/THESE ARE THE BIT NO. OF THE EXTRA BITS./<15><12>
6609  046524                          64$:
6610  046524  032737  000001  001204  MOAR:   BIT     #ONE,$TMP3              ;FIND THE EXTRA
6611  046532  001076                          BNE     PRIBIT                  ;GO TO PRINT BIT NO.
6612  046534  006037  001204          MOOR:   ROR     $TMP3                   ;SETUP FOR NEXT BIT
6613  046540  022737  000017  003446          CMP     #17,BITCNT              ;IS IT BIT 15 LAST TESTED
6614  046546  001403                          BEQ     NEXTST                  ;YES,SEE IF ANY BITS WHER NOT SET
6615  046550  005237  003446                  INC     BITCNT                  ;NO NOT LAST BIT YET
6616  046554  000763                          BR      MOAR                    ;GO TO TEST NEXT BIT
6617  046556  005037  003446          NEXTST: CLR     BITCNT                  ;ZERO BIT COUNTER
6618  046562  043737  001200  001202          BIC     $TMP1,$TMP2             ;FIND WHAT BITS WHER NOT SET
6619  046570  005737  001202                  TST     $TMP2                   ;WAS ALL BITS SET THAT SHOULD HAVE BEEN
6620  046574  001446                          BEQ     RETURN                  ;YES,AND TEST FINISHED
6621  046576  104401  046604                  TYPE    ,65$            ;;TYPE ASCIZ STRING
6622  046602  000426                          BR      64$             ;;GET OVER THE ASCIZ
6623                                  ;;65$:  .ASCIZ  <15><12>/BIT NO. OF THE BITS THAT WHERE NOT SET/<15><12>
6624  046660                          64$:
```

```
6625  046660  032737  000001  001202  MORE2:  BIT     #ONE,$TMP2              ;FIND BIT NOT SET
6626  046666  001014                          BNE     PRTBIT                  ;ERROR BIT FOUND
6627  046670  006037  001202          MORE:   ROR     $TMP2                   ;SETUP TO FIND MORE
6628  046674  022737  000017  003446          CMP     #17,BITCNT              ;WAS LAST BIT BIT 15
6629  046702  001403                          BEQ     RETURN                  ;YES AND TEST FINISHED
6630  046704  005237  003446                  INC     BITCNT                  ;NO SETUP FOR NEXT BIT
6631  046710  000763                          BR      MORE2                   ;CONTINUE TEST
6632  046712  104401  001223          RETURN: TYPE    ,$CRLF
6633  046716  000207                  RITURN: RTS     R7                      ;RETURN TO MAIN PROG.
6634  046720                          PRTBIT:
6635  046720  013746  003446                  MOV     BITCNT,-(SP)    ;;SAVE BITCNT FOR TYPEOUT
6636  046724  104405                          TYPDS                   ;;GO TYPE--DECIMAL ASCII WITH SIGN
6637  046726  000760                          BR      MORE                    ; OOK FOR MORE
6638  046730                          PRIBIT:
6639  046730  013746  003446                  MOV     BITCNT,-(SP)    ;;SAVE BITCNT FOR TYPEOUT
6640  046734  104405                          TYPDS                   ;;GO TYPE--DECIMAL ASCII WITH SIGN
6641  046736  000676                          BR      MOOR                    ;LOOK FOR MORE
6642                                  ;;**************************************************************
6643                                          ;THIS ROUTINE HANDLES TIMEOUT ERRORS
6644                                  ;;**************************************************************
6645
6646  046740                          TIEOUT:
6647  046740  104401  046746                  TYPE    ,65$                    ;;TYPE ASCIZ STRING
6648  046744  000434                          BR      64$                     ;;GET OVER THE ASCIZ
6649                                  ;;65$:  .ASCIZ  <15><12><12>/PROGRAM INSTRUCTION OR ADDRESS HAS CREATED A TIMEOUT/
6650  047036                          64$:
6651  047036  104401  047044                  TYPE    ,67$                    ;;TYPE ASCIZ STRING
6652  047042  000422                          BR      66$                     ;;GET OVER THE ASCIZ
6653                                  ;;67$:  .ASCIZ  <15><12>/ADDRESS WHICH CAUSED TIMEOUT WAS /
6654  047110                          66$:
6655  047110  012637  001206                  MOV     (SP)+,$TMP4             ;MOVE ADDRESS TO STORAGE
6656  047114  162737  000002  001206          SUB     #TWO,$TMP4              ;CORRECT ADDRESS
6657  047122  013746  001206                  MOV     $TMP4,-(SP)     ;;SAVE $TMP4 FOR TYPEOUT
6658  047126  104402                          TYPOC                   ;;GO TYPE--OCTAL ASCII(ALL DIGITS)
6659  047130  104401  047136                  TYPE    ,69$                    ;;TYPE ASCIZ STRING
6660  047134  000406                          BR      68$                     ;;GET OVER THE ASCIZ
6661                                  ;;69$:  .ASCIZ  <15><12>/PSW WAS  /
6662  047152                          68$:
6663  047152  012637  001206                  MOV     (SP)+,$TMP4             ;GET OLD PSW
6664  047156  013746  001206                  MOV     $TMP4,-(SP)     ;;SAVE $TMP4 FOR TYPEOUT
6665  047162  104402                          TYPOC                   ;;GO TYPE--OCTAL ASCII(ALL DIGITS)
6666  047164  013716  001106                  MOV     $LPADR,(SP)             ;FAKE RETURN
6667  047170  000002                          RTI
6668
6669                                  ;;**************************************************************
6670                                          ;THIS ROUTINE HANDLES PARITY ERRORS
6671                                  ;;**************************************************************
6672
6673  047172                          PARITY:
6674  047172  104401  047200                  TYPE    ,65$                    ;;TYPE ASCIZ STRING
6675  047176  000422                          BR      64$                     ;;GET OVER THE ASCIZ
6676                                  ;;65$:  .ASCIZ  <15><12>/PARITY TRAP TO VECTOR ADDRESS 114/
6677  047244                          64$:
6678  047244  104401  047252                  TYPE    ,67$                    ;;TYPE ASCIZ STRING
6679  047250  000420                          BR      66$                     ;;GET OVER THE ASCIZ
6680                                  ;;67$:  .ASCIZ  <15><12>/ADDRESS THAT CAUSED TRAP WAS /
```

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 6681  047312                                  66$:
 6682  047312  012637  004100                          MOV     (SP)+,RBUF              ;GET PC+2
 6683  047316  162737  000002  004100                  SUB     #TWO,RBUF               ;CORECT PC
 6684  047324  013746  004100                          MOV     RBUF,-(SP)      ;;SAVE RBUF FOR TYPEOUT
 6685  047330  104402                                  TYPOC                   ;;GO TYPE--OCTAL ASCII(ALL DIGITS)
 6686  047332  104401  047340                          TYPE    ,69$            ;;TYPE ASCIZ STRING
 6687  047336  000406                                  BR      68$             ;;GET OVER THE ASCIZ
 6688                                  ;;69$:  .ASCIZ  <15><12>/PSW WAS  /
 6689  047354                                  68$:
 6690  047354  012637  004100                          MOV     (SP)+,RBUF              ;GET OLD PSW
 6691  047360  013746  004100                          MOV     RBUF,-(SP)      ;;SAVE RBUF FOR TYPEOUT
 6692  047364  104402                                  TYPOC                   ;;GO TYPE--OCTAL ASCII(ALL DIGITS)
 6693  047366  005701                                  TST     R1                      ;ARE WE ON AN 11/70
 6694  047370  100507                                  BMI     TRAPED                  ;NO,ITS A 11/05-11/45
 6695  047372  104401  047400                          TYPE    ,71$            ;;TYPE ASCIZ STRING
 6696  047376  000417                                  BR      70$             ;;GET OVER THE ASCIZ
 6697                                  ;;71$:  .ASCIZ  <15><12>/HIGH ERROR ADDRESS REG. = /
 6698  047436                                  70$:
 6699  047436  013737  177742  004100                  MOV     HERADD,RBUF
 6700  047444  013746  004100                          MOV     RBUF,-(SP)      ;;SAVE RBUF FOR TYPEOUT
 6701  047450  104402                                  TYPOC                   ;;GO TYPE--OCTAL ASCII(ALL DIGITS)
 6702  047452  104401  047460                          TYPE    ,73$            ;;TYPE ASCIZ STRING
 6703  047456  000416                                  BR      72$             ;;GET OVER THE ASCIZ
 6704                                  ;;73$:  .ASCIZ  <15><12>/LOW ERROR ADDRESS REG. = /
 6705  047514                                  72$:
 6706  047514  013737  177740  004100                  MOV     LERADD,RBUF
 6707  047522  013746  004100                          MOV     RBUF,-(SP)      ;;SAVE RBUF FOR TYPEOUT
 6708  047526  104402                                  TYPOC                   ;;GO TYPE--OCTAL ASCII(ALL DIGITS)
 6709  047530  104401  047536                          TYPE    ,75$            ;;TYPE ASCIZ STRING
 6710  047534  000417                                  BR      74$             ;;GET OVER THE ASCIZ
 6711                                  ;;75$:  .ASCIZ  <15><12>/MEMORY SYSTEM ERROR REG. = /
 6712  047574                                  74$:
 6713  047574  013737  177744  004100                  MOV     MEMERR,RBUF
 6714  047602  013746  004100                          MOV     RBUF,-(SP)      ;;SAVE RBUF FOR TYPEOUT
 6715  047606  104402                                  TYPOC                   ;;GO TYPE--OCTAL ASCII(ALL DIGITS)
 6716  047610  013716  001106              TRAPED:     MOV     $LPADR,(SP)             ;FAKE RETURN
 6717  047614  000002                                  RTI                             ;RETURN WHERE LEFT OFF
 6718
 6719                                  ;;*****************************************************************
 6720                                          ;THIS IS THE DUAL PORT ROUTINE
 6721                                  ;;*****************************************************************
 6722  047616  012777  002161  133504  DUPORT:  MOV     #WRITEO!PSEL!IE,@RHCS1
 6723  047624  005037  003446                          CLR     BITCNT                  ;CLEAR BIT COUNTER
 6724  047630  032777  000200  133472  18$:     BIT     #RDY,@RHCS1             ;IS RDY SET
 6725  047636  001015                                  BNE     BULL                    ;BIT IS SET
 6726  047640  005237  003446                          INC     BITCNT                  ;COUNT UP
 6727  047644  001371                                  BNE     18$                     ;NOT FINISHED COUNTING
 6728  047646  005037  003446                          CLR     BITCNT                  ;GET READY TO DO IT AGAIN
 6729  047652  032777  000200  133450  19$:     BIT     #RDY,@RHCS1             ;IS IT SET YET?
 6730  047660  001004                                  BNE     BULL                    ;YES
 6731  047662  005237  003446                          INC     BITCNT                  ;COUNT UP
 6732  047666  001401                                  BEQ     BULL                    ;BIT IS NOT GOING TO SET
 6733  047670  000770                                  BR      19$
 6734  047672                                  BULL:
 6735  047672  032777  000200  133430                  BIT     #RDY,@RHCS1
 6736  047700  001001                                  BNE     CUTE
```

```
 6737  047702  104102                          ERROR   102
 6738  047704  000207                  CUTE:   RTS     PC
 6739                                  ;;**************************************************************************
 6740                                          ;THESE ARE THE CLEARS ROUTINES
 6741                                  ;;**************************************************************************
 6742
 6743  047706  012737  000000  001162  FINDIT: MOV     #0,$REG0                ;GET READY TO FIND ERROR
 6744  047714  017737  133410  001200          MOV     @RHCS1,$TMP1                    ;GET COMPARE READY
 6745  047722  042737  007777  001200          BIC     #READ6!GO!IE!RDY!A16!A17!PSEL!DVA,$TMP1
 6746                                                                          ;CLEAR BITS NOT NEEDED
 6747  047730  000207                          RTS     R7                      ;RETURN TO PROGRAM
 6748  047732  012737  000000  001162  LOOKFO: MOV     #0,$REG0                ;GET READY TO FIND ERROR
 6749  047740  017737  133374  001200          MOV     @RHCS2,$TMP1                    ;GET COMPARE READY
 6750  047746  042737  000377  001200          BIC     #US1!US2.US4!BAI!PAT!CLR!IR!OR,$TMP1
 6751                                                                          ;CLEAR BITS NOT NEEDED
 6752  047754  000207                          RTS     R7                      ;RETURN TO PROGRAM
 6753  047756  012737  000000  001162  LOOKED: MOV     #0,$REG0                ;GET READY TO FIND ERROR
 6754  047764  017737  133354  001200          MOV     @RHER,$TMP1                     ;GET COMPARE READY
 6755  047772  042737  000000  001200          BIC     #ZERO,$TMP1
 6756                                                                          ;CLEAR BITS NOT NEEDED
 6757  050000  000207                          RTS     R7                      ;RETURN TO PROGRAM
 6758  050002  012737  000000  001162  FIND:   MOV     #0,$REG0                ;GET READY TO FIND ERROR
 6759  050010  017737  133326  001200          MOV     @RHST,$TMP1                     ;GET COMPARE READY
 6760  050016  042737  030600  001200          BIC     #DRY!DPR!MOL!PIP,$TMP1
 6761                                                                          ;CLEAR BITS NOT NEEDED
 6762  050024  000207                          RTS     R7                      ;RETURN TO PROGRAM
 6763  050026  012737  000007  001162  FOUND:  MOV     #7,$REG0                ;GET READY TO FIND ERROR
 6764  050034  017737  133300  001200          MOV     @RHCS2,$TMP1                    ;GET COMPARE READY
 6765  050042  042737  177770  001200          BIC     #BAI!PAT!CLR!IR.OR!MPE!MXF!PGE!NEM!NED!UPE!WCE!DLT,$TMP1
 6766                                                                          ;CLEAR BITS NOT NEEDED
 6767  050050  000207                          RTS     R7                      ;RETURN TO PROGRAM
 6768  050052  012737  000000  001162  CS3ERR: MOV     #0,$REG0                ;GET READY TO FIND ERROR
 6769  050060  017737  133276  001200          MOV     @RHCS3,$TMP1                    ;GET COMPARE READY
 6770  050066  042737  000117  001200          BIC     #IE3!IPCK0!IPCK1!IPCK2!IPCK3,$TMP1
 6771                                                                          ;CLEAR BITS NOT NEEDED
 6772  050074  000207                          RTS     R7                      ;RETURN TO PROGRAM
 6773
 6774                                  ;;**************************************************************************
 6775                                          ;* THIS ROUTINE IS THE TEST NUMBER CORRECTION ROUTINE
 6776                                  ;;**************************************************************************
 6777
 6778  050076  013737  001102  003454  TSTNMB: MOV     $TSTNM,TSTNM            ;GET THE TEST NUMBER
 6779  050104  105037  003455          TSTNMA: CLRB    TSTNM+1                 ;CLEAR UPPER BYTE
 6780  050110  032737  020000  177570          BIT     #SW13,@#177570          ;INHIBIT TYPEOUT
 6781  050116  001026                          BNE     TSTNMA                  ;YES
 6782  050120  122737  000001  001103          CMPB    #1,$ERFLG               ;IS IT FIRST ERROR
 6783  050126  001022                          BNE     TSTNMA                  ;NO
 6784  050130  013737  003454  003456          MOV     TSTNM,OFFSET            ;GET TEST NUMBER
 6785  050136  006137  003456                  ROL     OFFSET                  ;CREAT OFFSET
 6786  050142  012737  072404  003460          MOV     #HEADER,HEDDAD          ;GET BEGINING OF TABLE
 6787  050150  063737  003456  003460          ADD     OFFSET,HEDDAD           ;CREATE MES ADDRESS
 6788  050156  017737  133276  050172          MOV     @HEDDAD,HEDADD          ;SET UP FOR MESSAGE
 6789  050164  104401  001223                  TYPE    ,$CRLF
 6790  050170  104401                          TYPE
 6791  050172  000000          HEDADD: 0
 6792  050174  004737  074122          TSTNMA: JSR     R7,@#$ERRTYP            ;GO TO ERROR TYPE ROUTINE
```

```
6793  050200  000207                        RTS     R7                      ;RETURN TO ERROR ROUTINE
6794
6795                                  ;;*****************************************************************
6796                                  ;THIS PROGRAM WHILL DEVIDE THE ERROR
6797                                  ;PRINTOUT BETWEEN TESTS
6798                                  ;;*****************************************************************
6799
6800  050202  105737  001103         ERRTST: TSTB    $ERFLG                  ;WAS THERE AN ERROR FOUND
6801  050206  001446                         BEQ     OUTOF                   ;NO ,GO TO NEXT TEST
6802  050210  032737  020000  177570         BIT     #SW13,@#177570          ;INHIBIT TYPEOUT ?
6803  050216  001042                         BNE     OUTOF                   ;YES
6804  050220  013737  001102  003454         MOV     $TSTNM,TSTNM            ;GET TEST NO.
6805  050226  105037  003455                 CLRB    TSTNM+1                 ;CLEAR UPPER BYTE
6806  050232  104401  050240                 TYPE    ,65$            ;;TYPE ASCIZ STRING
6807  050236  000406                         BR      64$             ;;GET OVER THE ASCIZ
6808                                  ;;65$:  .ASCIZ  <15><12>/^^^^TEST /
6809  050254                          64$:
6810  050254  013746  003454                 MOV     TSTNM,-(SP)     ;;SAVE TSTNM FOR TYPEOUT
6811  050260  104402                         TYPOC                   ;;GO TYPE--OCTAL ASCII(ALL DIGITS)
6812  050262  104401  050270                 TYPE    ,67$            ;;TYPE ASCIZ STRING
6813  050266  000416                         BR      66$             ;;GET OVER THE ASCIZ
6814                                  ;;67$:  .ASCIZ  / ERROR MESSAGE(S) ^^^^/<15><12><12><12>
6815  050324                          66$:
6816  050324  000207                 OUTOF:  RTS     R7
6817
6818                                  ;;*****************************************************************
6819                                  ;THIS IS THE INTERUPT ROUTINE
6820                                  ;FOR THE LARGE TRANSFER TEST
6821                                  ;;*****************************************************************
6822
6823  050326  012716  044630         BLKTST: MOV     #RHNINT,(SP)            ;SET THE CORRET RETURN
6824  050332  000002                         RTI                             ;AND RETURN
```

```
                                        ;;*****************************************************************
                                        ;;HEADER MESSAGES FOR ERROR PRINT OUTS
                                        ;;*****************************************************************

050334  044122  040440  042104  HED1:   .ASCIZ/RH ADDRESS DECODE TEST (TEST 1)/
050342  042522  051523  042040
050350  041505  042117  020105
050356  042524  052123  024040
050364  042524  052123  030440
050372  000051
050374  046103  040505  020122  HED2:   .ASCIZ/CLEAR  TEST (TEST 2)/
050402  052040  051505  020124
050410  052050  051505  020124
050416  024462     000
050421     124  051505  042524  HED3:   .ASCIZ/TESTER CONNECTED TEST (TEST 3)/
050426  020122  047503  047116
050434  041505  042524  020104
050442  042524  052123  024040
050450  042524  052123  031440
050456  000051
050460  047527  042122  041440  HED4:   .ASCIZ/WORD COUNT CLEAR TEST (TEST 4)/
050466  052517  052116  041440
050474  042514  051101  052040
050502  051505  020124  052050
050510  051505  020124  024464
050516     000
050517     122  041110  020101  HED5:   .ASCIZ/RHBA CLEAR TEST (TEST 5)/
050524  046103  040505  020122
050532  042524  052123  024040
050540  042524  052123  032440
050546  000051
050550  044122  040502  020105  HED6:   .ASCIZ/RHBAE CLEAR TEST (TEST 6)/
050556  046103  040505  020122
050564  042524  052123  024040
050572  042524  052123  033040
050600  000051
050602  044122  041104  041440  HED7:   .ASCIZ/RHDB CLEAR TEST (TEST 7)/
050610  042514  051101  052040
050616  051505  020124  052050
050624  051505  020124  024467
050632     000
050633     120  047522  020115  HED10:  .ASCIZ/PROM REGISTER DECODE TEST (TEST 10)/
050640  042522  044507  052123
050646  051105  042040  041505
050654  042117  020105  042524
050662  052123  024040  042524
050670  052123  030440  024460
050676     000
050677     122  041510  031523  HED11:  .ASCIZ/RHCS3 BIT TEST (TEST 11)/
050704  041040  052111  052040
050712  051505  020124  052050
050720  051505  020124  030461
050726  000051
050730  044122  041527  041040  HED12:  .ASCIZ/RHWC BIT TEST (TEST 12)/
050736  052111  052040  051505
050744  020124  052050  051505
```

```
 6881  050752  020124  031061  000051
 6882  050760  044122  040502  020105  HED13:  .ASCIZ/RHBAE BIT TEST (TEST 13)/
 6883  050766  044502  020124  042524
 6884  050774  052123  024040  042524
 6885  051002  052123  030440  024463
 6886  051010     000
 6887  051011     122  041110  020101  HED14:  .ASCIZ/RHBA BIT TEST (TEST 14)/
 6888  051016  044502  020124  042524
 6889  051024  052123  024040  042524
 6890  051032  052123  030440  024464
 6891  051040     000
 6892  051041     122  042110  020102  HED15:  .ASCIZ/RHDB BIT TEST (TEST 15)/
 6893  051046  044502  020124  042524
 6894  051054  052123  024040  042524
 6895  051062  052123  030440  024465
 6896  051070     000
 6897  051071     122  053510  020103  HED16:  .ASCIZ/RHWC OPERATIONAL TEST (TEST 16)/
 6898  051076  050117  051105  052101
 6899  051104  047511  040516  020114
 6900  051112  042524  052123  024040
 6901  051120  042524  052123  030440
 6902  051126  024466     000
 6903  051131     122  041110  020101  HED17:  .ASCIZ/RHBA OPERATIONAL TEST (TEST 17)/
 6904  051136  050117  051105  052101
 6905  051144  047511  040516  020114
 6906  051152  042524  052123  024040
 6907  051160  042524  052123  030440
 6908  051166  024467     000
 6909  051171     116  046505  052054  HED20:  .ASCIZ/NEM,TRE AND SC BIT TEST (TEST 20)/
 6910  051176  042522  040440  042116
 6911  051204  051440  020103  044502
 6912  051212  020124  042524  052123
 6913  051220  024040  042524  052123
 6914  051226  031040  024460     000
 6915  051233     127  042503  052054  HED21:  .ASCIZ/WCE,TRE AND SC BIT TEST (TEST 21)/
 6916  051240  042522  040440  042116
 6917  051246  051440  020103  044502
 6918  051254  020124  042524  052123
 6919  051262  024040  042524  052123
 6920  051270  031040  024461     000
 6921  051275     115  050104  026105  HED22:  .ASCIZ/MDPE,TRE AND SC BIT TEST (TEST 22)/
 6922  051302  051124  020105  047101
 6923  051310  020104  041523  041040
 6924  051316  052111  052040  051505
 6925  051324  020124  052050  051505
 6926  051332  020124  031062  000051
 6927  051340  050125  026105  051124  HED23:  .ASCIZ/UPE,TRE AND SC BIT TEST (TEST 23) RH11 ONLY/
 6928  051346  020105  047101  020104
 6929  051354  041523  041040  052111
 6930  051362  052040  051505  020124
 6931  051370  052050  051505  020124
 6932  051376  031462  020051  044122
 6933  051404  030461  047440  046116
 6934  051412  000131
 6935  051414  050125  026105  051124  HED24:  .ASCIZ/UPE,TRE AND SC BIT TEST (TEST 24)/
 6936  051422  020105  047101  020104
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 6937  051430  041523  041040  052111
 6938  051436  052040  051505  020124
 6939  051444  052050  051505  020124
 6940  051452  032062  000051
 6941  051456  042516  026104  051124  HED25:  .ASCIZ/NED,TRE AND SC BIT TEST (TEST 25)/
 6942  051464  020105  047101  020104
 6943  051472  041523  041040  052111
 6944  051500  052040  051505  020124
 6945  051506  052050  051505  020124
 6946  051514  032462  000051
 6947  051520  054115  026106  051124  HED26:  .ASCIZ/MXF,TRE AND SC BIT TEST (TEST 26)/
 6948  051526  020105  047101  020104
 6949  051534  041523  041040  052111
 6950  051542  052040  051505  020124
 6951  051550  052050  051505  020124
 6952  051556  033062  000051
 6953  051562  043520  020105  051124  HED27:  .ASCIZ/PGE TRE AND SC BIT TEST (TEST 27)/
 6954  051570  020105  047101  020104
 6955  051576  041523  041040  052111
 6956  051604  052040  051505  020124
 6957  051612  052050  051505  020124
 6958  051620  033462  000051
 6959  051624  054115  026106  051124  HED30:  .ASCIZ/MXF,TRE AND SC BIT TEST (TEST 30)/
 6960  051632  020105  047101  020104
 6961  051640  041523  041040  052111
 6962  051646  052040  051505  020124
 6963  051654  052050  051505  020124
 6964  051662  030063  000051
 6965  051666  041515  042520  040440  HED31:  .ASCIZ/MCPE AND SC ERROR BIT TEST (TEST 31)/
 6966  051674  042116  051440  020103
 6967  051702  051105  047522  020122
 6968  051710  044502  020124  042524
 6969  051716  052123  024040  042524
 6970  051724  052123  031440  024461
 6971  051732     000
 6972  051733     104  046102  052040  HED32:  .ASCIZ/DBL TEST,1 WORD FROM A BASE 4 ADDRESS (TEST 32)/
 6973  051740  051505  026124  020061
 6974  051746  047527  042122  043040
 6975  051754  047522  020115  020101
 6976  051762  040502  042523  032040
 6977  051770  040440  042104  042522
 6978  051776  051523  024040  042524
 6979  052004  052123  031440  024462
 6980  052012     000
 6981  052013     104  046102  052040  HED33:  .ASCIZ/DBL TEST,2 WORD FROM A BASE 4 ADD. (TEST 33)/
 6982  052020  051505  026124  020062
 6983  052026  047527  042122  043040
 6984  052034  047522  020115  020101
 6985  052042  040502  042523  032040
 6986  052050  040440  042104  020056
 6987  052056  052050  051505  020124
 6988  052064  031463  000051
 6989  052070  041104  020114  042524  HED34:  .ASCIZ/DBL TEST,3 WORD FROM A BASE 4 ADD. (TEST 34)/
 6990  052076  052123  031454  053440
 6991  052104  051117  020104  051106
 6992  052112  046517  040440  041040
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 6993  052120  051501  020105  020064
 6994  052126  042101  027104  024040
 6995  052134  042524  052123  031440
 6996  052142  024464     000
 6997  052145     104  046102  052040  HED35:  .ASCIZ/DBL TEST,4 WORDS FROM A BASE 4 ADD. (TEST 35)/
 6998  052152  051505  026124  020064
 6999  052160  047527  042122  020123
 7000  052166  051106  046517  040440
 7001  052174  041040  051501  020105
 7002  052202  020064  042101  027104
 7003  052210  024040  042524  052123
 7004  052216  031440  024465     000
 7005  052223     104  046102  052040  HED36:  .ASCIZ/DBL TEST,1 WORD FROM A BASE 4 ADD.(TEST 36)/
 7006  052230  051505  026124  020061
 7007  052236  047527  042122  043040
 7008  052244  047522  020115  020101
 7009  052252  040502  042523  032040
 7010  052260  040440  042104  024056
 7011  052266  042524  052123  031440
 7012  052274  024466     000
 7013  052277     104  046102  052040  HED37:  .ASCIZ/DBL TEST,2 WORD FROM A BASE 4 ADD. WITH BAI SET (TEST 37)/
 7014  052304  051505  026124  020062
 7015  052312  047527  042122  043040
 7016  052320  047522  020115  020101
 7017  052326  040502  042523  032040
 7018  052334  040440  042104  020056
 7019  052342  044527  044124  041040
 7020  052350  044501  051440  052105
 7021  052356  024040  042524  052123
 7022  052364  031440  024467     000
 7023  052371     104  046102  052040  HED40:  .ASCIZ/DBL TEST,2 WORD WITH BAI SET AND WRITE REV )TEST 40)/
 7024  052376  051505  026124  020062
 7025  052404  047527  042122  053440
 7026  052412  052111  020110  040502
 7027  052420  020111  042523  020124
 7028  052426  047101  020104  051127
 7029  052434  052111  020105  042522
 7030  052442  020126  052051  051505
 7031  052450  020124  030064  000051
 7032  052456  041104  020114  042524  HED41:  .ASCIZ/DBL TEST,NOT A BASE 4 ADD (TEST 41)/
 7033  052464  052123  047054  052117
 7034  052472  040440  041040  051501
 7035  052500  020105  020064  042101
 7036  052506  020104  052050  051505
 7037  052514  020124  030464  000051
 7038  052522  041104  020114  042524  HED42:  .ASCIZ/DBL TEST BASE 4 ADD. WRITE FWD (TEST 42)/
 7039  052530  052123  041040  051501
 7040  052536  020105  020064  042101
 7041  052544  027104  053440  044522
 7042  052552  042524  043040  042127
 7043  052560  024040  042524  052123
 7044  052566  032040  024462     000
 7045  052573     104  046102  052040  HED43:  .ASCIZ/DBL TEST ,2 WORD ,NOT A BASE 4 ADD. (TEST 43)/
 7046  052600  051505  020124  031054
 7047  052606  053440  051117  020104
 7048  052614  047054  052117  040440
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 7049  052622  041040  051501  020105
 7050  052630  020064  042101  027104
 7051  052636  024040  042524  052123
 7052  052644  032040  024463     000
 7053  052651     104  046102  052040  HED44:  .ASCIZ/DBL TEST,3 WORD ,NOT A BASE 4 ADD.,WRITE REV (TEST 44)/
 7054  052656  051505  026124  020063
 7055  052664  047527  042122  026040
 7056  052672  047516  020124  020101
 7057  052700  040502  042523  032040
 7058  052706  040440  042104  026056
 7059  052714  051127  052111  020105
 7060  052722  042522  020126  052050
 7061  052730  051505  020124  032064
 7062  052736  000051
 7063  052740  041104  020114  042524  HED45:  .ASCIZ/DBL TEST,2 WORD READ FWD (TEST 45)/
 7064  052746  052123  031054  053440
 7065  052754  051117  020104  042522
 7066  052762  042101  043040  042127
 7067  052770  024040  042524  052123
 7068  052776  032040  024465     000
 7069  053003     104  046102  052040  HED46:  .ASCIZ/DBL TEST,2 WORD READ FWD,NOT A BASE 4 ADD. (TEST 46)/
 7070  053010  051505  026124  020062
 7071  053016  047527  042122  051040
 7072  053024  040505  020104  053506
 7073  053032  026104  047516  020124
 7074  053040  020101  040502  042523
 7075  053046  032040  040440  042104
 7076  053054  020056  052050  051505
 7077  053062  020124  033064  000051
 7078  053070  041104  020114  042524  HED47:  .ASCIZ/DBL TEST,2 WORD READ REV,BASE 4 ADD. (TEST 47)/
 7079  053076  052123  031054  053440
 7080  053104  051117  020104  042522
 7081  053112  042101  051040  053105
 7082  053120  041054  051501  020105
 7083  053126  020064  042101  027104
 7084  053134  024040  042524  052123
 7085  053142  032040  024467     000
 7086  053147     104  046102  052040  HED50:  .ASCIZ/DBL TEST,2 WORD READ REV,NOT A BASE 4 ADD. (TEST 50)/
 7087  053154  051505  026124  020062
 7088  053162  047527  042122  051040
 7089  053170  040505  020104  042522
 7090  053176  026126  047516  020124
 7091  053204  020101  040502  042523
 7092  053212  032040  040440  042104
 7093  053220  020056  052050  051505
 7094  053226  020124  030065  000051
 7095  053234  041104  020114  042524  HED51:  .ASCIZ/DBL TEST,3 WORD READ FWD,BASE 4 ADD. (TEST 51)/
 7096  053242  052123  031454  053440
 7097  053250  051117  020104  042522
 7098  053256  042101  043040  042127
 7099  053264  041054  051501  020105
 7100  053272  020064  042101  027104
 7101  053300  024040  042524  052123
 7102  053306  032440  024461     000
 7103  053313     104  046102  052040  HED52:  .ASCIZ/DBL TEST,3 WORD READ REV,BASE 4 ADD. (TEST 52)/
 7104  053320  051505  026124  020063
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 7105  053326  047527  042122  051040
 7106  053334  040505  020104  042522
 7107  053342  026126  040502  042523
 7108  053350  032040  040440  042104
 7109  053356  020056  052050  051505
 7110  053364  020124  031065  000051
 7111  053372  041527  020105  053505  HED53:  .ASCIZ/WCE EW ERROR TEST 'WCELO'' (TEST 53)/
 7112  053400  042440  051122  051117
 7113  053406  052040  051505  020124
 7114  053414  053442  042503  047514
 7115  053422  020042  052050  051505
 7116  053430  020124  031465  000051
 7117  053436  041527  020105  053517  HED54:  .ASCIZ/WCE OW ERROR TEST 'WCEHI'' (TEST 54)/
 7118  053444  042440  051122  051117
 7119  053452  052040  051505  020124
 7120  053460  053442  042503  044510
 7121  053466  020042  052050  051505
 7122  053474  020124  032065  000051
 7123  053502  047111  042524  052522  HED55:  .ASCIZ/INTERUPT ENABLE TEST (TEST 55)/
 7124  053510  052120  042440  040516
 7125  053516  046102  020105  042524
 7126  053524  052123  024040  042524
 7127  053532  052123  032440  024465
 7128  053540     000
 7129  053541     122  040505  020104  HED56:  .ASCIZ/READ OPERATIONAL TEST (NORMAL #1) (TEST 56)/
 7130  053546  050117  051105  052101
 7131  053554  047511  040516  020114
 7132  053562  042524  052123  024040
 7133  053570  047516  046522  046101
 7134  053576  021440  024461  024040
 7135  053604  042524  052123  032440
 7136  053612  024466     000
 7137  053615     122  020110  050117  HED57:  .ASCIZ/RH OPERATIONAL WRITE TEST #1 (TEST 57)/
 7138  053622  051105  052101  047511
 7139  053630  040516  020114  051127
 7140  053636  052111  020105  042524
 7141  053644  052123  021440  020061
 7142  053652  052050  051505  020124
 7143  053660  033465  000051
 7144  053664  042522  042101  047440  HED60:  .ASCIZ/READ OPERATIONAL TEST (NORMAL #2)(TEST 60)/
 7145  053672  042520  040522  044524
 7146  053700  047117  046101  052040
 7147  053706  051505  020124  047050
 7148  053714  051117  040515  020114
 7149  053722  031043  024051  042524
 7150  053730  052123  033040  024460
 7151  053736     000
 7152  053737     122  020110  050117  HED61:  .ASCIZ/RH OPERATIONAL READ TEST #1 (TEST 61)/
 7153  053744  051105  052101  047511
 7154  053752  040516  020114  042522
 7155  053760  042101  052040  051505
 7156  053766  020124  030443  024040
 7157  053774  042524  052123  033040
 7158  054002  024461     000
 7159  054005     122  040505  020104  HED62:  .ASCIZ/READ OPERATIONAL TEST (NORMAL #3)(TEST 62)/
 7160  054012  050117  051105  052101
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7161  054020  047511  040516  020114
7162  054026  042524  052123  024040
7163  054034  047516  046522  046101
7164  054042  021440  024463  052050
7165  054050  051505  020124  031066
7166  054056  000051
7167  054060  044122  047440  042520  HED63:  .ASCIZ/RH OPERATIONAL WRITE TEST #2 (TEST 63)/
7168  054066  040522  044524  047117
7169  054074  046101  053440  044522
7170  054102  042524  052040  051505
7171  054110  020124  031043  024040
7172  054116  042524  052123  033040
7173  054124  024463     000
7174  054127     122  040505  020104  HED64:  .ASCIZ/READ OPERATIONAL TEST (NORMAL #4)(TEST 64)/
7175  054134  050117  051105  052101
7176  054142  047511  040516  020114
7177  054150  042524  052123  024040
7178  054156  047516  046522  046101
7179  054164  021440  024464  052050
7180  054172  051505  020124  032066
7181  054200  000051
7182  054202  044122  047440  042520  HED65:  .ASCIZ/RH OPERATIONAL READ TEST #2 (TEST 65)/
7183  054210  040522  044524  047117
7184  054216  046101  051040  040505
7185  054224  020104  042524  052123
7186  054232  021440  020062  052050
7187  054240  051505  020124  032466
7188  054246  000051
7189  054250  051127  052111  020105  HED66:  .ASCIZ/WRITE OPERATIONAL TEST (NORMAL #1)(TEST 66)/
7190  054256  050117  051105  052101
7191  054264  047511  040516  020114
7192  054272  042524  052123  024040
7193  054300  047516  046522  046101
7194  054306  021440  024461  052050
7195  054314  051505  020124  033066
7196  054322  000051
7197  054324  044122  047440  042520  HED67:  .ASCIZ/RH OPERATIONAL WRITE TEST #3 (TEST 67)/
7198  054332  040522  044524  047117
7199  054340  046101  053440  044522
7200  054346  042524  052040  051505
7201  054354  020124  031443  024040
7202  054362  042524  052123  033040
7203  054370  024467     000
7204  054373     127  044522  042524  HED70:  .ASCIZ/WRITE OPERATIONAL TEST (NORMAL #3)(TEST 70)/
7205  054400  047440  042520  040522
7206  054406  044524  047117  046101
7207  054414  052040  051505  020124
7208  054422  047050  051117  040515
7209  054430  020114  031443  024051
7210  054436  042524  052123  033440
7211  054444  024460     000
7212  054447     122  020110  050117  HED71:  .ASCIZ/RH OPERATIONAL READ TEST #3 (TEST 71)/
7213  054454  051105  052101  047511
7214  054462  040516  020114  042522
7215  054470  042101  052040  051505
7216  054476  020124  031443  024040
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7217  054504  042524  052123  033440
7218  054512  024461     000
7219  054515     127  044522  042524  HED72:  .ASCIZ/WRITE OPERATIONAL TEST (NORMAL #3)(TEST 72)/
7220  054522  047440  042520  040522
7221  054530  044524  047117  046101
7222  054536  052040  051505  020124
7223  054544  047050  051117  040515
7224  054552  020114  031443  024051
7225  054560  042524  052123  033440
7226  054566  024462     000
7227  054571     122  020110  050117  HED73:  .ASCIZ/RH OPERATIONAL WRITE TEST #4 (TEST 73)/
7228  054576  051105  052101  047511
7229  054604  040516  020114  051127
7230  054612  052111  020105  042524
7231  054620  052123  021440  020064
7232  054626  052050  051505  020124
7233  054634  031467  000051
7234  054640  051127  052111  020105  HED74:  .ASCIZ/WRITE OPERATIONAL TEST (NORMAL #4)(TEST 74)/
7235  054646  050117  051105  052101
7236  054654  047511  040516  020114
7237  054662  042524  052123  024040
7238  054670  047516  046522  046101
7239  054676  021440  024464  052050
7240  054704  051505  020124  032067
7241  054712  000051
7242  054714  044122  047440  042520  HED75:  .ASCIZ/RH OPERATIONAL READ TEST #4 (TEST 75)/
7243  054722  040522  044524  047117
7244  054730  046101  051040  040505
7245  054736  020104  042524  052123
7246  054744  021440  020064  052050
7247  054752  051505  020124  032467
7248  054760  000051
7249  054762  040514  043522  020105  HED76:  .ASCIZ/LARGE TRANSFER TEST 671 WORDS (TEST 76)/
7250  054770  051124  047101  043123
7251  054776  051105  052040  051505
7252  055004  020124  033466  020061
7253  055012  047527  042122  020123
7254  055020  052050  051505  020124
7255  055026  033067  000051
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                                                          ;ERROR MESSAGES
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                                                  .EVEN
055032  047503  051122  041505  EM1:     .ASCIZ/CORRECT BIT DID NOT SET IN RHWC/
055040  020124  044502  020124
055046  044504  020104  047516
055054  020124  042523  020124
055062  047111  051040  053510
055070  000103
055072  047503  051122  041505  EM2:     .ASCIZ/CORRECT BIT DID NOT SET IN RHBA/
055100  020124  044502  020124
055106  044504  020104  047516
055114  020124  042523  020124
055122  047111  051040  041110
055130  000101
055132  047503  051122  041505  EM3:     .ASCIZ/CORRECT BIT DID NOT SET IN BUS ADDRESS REG./
055140  020124  044502  020124
055146  044504  020104  047516
055154  020124  042523  020124
055162  047111  041040  051525
055170  040440  042104  042522
055176  051523  051040  043505
055204  000056
055206  047503  051122  041505  EM4:     .ASCIZ/CORRECT BIT DID NOT SET IN RHDB/
055214  020124  044502  020124
055222  044504  020104  047516
055230  020124  042523  020124
055236  047111  051040  042110
055244  000102
055246  047516  026516  054105  EM5:     .ASCIZ/NON-EXISTANT MEMORY DID NOT SET IN RHCS2/
055254  051511  040524  052116
055262  046440  046505  051117
055270  020131  044504  020104
055276  047516  020124  042523
055304  020124  047111  051040
055312  041510  031123     000
055317     040  047514  044507  EM6:     .ASCII/ LOGIC TO SET TRE BIT IN RHCS1 REGISTER/<15><12>
055324  020103  047524  051440
055332  052105  052040  042522
055340  041040  052111  044440
055346  020116  044122  051503
055354  020061  042522  044507
055362  052123  051105  005015
055370  051511  047040  052117           .ASCII/IS NOT WORKING,GO TO (CSRB) PRINTS IF RH11/<15><12>
055376  053440  051117  044513
055404  043516  043454  020117
055412  047524  024040  051503
055420  041122  020051  051120
055426  047111  051524  044440
055434  020106  044122  030461
055442  005015
055444  051117  024040  051503           .ASCIZ/OR (CSTB) PRINTS IF RH70 IN LOCATION B7 ON BOTH PRINTS/
055452  041124  020051  051120
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 7312  055460  047111  051524  044440
 7313  055466  020106  044122  030067
 7314  055474  044440  020116  047514
 7315  055502  040503  044524  047117
 7316  055510  041040  020067  047117
 7317  055516  041040  052117  020110
 7318  055524  051120  047111  051524
 7319  055532     000
 7320  055533     116  046505  041040  EM7:    .ASCIZ/NEM BIT DOES NOT READ AS SET IN RHCS2/
 7321  055540  052111  042040  042517
 7322  055546  020123  047516  020124
 7323  055554  042522  042101  040440
 7324  055562  020123  042523  020124
 7325  055570  047111  051040  041510
 7326  055576  031123     000
 7327  055601     116  046505  040440  EM10:   .ASCIZ/NEM AND SC NOT SET IN RHCS1/
 7328  055606  042116  051440  020103
 7329  055614  047516  020124  042523
 7330  055622  020124  047111  051040
 7331  055630  041510  030523     000
 7332  055635     123  020103  044502  EM11:   .ASCIZ/SC BIT SET BY ATTN OR MCPE ERROR/
 7333  055642  020124  042523  020124
 7334  055650  054502  040440  052124
 7335  055656  020116  051117  046440
 7336  055664  050103  020105  051105
 7337  055672  047522  000122
 7338  055676  051440  020103  044504  EM12:   .ASCIZ/ SC DID NOT SET/
 7339  055704  020104  047516  020124
 7340  055712  042523  000124
 7341  055716  051124  020105  044502  EM13:   .ASCIZ/TRE BIT IS SET BUT SC READS AS CLEARED/
 7342  055724  020124  051511  051440
 7343  055732  052105  041040  052125
 7344  055740  051440  020103  042522
 7345  055746  042101  020123  051501
 7346  055754  041440  042514  051101
 7347  055762  042105     000
 7348  055765     127  042503  041040  EM14:   .ASCIZ/WCE BIT DID NOT SET/
 7349  055772  052111  042040  042111
 7350  056000  047040  052117  051440
 7351  056006  052105     000
 7352  056011     127  042503  041040  EM15:   .ASCIZ/WCE BIT DID NOT SET/
 7353  056016  052111  042040  042111
 7354  056024  047040  052117  051440
 7355  056032  052105     000
 7356  056035     124  042522  041040  EM16:   .ASCIZ/TRE BIT NOT SET/
 7357  056042  052111  047040  052117
 7358  056050  051440  052105     000
 7359  056055     127  042503  040440  EM17:   .ASCIZ/WCE AND TRE ARE SET BUT SC BIT NOT SET/
 7360  056062  042116  052040  042522
 7361  056070  040440  042522  051440
 7362  056076  052105  041040  052125
 7363  056104  051440  020103  044502
 7364  056112  020124  047516  020124
 7365  056120  042523  000124
 7366  056124  050125  020105  044504  EM20:   .ASCIZ/UPE DID NOT SET IN RHCS2/
 7367  056132  020104  047516  020124
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 7368  056140  042523  020124  047111
 7369  056146  051040  041510  031123
 7370  056154     000
 7371  056155     124  042522  040440  EM21:   .ASCII/TRE AND SC BITS ARE SET/
 7372  056162  042116  051440  020103
 7373  056170  044502  051524  040440
 7374  056176  042522  051440  052105
 7375  056204  050125  020105  047101  EM22:   .ASCIZ/UPE AND SC BIT DID NOT SET/
 7376  056212  020104  041523  041040
 7377  056220  052111  042040  042111
 7378  056226  047040  052117  051440
 7379  056234  052105     000
 7380  056237     123  020103  044502  EM23:   .ASCIZ/SC BIT NOT SET/
 7381  056244  020124  047516  020124
 7382  056252  042523  000124
 7383  056256  042516  020104  044504  EM24:   .ASCIZ/NED DID NOT SET IN RHCS2/
 7384  056264  020104  047516  020124
 7385  056272  042523  020124  047111
 7386  056300  051040  041510  031123
 7387  056306     000
 7388  056307     124  042522  040440  EM25:   .ASCIZ/TRE AND SC SHOULD NOT SET/
 7389  056314  042116  051440  020103
 7390  056322  044123  052517  042114
 7391  056330  047040  052117  051440
 7392  056336  052105     000
 7393  056341     124  042522  051440  EM26:   .ASCIZ/TRE SHOULD NOT BE SET/
 7394  056346  047510  046125  020104
 7395  056354  047516  020124  042502
 7396  056362  051440  052105     000
 7397  056367     124  042522  041040  EM27:   .ASCIZ/TRE BIT WAS NOT SET BY NED/
 7398  056374  052111  053440  051501
 7399  056402  047040  052117  051440
 7400  056410  052105  041040  020131
 7401  056416  042516  000104
 7402  056422  054115  020106  044502  EM30:   .ASCIZ/MXF BIT DID NOT SET IN RHCS2/
 7403  056430  020124  044504  020104
 7404  056436  047516  020124  042523
 7405  056444  020124  047111  051040
 7406  056452  041510  031123     000
 7407  056457     115  043130  041040  EM31:   .ASCIZ/MXF BIT SHOULD BE SET IN RHCS2/
 7408  056464  052111  051440  047510
 7409  056472  046125  020104  042502
 7410  056500  051440  052105  044440
 7411  056506  020116  044122  051503
 7412  056514  000062
 7413  056516  054115  020106  047101  EM32:   .ASCIZ/MXF AND SC ARE NOT SET/
 7414  056524  020104  041523  040440
 7415  056532  042522  047040  052117
 7416  056540  051440  052105     000
 7417  056545     124  042522  051040  EM33:   .ASCIZ/TRE READS AS CLEARED,MXF AND SC ARE SET/
 7418  056552  040505  051504  040440
 7419  056560  020123  046103  040505
 7420  056566  042522  026104  054115
 7421  056574  020106  047101  020104
 7422  056602  041523  040440  042522
 7423  056610  051440  052105     000
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 7424  056615     124  051505  042524  EM34:   .ASCIZ/TESTER DOES NOT READ AS BEING CONNECTED/
 7425  056622  020122  047504  051505
 7426  056630  047040  052117  051040
 7427  056636  040505  020104  051501
 7428  056644  041040  044505  043516
 7429  056652  041440  047117  042516
 7430  056660  052103  042105     000
 7431  056665     102  052111  044440  EM35:   .ASCIZ/BIT IN RHCS3 WILL NOT SET/
 7432  056672  020116  044122  051503
 7433  056700  020063  044527  046114
 7434  056706  047040  052117  051440
 7435  056714  052105     000
 7436  056717     122  020110  044504  EM36:   .ASCIZ/RH DID NOT RESPOND TO ADDRESS/
 7437  056724  020104  047516  020124
 7438  056732  042522  050123  047117
 7439  056740  020104  047524  040440
 7440  056746  042104  042522  051523
 7441  056754     000
 7442  056755     104  052114  042040  EM37:   .ASCIZ/DLT DID NOT SET IN RHCS2/
 7443  056762  042111  047040  052117
 7444  056770  051440  052105  044440
 7445  056776  020116  044122  051503
 7446  057004  000062
 7447  057006  046104  020124  051511  EM40:   .ASCII/DLT IS NOT SET IN RHCS2,BUT TRE AND SC ARE SET/<15><12>
 7448  057014  047040  052117  051440
 7449  057022  052105  044440  020116
 7450  057030  044122  051503  026062
 7451  057036  052502  020124  051124
 7452  057044  020105  047101  020104
 7453  057052  041523  040440  042522
 7454  057060  051440  052105  005015
 7455  057066  051124  020105  047101          .ASCIZ/TRE AND SC COULD HAVE BEEN SET BY ANOTHER ERROR/
 7456  057074  020104  041523  041440
 7457  057102  052517  042114  044040
 7458  057110  053101  020105  042502
 7459  057116  047105  051440  052105
 7460  057124  041040  020131  047101
 7461  057132  052117  042510  020122
 7462  057140  051105  047522  000122
 7463  057146  052517  050124  052125  EM41:   .ASCIZ/OUTPUT READY DID NOT SET WHEN INFO WAS LOADED INTO THE DATA BUFFER/
 7464  057154  051040  040505  054504
 7465  057162  042040  042111  047040
 7466  057170  052117  051440  052105
 7467  057176  053440  042510  020116
 7468  057204  047111  047506  053440
 7469  057212  051501  046040  040517
 7470  057220  042504  020104  047111
 7471  057226  047524  052040  042510
 7472  057234  042040  052101  020101
 7473  057242  052502  043106  051105
 7474  057250     000
 7475  057251     101  046114  041040  EM42:   .ASCIZ/ALL BITS DID NOT LOAD INTO RHWC (177777)/
 7476  057256  052111  020123  044504
 7477  057264  020104  047516  020124
 7478  057272  047514  042101  044440
 7479  057300  052116  020117  044122
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 7480  057306  041527  024040  033461
 7481  057314  033467  033467  000051
 7482  057322  044122  041527  042040  EM43:   .ASCIZ/RHWC DID NOT LOAD ANY BITS (177777)/
 7483  057330  042111  047040  052117
 7484  057336  046040  040517  020104
 7485  057344  047101  020131  044502
 7486  057352  051524  024040  033461
 7487  057360  033467  033467  000051
 7488  057366  047523  042515  041040  EM44:   .ASCIZ/SOME BITS CLEARED IN RHWC AFTER CLR WAS LOADED INTO RHCS2/
 7489  057374  052111  020123  046103
 7490  057402  040505  042522  020104
 7491  057410  047111  051040  053510
 7492  057416  020103  043101  042524
 7493  057424  020122  046103  020122
 7494  057432  040527  020123  047514
 7495  057440  042101  042105  044440
 7496  057446  052116  020117  044122
 7497  057454  051503  000062
 7498  057460  047516  026516  054105  EM45:   .ASCIZ/NON-EXISTANT MEMORY BIT SET IN RHCS2 (NEM)/
 7499  057466  051511  040524  052116
 7500  057474  046440  046505  051117
 7501  057502  020131  044502  020124
 7502  057510  042523  020124  047111
 7503  057516  051040  041510  031123
 7504  057524  024040  042516  024515
 7505  057532     000
 7506  057533     122  041110  020101  EM46:   .ASCIZ/RHBA DID NOT CLR AFTER CLR WAS LOADED INTO RHCS2/
 7507  057540  044504  020104  047516
 7508  057546  020124  046103  020122
 7509  057554  043101  042524  020122
 7510  057562  046103  020122  040527
 7511  057570  020123  047514  042101
 7512  057576  042105  044440  052116
 7513  057604  020117  044122  051503
 7514  057612  000062
 7515  057614  046101  020114  044502  EM47:   .ASCIZ/ALL BITS DID NOT LOAD INTO RHBA (177776)/
 7516  057622  051524  042040  042111
 7517  057630  047040  052117  046040
 7518  057636  040517  020104  047111
 7519  057644  047524  051040  041110
 7520  057652  020101  030450  033467
 7521  057660  033467  024466     000
 7522  057665     114  040517  044504  EM50:   .ASCIZ/LOADING TRE AFTER ITS SET DOES NOT CLEAR ERROR/
 7523  057672  043516  052040  042522
 7524  057700  040440  052106  051105
 7525  057706  044440  051524  051440
 7526  057714  052105  042040  042517
 7527  057722  020123  047516  020124
 7528  057730  046103  040505  020122
 7529  057736  051105  047522  000122
 7530  057744  043520  020105  044504  EM51:   .ASCIZ/PGE DID NOT SET IN RHCS2/
 7531  057752  020104  047516  020124
 7532  057760  042523  020124  047111
 7533  057766  051040  041510  031123
 7534  057774     000
 7535  057775     124  042510  050040  EM52:   .ASCII/THE PROM WHILE ACCESSING A REGISTER/<15><12>
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 7536  060002  047522  020115  044127
 7537  060010  046111  020105  041501
 7538  060016  042503  051523  047111
 7539  060024  020107  020101  042522
 7540  060032  044507  052123  051105
 7541  060040  005015
 7542  060042  044127  041511  020110          .ASCII/WHICH YOUR TESTER CANNOT SUPPLY INFORMATION/<15><12>
 7543  060050  047531  051125  052040
 7544  060056  051505  042524  020122
 7545  060064  040503  047116  052117
 7546  060072  051440  050125  046120
 7547  060100  020131  047111  047506
 7548  060106  046522  052101  047511
 7549  060114  006516     012
 7550  060117     106  051117  051440          .ASCIZ/FOR SAYS INFO IS PRESENT/
 7551  060124  054501  020123  047111
 7552  060132  047506  044440  020123
 7553  060140  051120  051505  047105
 7554  060146  000124
 7555  060150  044122  051503  000061  EM53:   .ASCIZ/RHCS1/
 7556  060156  044122  041527     000  EM54:   .ASCIZ/RHWC/
 7557  060163     122  041110  000101  EM55:   .ASCIZ/RHBA/
 7558  060170  044122  051115  000062  EM56:   .ASCIZ/RHMR2/
 7559  060176  044122  051503  000062  EM57:   .ASCIZ/RHCS2/
 7560  060204  044122  052123     000  EM60:   .ASCIZ/RHST/
 7561  060211     122  042510  000122  EM61:   .ASCIZ/RHER/
 7562  060216  044122  051501     000  EM62:   .ASCIZ/RHAS/
 7563  060223     122  052110  041104  EM63:   .ASCIZ/RHTDB/
 7564  060230     000
 7565  060231     122  042110  000123  EM64:   .ASCIZ/RHDS/
 7566  060236  044122  051115  000061  EM65:   .ASCIZ/RHMR1/
 7567  060244  044122  052104     000  EM66:   .ASCIZ/RHDT/
 7568  060251     122  041110  042501  EM67:   .ASCIZ/RHBAE/
 7569  060256     000
 7570  060257     122  041510  031523  EM70:   .ASCIZ/RHCS3/
 7571  060264     000
 7572  060265     104  053105  041511  EM71:   .ASCIZ/DEVICE NUMBER IN RHMR2 DOES NOT EQUAL A 7AFTER A CLEAR/
 7573  060272  020105  052516  041115
 7574  060300  051105  044440  020116
 7575  060306  044122  051115  020062
 7576  060314  047504  051505  047040
 7577  060322  052117  042440  052521
 7578  060330  046101  040440  033440
 7579  060336  043101  042524  020122
 7580  060344  020101  046103  040505
 7581  060352  000122
 7582  060354  044122  051503  020061  EM72:   .ASCIZ/RHCS1 HAS AN ERROR BIT SET/<15><12>
 7583  060362  040510  020123  047101
 7584  060370  042440  051122  051117
 7585  060376  041040  052111  051440
 7586  060404  052105  005015     000
 7587  060411     105  051122  051117  EM73:   .ASCIZ/ERROR BIT SET IN RHCS2/
 7588  060416  041040  052111  051440
 7589  060424  052105  044440  020116
 7590  060432  044122  051503  000062
 7591  060440  051105  047522  020122  EM74:   .ASCIZ/ERROR BIT SET IN RHER/
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 7592  060446  044502  020124  042523
 7593  060454  020124  047111  051040
 7594  060462  042510  000122
 7595  060466  051105  047522  020122  EM75:   .ASCIZ/ERROR BIT SET IN RHST/<15><12>
 7596  060474  044502  020124  042523
 7597  060502  020124  047111  051040
 7598  060510  051510  006524  000012
 7599  060516  044122  040502  044440  EM76:   .ASCIZ/RHBA INCREMENTED BUT IT DID NOT CARRY OVER TO RHBAE,RHBAE SHOULD  40/
 7600  060524  041516  042522  042515
 7601  060532  052116  042105  041040
 7602  060540  052125  044440  020124
 7603  060546  044504  020104  047516
 7604  060554  020124  040503  051122
 7605  060562  020131  053117  051105
 7606  060570  052040  020117  044122
 7607  060576  040502  026105  044122
 7608  060604  040502  020105  044123
 7609  060612  052517  042114  036440
 7610  060620  030064     000
 7611  060623     122  054504  042040  EM77:   .ASCII/RDY DID NOT SET,AND WORD COUNT DID NOT INCREMENT/<15><12>
 7612  060630  042111  047040  052117
 7613  060636  051440  052105  040454
 7614  060644  042116  053440  051117
 7615  060652  020104  047503  047125
 7616  060660  020124  044504  020104
 7617  060666  047516  020124  047111
 7618  060674  051103  046505  047105
 7619  060702  006524     012
 7620  060705     104  044517  043516          .ASCIZ/DOING A WRITE OPERATION/
 7621  060712  040440  053440  044522
 7622  060720  042524  047440  042520
 7623  060726  040522  044524  047117
 7624  060734     000
 7625  060735     122  041110  042501  EM100:  .ASCII/RHBAE DID NOT CLEAR AFTER CLR WAS LOADED/<15><12>
 7626  060742  042040  042111  047040
 7627  060750  052117  041440  042514
 7628  060756  051101  040440  052106
 7629  060764  051105  041440  051114
 7630  060772  053440  051501  046040
 7631  061000  040517  042504  006504
 7632  061006     012
 7633  061007     111  052116  020117          .ASCIZ/INTO RHCS2/
 7634  061014  044122  051503  000062
 7635  061022  051127  052111  020105  EM101:  .ASCIZ/WRITE REVERSE OPERATION DID NOT WORK/
 7636  061030  042522  042526  051522
 7637  061036  020105  050117  051105
 7638  061044  052101  047511  020116
 7639  061052  044504  020104  047516
 7640  061060  020124  047527  045522
 7641  061066     000
 7642
 7643  061067     122  054504  042040  EM102:  .ASCIZ/RDY DID NOT SET IN RHCS1/
 7644  061074  042111  047040  052117
 7645  061102  051440  052105  044440
 7646  061110  020116  044122  051503
 7647  061116  000061
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7648  061120  052504  044522  043516  EM103:  .ASCII/DURING A WRITE OPERATION RDY DID NOT SET/<15><12>
7649  061126  040440  053440  044522
7650  061134  042524  047440  042520
7651  061142  040522  044524  047117
7652  061150  051040  054504  042040
7653  061156  042111  047040  052117
7654  061164  051440  052105  005015
7655  061172  047527  042122  041440          .ASCII/WORD COUNT DID NOT INCREMENT,BUT INFORMATION/<15><12>
7656  061200  052517  052116  042040
7657  061206  042111  047040  052117
7658  061214  044440  041516  042522
7659  061222  042515  052116  041054
7660  061230  052125  044440  043116
7661  061236  051117  040515  044524          .ASCII/
7662  061244  047117  005015
7663  061250  040527  020123  051127          .ASCIZ/WAS WRITTEN TO TESTER/
7664  061256  052111  042524  020116
7665  061264  047524  052040  051505
7666  061272  042524  000122
7667  061276  052504  044522  043516  EM104:  .ASCII/DURING A WRITE OPERATION RDY DID NOT SET/<15><12>
7668  061304  040440  053440  044522
7669  061312  042524  047440  042520
7670  061320  040522  044524  047117
7671  061326  051040  054504  042040
7672  061334  042111  047040  052117
7673  061342  051440  052105  005015
7674  061350  047527  042122  041440          .ASCII/WORD COUNT DID NOT INCREMENT,AND INFORMATION/<15><12>
7675  061356  052517  052116  042040
7676  061364  042111  047040  052117
7677  061372  044440  041516  042522
7678  061400  042515  052116  040454
7679  061406  042116  044440  043116
7680  061414  051117  040515  044524
7681  061422  047117  005015
7682  061426  040527  020123  047516          .ASCIZ/WAS NOT TRANSFERED TO THE TESTER/
7683  061434  020124  051124  047101
7684  061442  043123  051105  042105
7685  061450  052040  020117  044124
7686  061456  020105  042524  052123
7687  061464  051105     000
7688  061467     102  042501  044440  EM105:  .ASCIZ/BAE IS MESSED UP,IT SHOULD EQUAL 40,/
7689  061474  020123  042515  051523
7690  061502  042105  052440  026120
7691  061510  052111  051440  047510
7692  061516  046125  020104  050505
7693  061524  040525  020114  030064
7694  061532  000054
7695  061534  040502  020105  044504  EM106:  .ASCIZ/BAE DID NOT INCREMENT/
7696  061542  020104  047516  020124
7697  061550  047111  051103  046505
7698  061556  047105  000124
7699  061562  042522  042101  051040  EM107:  .ASCIZ/READ REV OPERATION DID NOT READ FROM TESTER TO STORAGE LOCATION (RBUF)/
7700  061570  053105  047440  042520
7701  061576  040522  044524  047117
7702  061604  042040  042111  047040
7703  061612  052117  051040  040505
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7704  061620  020104  051106  046517
7705  061626  052040  051505  042524
7706  061634  020122  047524  051440
7707  061642  047524  040522  042507
7708  061650  046040  041517  052101
7709  061656  047511  020116  051050
7710  061664  052502  024506     000
7711  061671     122  041110  042501  EM110:  .ASCII/RHBAE EQUALS 0,IT SHOULD EQUAL 40/<15><12>
7712  061676  042440  052521  046101
7713  061704  020123  026060  052111
7714  061712  051440  047510  046125
7715  061720  020104  050505  040525
7716  061726  020114  030064  005015
7717  061734  043101  042524  020122          .ASCIZ/AFTER A ONE WORD WRITE/
7718  061742  020101  047117  020105
7719  061750  047527  042122  053440
7720  061756  044522  042524     000
7721  061763     101  033461  042040  EM111:  .ASCIZ/A17 DID NOT SET AFTER BA WAS INCREMENTED/<15><12>
7722  061770  042111  047040  052117
7723  061776  051440  052105  040440
7724  062004  052106  051105  041040
7725  062012  020101  040527  020123
7726  062020  047111  051103  046505
7727  062026  047105  042524  006504
7728  062034  000012
7729  062036  040502  042040  042111  EM112:  .ASCIZ/BA DID NOT INCREMENT/
7730  062044  047040  052117  044440
7731  062052  041516  042522  042515
7732  062060  052116     000
7733  062063     102  020101  047111  EM113:  .ASCII/BA INCREMENTED BUT IT DID NOT CARRY TO/<15><12>
7734  062070  051103  046505  047105
7735  062076  042524  020104  052502
7736  062104  020124  052111  042040
7737  062112  042111  047040  052117
7738  062120  041440  051101  054522
7739  062126  052040  006517     012
7740  062133     101  033061  040440          .ASCIZ/A16 AND A17 IN RHCS1/
7741  062140  042116  040440  033461
7742  062146  044440  020116  044122
7743  062154  051503  000061
7744  062160  052517  050124  052125  EM114:  .ASCII/OUTPUT READY WAS NOT NEGATED AFTER CLR WAS/<15><12>
7745  062166  051040  040505  054504
7746  062174  053440  051501  047040
7747  062202  052117  047040  043505
7748  062210  052101  042105  040440
7749  062216  052106  051105  041440
7750  062224  051114  053440  051501
7751  062232  005015
7752  062234  047514  042101  042105          .ASCIZ/LOADED INTO RHCS2/
7753  062242  044440  052116  020117
7754  062250  044122  051503  000062
7755  062256  046101  020114  044502  EM115:  .ASCIZ/ALL BITS DID NOT READ TO STORAGE LOC. (RBUF) DURING A READ REV. OPERATION
7756  062264  051524  042040  042111
7757  062272  047040  052117  051040
7758  062300  040505  020104  047524
7759  062306  051440  047524  040522
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 7760  062314  042507  046040  041517
 7761  062322  020056  051050  052502
 7762  062330  024506  042040  051125
 7763  062336  047111  020107  020101
 7764  062344  042522  042101  051040
 7765  062352  053105  020056  050117
 7766  062360  051105  052101  047511
 7767  062366  000116
 7768  062370  042115  042520  042040  EM116:  .ASCIZ/MDPE DID NOT SET IN RHCS2/
 7769  062376  042111  047040  052117
 7770  062404  051440  052105  044440
 7771  062412  020116  044122  051503
 7772  062420  000062
 7773  062422  047111  047506  042040  EM117:  .ASCII/INFO DID NOT WRITE TO TESTER DOING A/<15><12>
 7774  062430  042111  047040  052117
 7775  062436  053440  044522  042524
 7776  062444  052040  020117  042524
 7777  062452  052123  051105  042040
 7778  062460  044517  043516  040440
 7779  062466  005015
 7780  062470  051127  052111  020105          .ASCIZ/WRITE REVERSE OPERATION/
 7781  062476  042522  042526  051522
 7782  062504  020105  050117  051105
 7783  062512  052101  047511  000116
 7784  062520  051124  020105  047101  EM120:  .ASCIZ/TRE AND SC WHERE NOT SET BY MDPE/
 7785  062526  020104  041523  053440
 7786  062534  042510  042522  047040
 7787  062542  052117  051440  052105
 7788  062550  041040  020131  042115
 7789  062556  042520     000
 7790  062561     124  042522  044440  EM121:  .ASCIZ/TRE IS SET IN RHCS1,MDPE AND SC/
 7791  062566  020123  042523  020124
 7792  062574  047111  051040  041510
 7793  062602  030523  046454  050104
 7794  062610  020105  047101  020104
 7795  062616  041523     000
 7796  062621     123  047510  046125          .ASCIZ/SHOULD ALSO BE SET/
 7797  062626  020104  046101  047523
 7798  062634  041040  020105  042523
 7799  062642  000124
 7800  062644  042115  042520  040440  EM122:  .ASCIZ/MDPE AND SC SHOULD BE SET/
 7801  062652  042116  051440  020103
 7802  062660  044123  052517  042114
 7803  062666  041040  020105  042523
 7804  062674  000124
 7805  062676  051124  020105  047101  EM123:  .ASCIZ/TRE AND SC ARE SET, PGE SHOULD ALSO BE SET/
 7806  062704  020104  041523  040440
 7807  062712  042522  051440  052105
 7808  062720  020054  043520  020105
 7809  062726  044123  052517  042114
 7810  062734  040440  051514  020117
 7811  062742  042502  051440  052105
 7812  062750     000
 7813  062751     104  046102  042040  EM124:  .ASCII/DBL DID NOT SET AFTER A 4 WORD WRITE FROM/<15><12>
 7814  062756  042111  047040  052117
 7815  062764  051440  052105  040440
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 7816  062772  052106  051105  040440
 7817  063000  032040  053440  051117
 7818  063006  020104  051127  052111
 7819  063014  020105  051106  046517
 7820  063022  005015
 7821  063024  047101  042440  042526          .ASCIZ/AN EVEN ADDRESS/
 7822  063032  020116  042101  051104
 7823  063040  051505  000123
 7824  063044  041104  020114  042523  EM125:  .ASCII/DBL SET IN RHCS3 DOING A 1 WORD WRITE FROM/<15><12>
 7825  063052  020124  047111  051040
 7826  063060  041510  031523  042040
 7827  063066  044517  043516  040440
 7828  063074  030440  053440  051117
 7829  063102  020104  051127  052111
 7830  063110  020105  051106  046517
 7831  063116  005015
 7832  063120  047101  042440  042526          .ASCIZ/AN EVEN ADDRESS/
 7833  063126  020116  042101  051104
 7834  063134  051505  000123
 7835  063140  041104  020114  042523  EM126:  .ASCII/DBL SET IN RHCS3 ON A 3 WORD WRITE FROM/<15><12>
 7836  063146  020124  047111  051040
 7837  063154  041510  031523  047440
 7838  063162  020116  020101  020063
 7839  063170  047527  042122  053440
 7840  063176  044522  042524  043040
 7841  063204  047522  006515     012
 7842  063211     101  020116  053105          .ASCIZ/AN EVEN ADDRESS/
 7843  063216  047105  040440  042104
 7844  063224  042522  051523     000
 7845  063231     104  046102  042040  EM127:  .ASCII/DBL DID NOT SET IN RHCS3 AFTER A 2 WORD/<15><12>
 7846  063236  042111  047040  052117
 7847  063244  051440  052105  044440
 7848  063252  020116  044122  051503
 7849  063260  020063  043101  042524
 7850  063266  020122  020101  020062
 7851  063274  047527  042122  005015
 7852  063302  051106  046517  040440          .ASCIZ/FROM AN EVEN ADDRESS/
 7853  063310  020116  053105  047105
 7854  063316  040440  042104  042522
 7855  063324  051523     000
 7856  063327     115  050103  020105  EM130:  .ASCIZ/MCPE SET IN RHCS1 BUT SC READS AS CLEARED/
 7857  063334  042523  020124  047111
 7858  063342  051040  041510  030523
 7859  063350  041040  052125  051440
 7860  063356  020103  042522  042101
 7861  063364  020123  051501  041440
 7862  063372  042514  051101  042105
 7863  063400     000
 7864  063401     115  050103  020105  EM131:  .ASCIZ/MCPE DID NOT SET IN RHCS1/
 7865  063406  044504  020104  047516
 7866  063414  020124  042523  020124
 7867  063422  047111  051040  041510
 7868  063430  030523     000
 7869  063433     127  042503  046040  EM132:  .ASCIZ/WCE LO IN RHCS3 DID NOT SET/
 7870  063440  020117  047111  051040
 7871  063446  041510  031523  042040
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 7872  063454  042111  047040  052117
 7873  063462  051440  052105     000
 7874  063467     127  042503  046040  EM133:  .ASCII/WCE LO SHOULD ONLY BE SET IN RHCS3 BUT/<15><12>
 7875  063474  020117  044123  052517
 7876  063502  042114  047440  046116
 7877  063510  020131  042502  051440
 7878  063516  052105  044440  020116
 7879  063524  044122  051503  020063
 7880  063532  052502  006524     012
 7881  063537     127  042503  044040          .ASCIZ/WCE HI ALSO READS AS SET/
 7882  063544  020111  046101  047523
 7883  063552  051040  040505  051504
 7884  063560  040440  020123  042523
 7885  063566  000124
 7886  063570  041527  020105  047514  EM134:  .ASCIZ/WCE LO SET IN RHCS3 BUT WCE DID NOT SET IN RHCS2/
 7887  063576  051440  052105  044440
 7888  063604  020116  044122  051503
 7889  063612  020063  052502  020124
 7890  063620  041527  020105  044504
 7891  063626  020104  047516  020124
 7892  063634  042523  020124  047111
 7893  063642  051040  041510  031123
 7894  063650     000
 7895  063651     127  042503  044040  EM135:  .ASCIZ/WCE HI DID NOT SET IN RHCS3/
 7896  063656  020111  044504  020104
 7897  063664  047516  020124  042523
 7898  063672  020124  047111  051040
 7899  063700  041510  031523     000
 7900  063705     127  042503  044040  EM136:  .ASCIZ/WCE HI SET IN RHCS3 BUT WCE DID NOT SET IN RHCS2/
 7901  063712  020111  042523  020124
 7902  063720  047111  051040  041510
 7903  063726  031523  041040  052125
 7904  063734  053440  042503  042040
 7905  063742  042111  047040  052117
 7906  063750  051440  052105  044440
 7907  063756  020116  044122  051503
 7908  063764  000062
 7909  063766  041527  020105  044510  EM137:  .ASCII/WCE HI SHOULD ONLY BE SET IN RHCS3 BUT/<15><12>
 7910  063774  051440  047510  046125
 7911  064002  020104  047117  054514
 7912  064010  041040  020105  042523
 7913  064016  020124  047111  051040
 7914  064024  041510  031523  041040
 7915  064032  052125  005015
 7916  064036  041527  020105  047514          .ASCIZ/WCE LO ALSO READS AS SET/
 7917  064044  040440  051514  020117
 7918  064052  042522  042101  020123
 7919  064060  051501  051440  052105
 7920  064066     000
 7921  064067     127  044522  042524  EM140:  .ASCIZ/WRITE OPERATION DID NOT INCREMENT WORD COUNT/
 7922  064074  047440  042520  040522
 7923  064102  044524  047117  042040
 7924  064110  042111  047040  052117
 7925  064116  044440  041516  042522
 7926  064124  042515  052116  053440
 7927  064132  051117  020104  047503
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 7928  064140  047125  000124
 7929  064144  052502  020123  042101  EM141:  .ASCIZ/BUS ADDRESS DID NOT INCREMENT AFTER A WRITE/
 7930  064152  051104  051505  020123
 7931  064160  044504  020104  047516
 7932  064166  020124  047111  051103
 7933  064174  046505  047105  020124
 7934  064202  043101  042524  020122
 7935  064210  020101  051127  052111
 7936  064216  000105
 7937  064220  047111  047506  046522  EM142:  .ASCIZ/INFORMATION DID NOT GET WRITTEN TO TESTER/
 7938  064226  052101  047511  020116
 7939  064234  044504  020104  047516
 7940  064242  020124  042507  020124
 7941  064250  051127  052111  042524
 7942  064256  020116  047524  052040
 7943  064264  051505  042524  000122
 7944  064272  042522  042101  047440  EM143:  .ASCIZ/READ OPERATION DID NOT INCREMENT WORD COUNT/
 7945  064300  042520  040522  044524
 7946  064306  047117  042040  042111
 7947  064314  047040  052117  044440
 7948  064322  041516  042522  042515
 7949  064330  052116  053440  051117
 7950  064336  020104  047503  047125
 7951  064344  000124
 7952  064346  052502  020123  042101  EM144:  .ASCII/BUS ADDRESS DID NOT INCREMENT AFTER A READ/<15><12>
 7953  064354  051104  051505  020123
 7954  064362  044504  020104  047516
 7955  064370  020124  047111  051103
 7956  064376  046505  047105  020124
 7957  064404  043101  042524  020122
 7958  064412  020101  042522  042101
 7959  064420  005015
 7960  064422  050117  051105  052101          .ASCIZ/OPERATION/
 7961  064430  047511  000116
 7962  064434  047111  047506  046522  EM145:  .ASCIZ/INFORMATION DID NOT READ FROM TESTER/
 7963  064442  052101  047511  020116
 7964  064450  044504  020104  047516
 7965  064456  020124  042522  042101
 7966  064464  043040  047522  020115
 7967  064472  042524  052123  051105
 7968  064500     000
 7969  064501     124  044510  020123  EM146:  .ASCIZ/THIS IS THE CONTENTS OF THE RH REGISTERS/
 7970  064506  051511  052040  042510
 7971  064514  041440  047117  042524
 7972  064522  052116  020123  043117
 7973  064530  052040  042510  051040
 7974  064536  020110  042522  044507
 7975  064544  052123  051105  000123
 7976  064552  046101  020114  044502  EM147:   ASCII/ALL BITS DID NOT GET TRANSFERED DURING A/<15><12>
 7977  064560  051524  042040  042111
 7978  064566  047040  052117  043440
 7979  064574  052105  052040  040522
 7980  064602  051516  042506  042522
 7981  064610  020104  052504  044522
 7982  064616  043516  040440  005015
 7983  064624  042522  042101  047440          .ASCIZ/READ OPERATION/
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 7984  064632  042520  040522  044524
 7985  064640  047117     000
 7986  064643     122  040505  020104  EM150:  .ASCII/READ OPERATION DID NOT SEEM TO WORK,NO /<15><12>
 7987  064650  050117  051105  052101
 7988  064656  047511  020116  044504
 7989  064664  020104  047516  020124
 7990  064672  042523  046505  052040
 7991  064700  020117  047527  045522
 7992  064706  047054  020117  005015
 7993  064714  047111  047506  046522          .ASCIZ/INFORMATION WAS TRANSFERED TO STORAGE LOC.(RBUF)/
 7994  064722  052101  047511  020116
 7995  064730  040527  020123  051124
 7996  064736  047101  043123  051105
 7997  064744  042105  052040  020117
 7998  064752  052123  051117  043501
 7999  064760  020105  047514  027103
 8000  064766  051050  052502  024506
 8001  064774     000
 8002  064775     101  046114  041040  EM151:  .ASCII/ALL BITS WHERE NOT TRANSFERED TO TESTER/<15><12>
 8003  065002  052111  020123  044127
 8004  065010  051105  020105  047516
 8005  065016  020124  051124  047101
 8006  065024  043123  051105  042105
 8007  065032  052040  020117  042524
 8008  065040  052123  051105  005015
 8009  065046  052504  044522  043516          .ASCIZ/DURING A WRITE OPERATION/
 8010  065054  040440  053440  044522
 8011  065062  042524  047440  042520
 8012  065070  040522  044524  047117
 8013  065076     000
 8014  065077     127  044522  042524  EM152:  .ASCIZ/WRITE OPERATION DID NOT WRITE TO TESTER/
 8015  065104  047440  042520  040522
 8016  065112  044524  047117  042040
 8017  065120  042111  047040  052117
 8018  065126  053440  044522  042524
 8019  065134  052040  020117  042524
 8020  065142  052123  051105     000
 8021  065147     104  046102  051440  EM153:  .ASCII/DBL SET ON A 2 WORD TRANSFER WITH BAI/<15><12>
 8022  065154  052105  047440  020116
 8023  065162  020101  020062  047527
 8024  065170  042122  052040  040522
 8025  065176  051516  042506  020122
 8026  065204  044527  044124  041040
 8027  065212  044501  005015
 8028  065216  042523  020124  047111          .ASCIZ/SET IN RHCS2/
 8029  065224  051040  041510  031123
 8030  065232     000
 8031  065233     104  046102  051440  EM154:  .ASCIZ/DBL SET IN RHCS3 ON A 1 WORD READ FROM/<15><12>
 8032  065240  052105  044440  020116
 8033  065246  044122  051503  020063
 8034  065254  047117  040440  030440
 8035  065262  053440  051117  020104
 8036  065270  042522  042101  043040
 8037  065276  047522  006515  000012
 8038  065304  047101  042440  042526          .ASCIZ/AN EVEN ADDRESS/
 8039  065312  020116  042101  051104
```

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 8040  065320  051505  000123
 8041  065324  041104  020114  042523  EM155:  .ASCII/DBL SET ON A 2 WORD WRITE REV. WITH BAI SET/<15><12>
 8042  065332  020124  047117  040440
 8043  065340  031040  053440  051117
 8044  065346  020104  051127  052111
 8045  065354  020105  042522  027126
 8046  065362  053440  052111  020110
 8047  065370  040502  020111  042523
 8048  065376  006524     012
 8049  065401     111  020116  044122          .ASCIZ/IN RHCS2/
 8050  065406  051503  000062
 8051  065412  041104  020114  042523  EM156:  .ASCII/DBL SET ON A 2 WORD TRANSFER(WRITE)/<15><12>
 8052  065420  020124  047117  040440
 8053  065426  031040  053440  051117
 8054  065434  020104  051124  047101
 8055  065442  043123  051105  053450
 8056  065450  044522  042524  006451
 8057  065456     012
 8058  065457     106  047522  020115          .ASCIZ/FROM AN ODD ADDRESS/
 8059  065464  047101  047440  042104
 8060  065472  040440  042104  042522
 8061  065500  051523     000
 8062  065503     104  046102  042040  EM157:  .ASCII/DBL DID NOT SET ON A 2 WORD WRITE REV.FROM AN EVEN/<15><12>
 8063  065510  042111  047040  052117
 8064  065516  051440  052105  047440
 8065  065524  020116  020101  020062
 8066  065532  047527  042122  053440
 8067  065540  044522  042524  051040
 8068  065546  053105  043056  047522
 8069  065554  020115  047101  042440
 8070  065562  042526  006516     012
 8071  065567     101  042104  042522          .ASCIZ/ADDRESS/
 8072  065574  051523     000
 8073  065577     104  046102  051440  EM160:  .ASCII/DBL SET ON A 2 WORD WRITE REVERSE/<15><12>
 8074  065604  052105  047440  020116
 8075  065612  020101  020062  047527
 8076  065620  042122  053440  044522
 8077  065626  042524  051040  053105
 8078  065634  051105  042523  005015
 8079  065642  051106  046517  040440          .ASCIZ/FROM AN ODD ADDRESS/
 8080  065650  020116  042117  020104
 8081  065656  042101  051104  051505
 8082  065664  000123
 8083  065666  041104  020114  042523  EM161:  .ASCII/DBL SET ON A 3 WORD WRITE REVERSE/<15><12>
 8084  065674  020124  047117  040440
 8085  065702  031440  053440  051117
 8086  065710  020104  051127  052111
 8087  065716  020105  042522  042526
 8088  065724  051522  006505     012
 8089  065731     106  047522  020115          .ASCIZ/FROM AN ODD ADDRESS/
 8090  065736  047101  047440  042104
 8091  065744  040440  042104  042522
 8092  065752  051523     000
 8093  065755     104  046102  042040  EM162:  .ASCII/DBL DID NOT SET ON A 2 WORD READ FROM AN/<15><12>
 8094  065762  042111  047040  052117
 8095  065770  051440  052105  047440
```

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 8096  065776  020116  020101  020062
 8097  066004  047527  042122  051040
 8098  066012  040505  020104  051106
 8099  066020  046517  040440  006516
 8100  066026     012
 8101  066027     105  042526  020116          .ASCIZ/EVEN ADDRESS/
 8102  066034  042101  051104  051505
 8103  066042  000123
 8104  066044  041104  020114  042523  EM163:  .ASCII/DBL SET ON A 2 WORD READ FROM/<15><12>
 8105  066052  020124  047117  040440
 8106  066060  031040  053440  051117
 8107  066066  020104  042522  042101
 8108  066074  043040  047522  006515
 8109  066102     012
 8110  066103     101  020116  042117          .ASCIZ/AN ODD ADDRESS/
 8111  066110  020104  042101  051104
 8112  066116  051505  000123
 8113  066122  041104  020114  042523  EM164:  .ASCII/DBL SET ON A 2 WORD READ REVERSE/<15><12>
 8114  066130  020124  047117  040440
 8115  066136  031040  053440  051117
 8116  066144  020104  042522  042101
 8117  066152  051040  053105  051105
 8118  066160  042523  005015
 8119  066164  051106  046517  040440          .ASCIZ/FROM AN EVEN ADDRESS/
 8120  066172  020116  053105  047105
 8121  066200  040440  042104  042522
 8122  066206  051523     000
 8123  066211     104  046102  042040  EM165:  .ASCII/DBL DID NOT SET ON A 2 WORD READ REVERSE/<15><12>
 8124  066216  042111  047040  052117
 8125  066224  051440  052105  047440
 8126  066232  020116  020101  020062
 8127  066240  047527  042122  051040
 8128  066246  040505  020104  042522
 8129  066254  042526  051522  006505
 8130  066262     012
 8131  066263     106  047522  020115          .ASCIZ/FROM AN ODD ADDRESS/
 8132  066270  047101  047440  042104
 8133  066276  040440  042104  042522
 8134  066304  051523     000
 8135  066307     104  046102  051440  EM166:  .ASCII/DBL SET ON A 3 WORD READ FROM/<15><12>
 8136  066314  052105  047440  020116
 8137  066322  020101  020063  047527
 8138  066330  042122  051040  040505
 8139  066336  020104  051106  046517
 8140  066344  005015
 8141  066346  047101  042440  042526          .ASCIZ/AN EVEN ADDRESS/
 8142  066354  020116  042101  051104
 8143  066362  051505  000123
 8144  066366  041104  020114  044504  EM167:  .ASCII/DBL DID NOT SET ON A 3 WORD READ REVERSE/<15><12>
 8145  066374  020104  047516  020124
 8146  066402  042523  020124  047117
 8147  066410  040440  031440  053440
 8148  066416  051117  020104  042522
 8149  066424  042101  051040  053105
 8150  066432  051105  042523  005015
 8151  066440  051106  046517  040440          .ASCIZ/FROM AN EVEN ADDRESS/
```

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8152  066446  020116  053105  047105
8153  066454  040440  042104  042522
8154  066462  051523     000
8155  066465     124  042522  051040  EM171:  .ASCIZ/TRE READS AS SET PGE AND SC SHOULD BE SET/
8156  066472  040505  051504  040440
8157  066500  020123  042523  020124
8158  066506  043520  020105  047101
8159  066514  020104  041523  051440
8160  066522  047510  046125  020104
8161  066530  042502  051440  052105
8162  066536     000
8163  066537     123  020103  044123  EM172:  .ASCIZ/SC SHOULD BE SET/
8164  066544  052517  042114  041040
8165  066552  020105  042523  000124
8166  066560  042122  020131  047111  EM173:  .ASCIZ/RDY IN RHCS1 DID NOT CAUSE AN INTERRUPT WITH IE SET/
8167  066566  051040  041510  030523
8168  066574  042040  042111  047040
8169  066602  052117  041440  052501
8170  066610  042523  040440  020116
8171  066616  047111  042524  051122
8172  066624  050125  020124  044527
8173  066632  044124  044440  020105
8174  066640  042523  000124
8175  066644  042511  053440  046111  EM174:  .ASCIZ/IE WILL NOT SET IN RHCS1/
8176  066652  020114  047516  020124
8177  066660  042523  020124  047111
8178  066666  051040  041510  030523
8179  066674     000
8180  066675     111  020105  040510  EM175:  .ASCIZ/IE HAS AN OPEN GOING TO THE BUS/
8181  066702  020123  047101  047440
8182  066710  042520  020116  047507
8183  066716  047111  020107  047524
8184  066724  052040  042510  041040
8185  066732  051525     000
8186  066735     122  041510  031523  EM176:  .ASCIZ/RHCS3 HAS AN ERROR BIT SET/
8187  066742  044040  051501  040440
8188  066750  020116  051105  047522
8189  066756  020122  044502  020124
8190  066764  042523  000124
8191  066770  046104  020124  047101  EM177:  .ASCIZ/DLT AND TRE ARE SET,SC SHOULD BE SET/
8192  066776  020104  051124  020105
8193  067004  051101  020105  042523
8194  067012  026124  041523  051440
8195  067020  047510  046125  020104
8196  067026  042502  051440  052105
8197  067034     000
8198  067035     110  041111  052131  EM200:  .ASCIZ/HIBYTE ,LOBYTE GATE FOR RHWC NOT WORKING PROPERLY/
8199  067042  020105  046054  041117
8200  067050  052131  020105  040507
8201  067056  042524  043040  051117
8202  067064  051040  053510  020103
8203  067072  047516  020124  047527
8204  067100  045522  047111  020107
8205  067106  051120  050117  051105
8206  067114  054514     000
8207  067117     110  041111  052131  EM201:  .ASCIZ/HIBYTE ,LOBYTE GATE FOR RHDB NOT WORKING PROPERLY/
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 8208  067124  020105  046054  041117
 8209  067132  052131  020105  040507
 8210  067140  042524  043040  051117
 8211  067146  051040  042110  020102
 8212  067154  047516  020124  047527
 8213  067162  045522  047111  020107
 8214  067170  051120  050117  051105
 8215  067176  054514     000
 8216  067201     110  041111  052131  EM202:  .ASCIZ/HIBYTE ,LOBYTE GATE FOR RHBA NOT WORKING PROPERLY/
 8217  067206  020105  046054  041117
 8218  067214  052131  020105  040507
 8219  067222  042524  043040  051117
 8220  067230  051040  041110  020101
 8221  067236  047516  020124  047527
 8222  067244  045522  047111  020107
 8223  067252  051120  050117  051105
 8224  067260  054514     000
 8225  067263     124  042510  041040  EM203:  .ASCIZ/THE BUS ADDRESS IS INCORRECT IT SHOULD BE 15000/
 8226  067270  051525  040440  042104
 8227  067276  042522  051523  044440
 8228  067304  020123  047111  047503
 8229  067312  051122  041505  020124
 8230  067320  052111  051440  047510
 8231  067326  046125  020104  042502
 8232  067334  030440  030065  030060
 8233  067342     000
 8234  067343     124  051505  042524  EM204:  .ASCIZ/TESTER DATA BUFFER DOES NOT CONTAIN THE CORRECT INFO/
 8235  067350  020122  040504  040524
 8236  067356  041040  043125  042506
 8237  067364  020122  047504  051505
 8238  067372  047040  052117  041440
 8239  067400  047117  040524  047111
 8240  067406  052040  042510  041440
 8241  067414  051117  042522  052103
 8242  067422  044440  043116  000117
 8243  067430  044122  042040  042111  EM205:  .ASCIZ/RH DID NOT INTERUPT LOOK AT CS1 TO SEE IF IE IS SET/
 8244  067436  047040  052117  044440
 8245  067444  052116  051105  050125
 8246  067452  020124  047514  045517
 8247  067460  040440  020124  051503
 8248  067466  020061  047524  051440
 8249  067474  042505  044440  020106
 8250  067502  042511  044440  020123
 8251  067510  042523  000124
 8252  067514  044122  041527  051440  EM206:  .ASCIZ/RHWC SHOULD BE ZERO/
 8253  067522  047510  046125  020104
 8254  067530  042502  055040  051105
 8255  067536  000117
 8256
 8257  067540  051124  047101  043123  EM207:  .ASCIZ/TRANSFER WAS DONE ON PORT B/
 8258  067546  051105  053440  051501
 8259  067554  042040  047117  020105
 8260  067562  047117  050040  051117
 8261  067570  020124  000102
 8262  067574  041520  020040  020040  DH1:    .ASCII/PC       TEST    RHWC    CONTENTS RHWC/<15><12>
 8263  067602  020040  042524  052123
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 8264  067610  020040  020040  044122
 8265  067616  041527  020040  020040
 8266  067624  047503  052116  047105
 8267  067632  051524  051040  053510
 8268  067640  006503     012
 8269  067643     040  020040  020040          .ASCIZ/       NO.            SHOULD HAVE BEEN/
 8270  067650  020040  047040  027117
 8271  067656  020040  020040  020040
 8272  067664  020040  020040  020040
 8273  067672  051440  047510  046125
 8274  067700  020104  040510  042526
 8275  067706  041040  042505  000116
 8276  067714  041520  020040  020040  DH2:    .ASCII/PC     TEST    RHBAE  CONTENTS RHBAE/<15><12>
 8277  067722  020040  042524  052123
 8278  067730  020040  020040  044122
 8279  067736  040502  020105  020040
 8280  067744  047503  052116  047105
 8281  067752  051524  051040  041110
 8282  067760  042501  005015
 8283  067764  020040  020040  020040          .ASCIZ/       NO.            SHOULD HAVE BEEN/
 8284  067772  020040  047516  020056
 8285  070000  020040  020040  020040
 8286  070006  020040  020040  020040
 8287  070014  044123  052517  042114
 8288  070022  044040  053101  020105
 8289  070030  042502  047105     000
 8290  070035     120  020103  020040  DH3:    .ASCII/PC     TEST    RHBA   CONTENTS RHBA/<15><12>
 8291  070042  020040  052040  051505
 8292  070050  020124  020040  051040
 8293  070056  041110  020101  020040
 8294  070064  041440  047117  042524
 8295  070072  052116  020123  044122
 8296  070100  040502  005015
 8297  070104  020040  020040  020040          .ASCIZ/       NO.            SHOULD HAVE BEEN/
 8298  070112  020040  047516  020056
 8299  070120  020040  020040  020040
 8300  070126  020040  020040  020040
 8301  070134  044123  052517  042114
 8302  070142  044040  053101  020105
 8303  070150  042502  047105     000
 8304  070155     120  020103  020040  DH4:    .ASCII/PC     TEST    RHDB   CONTENTS RHDB/<15><12>
 8305  070162  020040  052040  051505
 8306  070170  020124  020040  051040
 8307  070176  042110  020102  020040
 8308  070204  041440  047117  042524
 8309  070212  052116  020123  044122
 8310  070220  041104  005015
 8311  070224  020040  020040  020040          .ASCIZ/       NO.            SHOULD HAVE BEEN/
 8312  070232  020040  047516  020056
 8313  070240  020040  020040  020040
 8314  070246  020040  020040  020040
 8315  070254  044123  052517  042114
 8316  070262  044040  053101  020105
 8317  070270  042502  047105     000
 8318  070275     120  020103  020040  DH5:    .ASCII/PC     TEST    RHCS2  TRE AND SC/<15><12>
 8319  070302  020040  052040  051505
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 8320  070310  020124  020040  051040
 8321  070316  041510  031123  020040
 8322  070324  052040  042522  040440
 8323  070332  042116  051440  006503
 8324  070340     012
 8325  070341     040  020040  020040          .ASCIZ/       NO.                  BITS/
 8326  070346  020040  047040  027117
 8327  070354  020040  020040  020040
 8328  070362  020040  020040  020040
 8329  070370  020040  020040  041040
 8330  070376  052111  000123
 8331  070402  041520  020040  020040  DH11:   .ASCII/PC      TEST    CONTENTS OF/<15><12>
 8332  070410  020040  042524  052123
 8333  070416  020040  020040  047503
 8334  070424  052116  047105  051524
 8335  070432  047440  006506     012
 8336  070437     040  020040  020040          .ASCIZ/       NO.       RHCS2/
 8337  070444  020040  047040  027117
 8338  070452  020040  020040  020040
 8339  070460  020040  044122  051503
 8340  070466  000062
 8341  070470  041520  020040  020040  DH34:   .ASCII/PC      TEST    DEVICE/<15><12>
 8342  070476  020040  042524  052123
 8343  070504  020040  020040  042504
 8344  070512  044526  042503  005015
 8345  070520  020040  020040  020040          .ASCIZ/       NO.     CODE/
 8346  070526  020040  047516  020056
 8347  070534  020040  020040  047503
 8348  070542  042504     000
 8349  070545     120  000103          DH35:   .ASCIZ/PC/
 8350  070550  041520  020040  020040  DH36:   .ASCII/PC      TEST    FAILING/<15><12>
 8351  070556  020040  042524  052123
 8352  070564  020040  020040  040506
 8353  070572  046111  047111  006507
 8354  070600     012
 8355  070601     040  020040  020040          .ASCIZ/       NO.     ADDRESS/
 8356  070606  020040  047040  027117
 8357  070614  020040  020040  040440
 8358  070622  042104  042522  051523
 8359  070630     000
 8360  070631     120  020103  020040  DH41:   .ASCIZ/PC      TEST NUMBER/
 8361  070636  020040  052040  051505
 8362  070644  020124  052516  041115
 8363  070652  051105     000
 8364  070655     120  020103  020040  DH52:   .ASCII/PC      TEST    ADDRESS  DATA   RHAS/<15><12>
 8365  070662  020040  052040  051505
 8366  070670  020124  020040  040440
 8367  070676  042104  042522  051523
 8368  070704  020040  040504  040524
 8369  070712  020040  051040  040510
 8370  070720  006523     012
 8371  070723     040  020040  020040          .ASCIZ/       NO.     CONTENTS/
 8372  070730  020040  047040  027117
 8373  070736  020040  020040  041440
 8374  070744  047117  042524  052116
 8375  070752  000123
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 8376  070754  041520  020040  020040  DH71:   .ASCII/PC      TEST    DEVICE/<15><12>
 8377  070762  020040  042524  052123
 8378  070770  020040  020040  042504
 8379  070776  044526  042503  005015
 8380  071004  020040  020040  020040          .ASCIZ/        NO.     NUMBER/
 8381  071012  020040  047516  020056
 8382  071020  020040  020040  052516
 8383  071026  041115  051105     000
 8384  071033     120  020103  020040  DH72:   .ASCII/PC      TEST    CONTENTS OF/<15><12>
 8385  071040  020040  052040  051505
 8386  071046  020124  020040  041440
 8387  071054  047117  042524  052116
 8388  071062  020123  043117  005015
 8389  071070  020040  020040  020040          .ASCIZ/        NO.      REGISTER/
 8390  071076  020040  047516  020056
 8391  071104  020040  020040  051040
 8392  071112  043505  051511  042524
 8393  071120  000122
 8394  071122  041520  020040  020040  DH76:   .ASCIZ/PC      TEST NO.  RHBAE   RHBA/
 8395  071130  052040  051505  020124
 8396  071136  047516  020056  051040
 8397  071144  041110  042501  020040
 8398  071152  051040  041110  000101
 8399  071160  041520  020040  020040  DH105:  .ASCIZ/PC      TEST NO. RHBAE   RHBA    RHWC/
 8400  071166  052040  051505  020124
 8401  071174  047516  020056  044122
 8402  071202  040502  020105  020040
 8403  071210  044122  040502  020040
 8404  071216  020040  044122  041527
 8405  071224     000
 8406  071225     120  020103  020040  DH111:  .ASCIZ/PC      TEST NO. RHCS1   RHBA    RHWC/
 8407  071232  020040  042524  052123
 8408  071240  047040  027117  051040
 8409  071246  041510  030523  020040
 8410  071254  051040  041110  020101
 8411  071262  020040  051040  053510
 8412  071270  000103
 8413  071272  041520  020040  020040  DH121:  .ASCIZ/PC      TEST NO. RHCS1   RHCS2/
 8414  071300  052040  051505  020124
 8415  071306  047516  020056  044122
 8416  071314  051503  020061  020040
 8417  071322  044122  051503  000062
 8418  071330  041520  020040  020040  DH130:  .ASCIZ/PC      TEST NO. RHCS1/
 8419  071336  052040  051505  020124
 8420  071344  047516  020056  044122
 8421  071352  051503  000061
 8422  071356  041520  020040  020040  DH132:  .ASCIZ/PC      TEST NO. RHBAE   RHBA    RHCS2   RHCS3/
 8423  071364  052040  051505  020124
 8424  071372  047516  020056  044122
 8425  071400  040502  020105  020040
 8426  071406  044122  040502  020040
 8427  071414  020040  044122  051503
 8428  071422  020062  020040  044122
 8429  071430  051503  000063
 8430  071434  041520  020040  020040  DH142:  .ASCIZ/PC      TEST NO. EVENAD  RHTDB/
 8431  071442  052040  051505  020124
```

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 8432  071450  047516  020056  053105
 8433  071456  047105  042101  020040
 8434  071464  044122  042124  000102
 8435  071472  041520  020040  020040  DH146:  .ASCIZ/PC      TEST NO. RHCS1   RHCS2   RHWC/
 8436  071500  052040  051505  020124
 8437  071506  047516  020056  044122
 8438  071514  051503  020061  020040
 8439  071522  044122  051503  020062
 8440  071530  020040  044122  041527
 8441  071536     000
 8442  071537     120  020103  020040  DH147:  .ASCIZ/PC      TEST NO. RBUF    RHTDB/
 8443  071544  020040  042524  052123
 8444  071552  047040  027117  051040
 8445  071560  052502  020106  020040
 8446  071566  051040  052110  041104
 8447  071574     000
 8448  071575     122  041110  042501  DH170:  .ASCIZ/RHBAE   RHBA    RHCS3/
 8449  071602  020040  051040  041110
 8450  071610  020101  020040  051040
 8451  071616  041510  031523     000
 8452  071623     120  020103  020040  DH171:  .ASCIZ/PC      TEST NO. RHCS3/
 8453  071630  020040  042524  052123
 8454  071636  047040  027117  051040
 8455  071644  041510  031523     000
 8456  071651     120  020103  020040  DH172:  .ASCII/PC      TEST    DEVICE  RHCS2/<15><12>
 8457  071656  020040  052040  051505
 8458  071664  020124  020040  042040
 8459  071672  053105  041511  020105
 8460  071700  051040  041510  031123
 8461  071706  005015
 8462  071710  020040  020040  020040          .ASCIZ/        NO.     NUMBER  /
 8463  071716  020040  047516  020056
 8464  071724  020040  020040  052516
 8465  071732  041115  051105  020040
 8466  071740     000
 8467          071742                  .EVEN
 8468  071742  001116  003454  003444  DT1:    .WORD   $ERRPC,TSTNM,WC,$REG0,0
 8469  071750  001162  000000
 8470  071754  001116  003454  003416  DT2:    .WORD   $ERRPC,TSTNM,BAE,$REG0,0
 8471  071762  001162  000000
 8472  071766  001116  003454  003414  DT3:    .WORD   $ERRPC,TSTNM,BA,$REG0,0
 8473  071774  001162  000000
 8474  072000  001116  003454  003426  DT4:    .WORD   $ERRPC,TSTNM,DB,$REG0,0
 8475  072006  001162  000000
 8476  072012  001116  003454  003422  DT5:    .WORD   $ERRPC,TSTNM,CS2,$REG0,0
 8477  072020  001162  000000
 8478  072024  001116  003454  003422  DT11:   .WORD   $ERRPC,TSTNM,CS2,0
 8479  072032  000000
 8480  072034  001116  003454  003434  DT34:   .WORD   $ERRPC,TSTNM,DT,0
 8481  072042  000000
 8482  072044  001116  000000          DT35:   .WORD   $ERRPC,0
 8483  072050  001116  003454  003330  DT36:   .WORD   $ERRPC,TSTNM,RHCS1,0
 8484  072056  000000
 8485  072060  001116  003454  000000  DT41:   .WORD   $ERRPC,TSTNM,0
 8486  072066  001116  003454  003416  DT52:   .WORD   $ERRPC,TSTNM,BAE,$REG0,AS,0
 8487  072074  001162  003412  000000
```

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 8488  072102  001116  003454  004100  DT71:   .WORD   $ERRPC,TSTNM,RBUF,0
 8489  072110  000000
 8490  072112  001116  003454  003416  DT76:   .WORD   $ERRPC,TSTNM,BAE,BA,0
 8491  072120  003414  000000
 8492  072124  001116  003454  003416  DT105:  .WORD   $ERRPC,TSTNM,BAE,BA,WC,0
 8493  072132  003414  003444  000000
 8494  072140  001116  003454  003420  DT111:  .WORD   $ERRPC,TSTNM,CS1,BA,WC,0
 8495  072146  003414  003444  000000
 8496  072154  001116  003454  003420  DT121:  .WORD   $ERRPC,TSTNM,CS1,CS2,0
 8497  072162  003422  000000
 8498  072166  001116  003454  003420  DT130:  .WORD   $ERRPC,TSTNM,CS1,0
 8499  072174  000000
 8500  072176  001116  003454  003416  DT132:  .WORD   $ERRPC,TSTNM,BAE,BA,CS2,CS3,0
 8501  072204  003414  003422  003424
 8502  072212  000000
 8503  072214  001116  003454  004000  DT142:  .WORD   $ERRPC,TSTNM,EVENAD,$REG0,0
 8504  072222  001162  000000
 8505  072226  001116  003454  003420  DT146:  .WORD   $ERRPC,TSTNM,CS1,CS2,WC,0
 8506  072234  003422  003444  000000
 8507  072242  001116  003454  004100  DT147:  .WORD   $ERRPC,TSTNM,RBUF,$REG0,0
 8508  072250  001162  000000
 8509  072254  003416  003414  003424  DT170:  .WORD   BAE,BA,CS3,0
 8510  072262  000000
 8511  072264  001116  003454  003424  DT171:.WORD     $ERRPC,TSTNM,CS3,0
 8512  072272  000000
 8513  072274  001116  003454  004100  DT172:  .WORD   $ERRPC,TSTNM,RBUF,CS2,0
 8514  072302  003422  000000
 8515                                  .EVEN
 8516  072306      000      000      000  DF1:    .BYTE   0,0,0,0
 8517  072311      000
 8518  072312      000      000      000  DF2:    .BYTE   0,0,0,0
 8519  072315      000
 8520  072316      000      000      000  DF3:    .BYTE   0,0,0,0
 8521  072321      000
 8522  072322      000      000      000  DF4:    .BYTE   0,0,0,0
 8523  072325      000
 8524  072326      000      000      000  DF5:    .BYTE   0,0,0,0
 8525  072331      000
 8526  072332      000      000      000  DF11:   .BYTE   0,0,0
 8527  072335      000      000      000  DF34:   .BYTE   0,0,0
 8528  072340      000                    DF35:   .BYTE   0
 8529  072341      000      000      000  DF36:   .BYTE   0,0,0
 8530  072344      000      000           DF41:   .BYTE   0,0
 8531  072346      000      000      000  DF52:   .BYTE   0,0,0,0,0
 8532  072351      000      000
 8533  072353      000      000      000  DF71:   .BYTE   0,0,0
 8534  072356      000      000      000  DF76:   .BYTE   0,0,0,0
 8535  072361      000
 8536  072362      000      000      000  DF105:  .BYTE   0,0,0,0,0
 8537  072365      000      000
 8538  072367      000      000      000  DF132:  .BYTE   0,0,0,0,0,0
 8539  072372      000      000      000
 8540  072375      000      000      000  DF170:  .BYTE   0,0,0
 8541  072400      000      000      000  DF172:  .BYTE   0,0,0,0
 8542  072403      000
 8543                                  .EVEN
```

```
 8544
 8545  072404  000000  ;;**********************************************************************
 8546  072406  050334  HEADER: 0
 8547  072410  050374          HED1
 8548  072412  050421          HED2
 8549  072414  050460          HED3
 8550  072416  050517          HED4
 8551  072420  050550          HED5
 8552  072422  050602          HED6
 8553  072424  050633          HED7
 8554  072426  050677          HED10
 8555  072430  050730          HED11
 8556  072432  050760          HED12
 8557  072434  051011          HED13
 8558  072436  051041          HED14
 8559  072440  051071          HED15
 8560  072442  051131          HED16
 8561  072444  051171          HED17
 8562  072446  051233          HED20
 8563  072450  051275          HED21
 8564  072452  051340          HED22
 8565  072454  051414          HED23
 8566  072456  051456          HED24
 8567  072460  051520          HED25
 8568  072462  051562          HED26
 8569  072464  051624          HED27
 8570  072466  051666          HED30
 8571  072470  051733          HED31
 8572  072472  052013          HED32
 8573  072474  052070          HED33
 8574  072476  052145          HED34
 8575  072500  052223          HED35
 8576  072502  052277          HED36
 8577  072504  052371          HED37
 8578  072506  052456          HED40
 8579  072510  052522          HED41
 8580  072512  052573          HED42
 8581  072514  052651          HED43
 8582  072516  052740          HED44
 8583  072520  053003          HED45
 8584  072522  053070          HED46
 8585  072524  053147          HED47
 8586  072526  053234          HED50
 8587  072530  053313          HED51
 8588  072532  053372          HED52
 8589  072534  053436          HED53
 8590  072536  053502          HED54
 8591  072540  053541          HED55
 8592  072542  053615          HED56
 8593  072544  053664          HED57
 8594  072546  053737          HED60
 8595  072550  054005          HED61
 8596  072552  054060          HED62
 8597  072554  054127          HED63
 8598  072556  054202          HED64
 8599  072560  054250          HED65
                               HED66
```

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 8600  072562  054324                HED67
 8601  072564  054373                HED70
 8602  072566  054447                HED71
 8603  072570  054515                HED72
 8604  072572  054571                HED73
 8605  072574  054640                HED74
 8606  072576  054714                HED75
 8607  072600  054762                HED76
```

```
                                .SBTTL  SCOPE HANDLER ROUTINE

                                ;;*********************************************************************
                                ;*THIS ROUTINE CONTROLS THE LOOPING OF SUBTESTS. IT WILL INCREMENT
                                ;*AND LOAD THE TEST NUMBER($TSTNM) INTO THE DISPLAY REG.(DISPLAY<7:0>)
                                ;*AND LOAD THE ERROR FLAG ($ERFLG) INTO DISPLAY<15:08>
                                ;*THE SWITCH OPTIONS PROVIDED BY THIS ROUTINE ARE:
                                ;*SW14=1         LOOP ON TEST
                                ;*SW11=1         INHIBIT ITERATIONS
                                ;*SW09=1         LOOP ON ERROR
                                ;*SW08=1         LOOP ON TEST IN SWR<7:0>
                                ;*CALL
                                ;*      SCOPE           ;;SCOPE=IOT

072602                          $SCOPE:
072602  032777  040000  106330  1$:     BIT     #BIT14,@SWR     ;;LOOP ON PRESENT TEST?
072610  001111                          BNE     $OVER           ;;YES IF SW14=1
                                ;#####START OF CODE FOR THE XOR TESTER#####
072612  000416                  $XTSTR: BR      6$              ;;IF RUNNING ON THE "XOR" TESTER CHANGE
                                                                ;;THIS INSTRUCTION TO A "NOP" (NOP=240)
072614  013746  000004                  MOV     @#ERRVEC,-(SP)  ;;SAVE THE CONTENTS OF THE ERROR VECTOR
072620  012737  072640  000004          MOV     #5$,@#ERRVEC    ;;SET FOR TIMEOUT
072626  005737  177060                  TST     @#177060        ;;TIME OUT ON XOR?
072632  012637  000004                  MOV     (SP)+,@#ERRVEC  ;;RESTORE THE ERROR VECTOR
072636  000463                          BR      $SVLAD          ;;GO TO THE NEXT TEST
072640  022626                  5$:     CMP     (SP)+,(SP)+     ;;CLEAR THE STACK AFTER A TIME OUT
072642  012637  000004                  MOV     (SP)+,@#ERRVEC  ;;RESTORE THE ERROR VECTOR
072646  000423                          BR      7$              ;;LOOP ON THE PRESENT TEST
072650                          6$:;#####END OF CODE FOR THE XOR TESTER#####
072650  032777  000400  106262          BIT     #BIT08,@SWR     ;;LOOP ON SPEC. TEST?
072656  001404                          BEQ     2$              ;;BR IF NO
072660  127737  106254  001102          CMPB    @SWR,$TSTNM     ;;ON THE RIGHT TEST?    SWR<7:0>
072666  001462                          BEQ     $OVER           ;;BR IF YES
072670  105737  001103          2$:     TSTB    $ERFLG          ;;HAS AN ERROR OCCURRED?
072674  001421                          BEQ     3$              ;;BR IF NO
072676  123737  001115  001103          CMPB    $ERMAX,$ERFLG   ;;MAX. ERRORS FOR THIS TEST OCCURRED?
072704  101015                          BHI     3$              ;;BR IF NO
072706  032777  001000  106224          BIT     #BIT09,@SWR     ;;LOOP ON ERROR?
072714  001404                          BEQ     4$              ;;BR IF NO
072716  013737  001110  001106  7$:     MOV     $LPERR,$LPADR   ;;SET LOOP ADDRESS TO LAST SCOPE
072724  000443                          BR      $OVER
072726  105037  001103          4$:     CLRB    $ERFLG          ;;ZERO THE ERROR FLAG
072732  005037  001212                  CLR     $TIMES          ;;CLEAR THE NUMBER OF ITERATIONS TO MAKE
072736  000415                          BR      1$              ;;ESCAPE TO THE NEXT TEST
072740  032777  004000  106172  3$:     BIT     #BIT11,@SWR     ;;INHIBIT ITERATIONS?
072746  001011                          BNE     1$              ;;BR IF YES
072750  005737  001100                  TST     $PASS           ;;IF FIRST PASS OF PROGRAM
072754  001406                          BEQ     1$              ;;      INHIBIT ITERATIONS
072756  005237  001104                  INC     $ICNT           ;;INCREMENT ITERATION COUNT
072762  023737  001212  001104          CMP     $TIMES,$ICNT    ;;CHECK THE NUMBER OF ITERATIONS MADE
073000  002021                          BGE     $OVER           ;;BR IF MORE ITERATION REQUIRED
073002  012737  000001  001104  1$:     MOV     #1,$ICNT        ;;REINITIALIZE THE ITERATION COUNTER
073010  013737  073050  001212          MOV     $MXCNT,$TIMES   ;;SET NUMBER OF ITERATIONS TO DO
073016  105237  001102          $SVLAD: INCB    $TSTNM          ;;COUNT TEST NUMBERS
073022  011637  001106                  MOV     (SP),$LPADR     ;;SAVE SCOPE LOOP ADDRESS
073026  011637  001110                  MOV     (SP),$LPERR     ;;SAVE ERROR LOOP ADDRESS
```

```
8664  073022  005037  001214            CLR     $ESCAPE          ;;CLEAR THE ESCAPE FROM ERROR ADDRESS
8665  073026  112737  000001  001115    MOVB    #1,$ERMAX        ;;ONLY ALLOW ONE(1) ERROR ON NEXT TEST
8666  073034  013777  001102  106100  $OVER:  MOV     $TSTNM,@DISPLAY ;;DISPLAY TEST NUMBER
8667  073042  013716  001106            MOV     $LPADR,(SP)      ;;FUDGE RETURN ADDRESS
8668  073046  000002                    RTI                      ;;FIXES PS
8669  073050  000100                  $MXCNT: 100                ;;MAX. NUMBER OF ITERATIONS
8670                                   .SBTTL  POWER DOWN AND UP ROUTINES
8671
8672                                   ;;**************************************************************************
8673                                   ;POWER DOWN ROUTINE
8674  073052  012737  073212  000024  $PWRDN: MOV     #$ILLUP,@#PWRVEC ;;SET FOR FAST UP
8675  073060  012737  000340  000026          MOV     #340,@#PWRVEC+2 ;;PRIO:7
8676  073066  010046                  MOV     R0,-(SP)         ;;PUSH R0 ON STACK
8677  073070  010146                  MOV     R1,-(SP)         ;;PUSH R1 ON STACK
8678  073072  010246                  MOV     R2,-(SP)         ;;PUSH R2 ON STACK
8679  073074  010346                  MOV     R3,-(SP)         ;;PUSH R3 ON STACK
8680  073076  010446                  MOV     R4,-(SP)         ;;PUSH R4 ON STACK
8681  073100  010546                  MOV     R5,-(SP)         ;;PUSH R5 ON STACK
8682  073102  017746  106032          MOV     @SWR,-(SP)       ;;PUSH @SWR ON STACK
8683  073106  010637  073216          MOV     SP,$SAVR6        ;;SAVE SP
8684  073112  012737  073124  000024  MOV     #$PWRUP,@#PWRVEC ;;SET UP VECTOR
8685  073120  000000                  HALT
8686  073122  000776                  BR      .-2              ;;HANG UP
8687
8688                                   ;;**************************************************************************
8689                                   ;POWER UP ROUTINE
8690  073124  012737  073212  000024  $PWRUP: MOV     #$ILLUP,@#PWRVEC ;;SET FOR FAST DOWN
8691  073132  013706  073216          MOV     $SAVR6,SP        ;;GET SP
8692  073136  005037  073216          CLR     $SAVR6           ;;WAIT LOOP FOR THE TTY
8693  073142  005237  073216  1$:     INC     $SAVR6           ;;WAIT FOR THE INC
8694  073146  001375                  BNE     1$               ;;OF  WORD
8695  073150  012677  105764          MOV     (SP)+,@SWR       ;;POP STACK INTO @SWR
8696  073154  012605                  MOV     (SP)+,R5         ;;POP STACK INTO R5
8697  073156  012604                  MOV     (SP)+,R4         ;;POP STACK INTO R4
8698  073160  012603                  MOV     (SP)+,R3         ;;POP STACK INTO R3
8699  073162  012602                  MOV     (SP)+,R2         ;;POP STACK INTO R2
8700  073164  012601                  MOV     (SP)+,R1         ;;POP STACK INTO R1
8701  073166  012600                  MOV     (SP)+,R0         ;;POP STACK INTO R0
8702  073170  012737  073052  000024          MOV     #$PWRDN,@#PWRVEC ;;SET UP THE POWER DOWN VECTOR
8703  073176  012737  000340  000026          MOV     #340,@#PWRVEC+2 ;;PRIO:7
8704  073204  104401                  TYPE                     ;REPORT THE POWER FAILURE
8705  073206  073220                $PWRMG: .WORD   $POWER           ;;POWER FAIL MESSAGE POINTER
8706  073210  000002                  RTI
8707  073212  000000                $ILLUP: HALT                     ;;THE POWER UP SEQUENCE WAS STARTED
8708  073214  000776                  BR      .-2              ;; BEFORE THE POWER DOWN WAS COMPLETE
8709  073216  000000                $SAVR6: 0                        ;;PUT THE SP HERE
8710  073220  005015  047520  042527  $POWER: .ASCIZ   <15><12>'POWER'
8711  073226  000122
8712                                   .EVEN
```

```
                                .SBTTL  TYPE ROUTINE

                                ;;**********************************************************************
                                ;*ROUTINE TO TYPE ASCIZ MESSAGE. MESSAGE MUST TERMINATE WITH A 0 BYTE.
                                ;*THE ROUTINE WILL INSERT A NUMBER OF NULL CHARACTERS AFTER A LINE FEED.
                                ;*NOTE1:         $NULL CONTAINS THE CHARACTER TO BE USED AS THE FILLER CHARACTER.
                                ;*NOTE2:         $FILLS CONTAINS THE NUMBER OF FILLER CHARACTERS REQUIRED.
                                ;*NOTE3:         $FILLC CONTAINS THE CHARACTER TO FILL AFTER.
                                ;*
                                ;*CALL:
                                ;*1) USING A TRAP INSTRUCTION
                                ;*      TYPE    ,MESADR         ;;MESADR IS FIRST ADDRESS OF AN ASCIZ STRING
                                ;*OR
                                ;*      TYPE
                                ;*      MESADR
                                ;*

073230  105737  001157        $TYPE:  TSTB    $TPFLG          ;;IS THERE A TERMINAL?
073234  100002                        BPL     1$              ;;BR IF YES
073236  000000                        HALT                    ;;HALT HERE IF NO TERMINAL
073240  000407                        BR      3$              ;;LEAVE
073242  010046                1$:     MOV     R0,-(SP)        ;;SAVE R0
073244  017600  000002                MOV     @2(SP),R0       ;;GET ADDRESS OF ASCIZ STRING
073250  112046                2$:     MOVB    (R0)+,-(SP)     ;;PUSH CHARACTER TO BE TYPED ONTO STACK
073252  001005                        BNE     4$              ;;BR IF IT ISN'T THE TERMINATOR
073254  005726                        TST     (SP)+           ;;IF TERMINATOR POP IT OFF THE STACK
073256  012600                60$:    MOV     (SP)+,R0        ;;RESTORE R0
073260  062716  000002        3$:     ADD     #2,(SP)         ;;ADJUST RETURN PC
073264  000002                        RTI                     ;;RETURN
073266  122716  000011        4$:     CMPB    #HT,(SP)        ;;BRANCH IF <HT>
073272  001430                        BEQ     8$
073274  122716  000200                CMPB    #CRLF,(SP)      ;;BRANCH IF NOT <CRLF>
073300  001006                        BNE     5$
073302  005726                        TST     (SP)+           ;;POP  <CR><LF> EQUIV
073304  104401                        TYPE                    ;;TYPE A CR AND LF
073306  001223                        $CRLF
073310  105037  073444                CLRB    $CHARCNT        ;;CLEAR CHARACTER COUNT
073314  000755                        BR      2$              ;;GET NEXT CHARACTER
073316  004737  073400        5$:     JSR     PC,$TYPEC       ;;GO TYPE THIS CHARACTER
073322  123726  001156        6$:     CMPB    $FILLC,(SP)+    ;;IS IT TIME FOR FILLER CHARS.?
073326  001350                        BNE     2$              ;;IF NO GO GET NEXT CHAR.
073330  013746  001154                MOV     $NULL,-(SP)     ;;GET # OF FILLER CHARS. NEEDED
                                                              ;;AND THE NULL CHAR.
073334  105366  000001        7$:     DECB    1(SP)           ;;DOES A NULL NEED TO BE TYPED?
073340  002770                        BLT     6$              ;;BR IF NO--GO POP THE NULL OFF OF STACK
073342  004737  073400                JSR     PC,$TYPEC       ;;GO TYPE A NULL
073346  105337  073444                DECB    $CHARCNT        ;;DO NOT COUNT AS A COUNT
073352  000770                        BR      7$              ;;LOOP

                                ;HORIZONTAL TAB PROCESSOR

073354  112716  000040        8$:     MOVB    #' ,(SP)        ;;REPLACE TAB WITH SPACE
073360  004737  073400        9$:     JSR     PC,$TYPEC       ;;TYPE A SPACE
073364  132737  000007  073444        BITB    #7,$CHARCNT     ;;BRANCH IF NOT AT
073372  001372                        BNE     9$              ;;TAB STOP
073374  005726                        TST     (SP)+           ;;POP SPACE OFF STACK
```

```
 8769  073376  000724                          BR      2$              ;;GET NEXT CHARACTER
 8770  073400  105777  105544          $TYPEC: TSTB    @$TPS           ;;WAIT UNTIL PRINTER IS READY
 8771  073404  100375                          BPL     $TYPEC
 8772  073406  116677  000002  105536          MOVB    2(SP),@$TPB     ;;LOAD CHAR TO BE TYPED INTO DATA REG.
 8773  073414  122766  000015  000002          CMPB    #CR,2(SP)       ;;IS CHARACTER A CARRIAGE RETURN?
 8774  073422  001003                          BNE     1$              ;;BRANCH IF NO
 8775  073424  105037  073444                  CLRB    $CHARCNT        ;;YES--CLEAR CHARACTER COUNT
 8776  073430  000406                          BR      $TYPEX          ;;EXIT
 8777  073432  122766  000012  000002  1$:     CMPB    #LF,2(SP)       ;;IS CHARACTER A LINE FEED?
 8778  073440  001402                          BEQ     $TYPEX          ;;BRANCH IF YES
 8779  073442  105227                          INCB    (PC)+           ;;COUNT THE CHARACTER
 8780  073444  000000          $CHARCNT:.WORD  0               ;;CHARACTER COUNT STORAGE
 8781  073446  000207          $TYPEX: RTS     PC
 8782
```

```
                                .SBTTL  BINARY TO OCTAL (ASCII) AND TYPE

                                ;;**********************************************************************
                                ;*THIS ROUTINE IS USED TO CHANGE A 16-BIT BINARY NUMBER TO A 6-DIGIT
                                ;*OCTAL (ASCII) NUMBER AND TYPE IT.
                                ;*$TYPOS---ENTER HERE TO SETUP SUPPRESS ZEROS AND NUMBER OF DIGITS TO TYPE
                                ;*CALL:
                                ;*      MOV     NUM,-(SP)       ;;NUMBER TO BE TYPED
                                ;*      TYPOS                   ;;CALL FOR TYPEOUT
                                ;*      .BYTE   N               ;;N=1 TO 6 FOR NUMBER OF DIGITS TO TYPE
                                ;*      .BYTE   M               ;;M=1 OR 0
                                ;*                                      ;;1=TYPE LEADING ZEROS
                                ;*                                      ;;0=SUPPRESS LEADING ZEROS
                                ;*
                                ;*$TYPON----ENTER HERE TO TYPE OUT WITH THE SAME PARAMETERS AS THE LAST
                                ;*$TYPOS OR $TYPOC
                                ;*CALL:
                                ;*      MOV     NUM,-(SP)       ;;NUMBER TO BE TYPED
                                ;*      TYPON                   ;;CALL FOR TYPEOUT
                                ;*
                                ;*$TYPOC---ENTER HERE FOR TYPEOUT OF A 16 BIT NUMBER
                                ;*CALL:
                                ;*      MOV     NUM,-(SP)       ;;NUMBER TO BE TYPED
                                ;*      TYPOC                   ;;CALL FOR TYPEOUT

073450  017646  000000          $TYPOS: MOV     @(SP),-(SP)     ;;PICKUP THE MODE
073454  116637  000001  073673          MOVB    1(SP),$OFILL    ;;LOAD ZERO FILL SWITCH
073462  112637  073675                  MOVB    (SP)+,$OMODE+1  ;;NUMBER OF DIGITS TO TYPE
073466  062716  000002                  ADD     #2,(SP)         ;;ADJUST RETURN ADDRESS
073472  000406                          BR      $TYPON
073474  112737  000001  073673  $TYPOC: MOVB    #1,$OFILL       ;;SET THE ZERO FILL SWITCH
073502  112737  000006  073675          MOVB    #6,$OMODE+1     ;;SET FOR SIX(6) DIGITS
073510  112737  000005  073672  $TYPON: MOVB    #5,$OCNT        ;;SET THE ITERATION COUNT
073516  010346                          MOV     R3,-(SP)        ;;SAVE R3
073520  010446                          MOV     R4,-(SP)        ;;SAVE R4
073522  010546                          MOV     R5,-(SP)        ;;SAVE R5
073524  113704  073675                  MOVB    $OMODE+1,R4     ;;GET THE NUMBER OF DIGITS TO TYPE
073530  005404                          NEG     R4
073532  062704  000006                  ADD     #6,R4           ;;SUBTRACT IT FOR MAX. ALLOWED
073536  110437  073674                  MOVB    R4,$OMODE       ;;SAVE IT FOR USE
073542  113704  073673                  MOVB    $OFILL,R4       ;;GET THE ZERO FILL SWITCH
073546  016605  000012                  MOV     12(SP),R5       ;;PICKUP THE INPUT NUMBER
073552  005003                          CLR     R3              ;;CLEAR THE OUTPUT WORD
073554  006105                  1$:     ROL     R5              ;;ROTATE MSB INTO "C"
073556  000404                          BR      3$              ;;GO DO MSB
073560  006105                  2$:     ROL     R5              ;;FORM THIS DIGIT
073562  006105                          ROL     R5
073564  006105                          ROL     R5
073566  010503                          MOV     R5,R3
073570  006103                  3$:     ROL     R3              ;;GET LSB OF THIS DIGIT
073572  105337  073674                  DECB    $OMODE          ;;TYPE THIS DIGIT?
073576  100016                          BPL     7$              ;;BR IF NO
073600  042703  177770                  BIC     #177770,R3      ;;GET RID OF JUNK
073604  001002                          BNE     4$              ;;TEST FOR 0
073606  005704                          TST     R4              ;;SUPPRESS THIS 0?
073610  001403                          BEQ     5$              ;;BR IF YES
```

```
 8839  073612  005204                  4$:     INC     R4              ;;DON'T SUPPRESS ANYMORE 0'S
 8840  073614  052703  000060          5$:     BIS     #'0,R3          ;;MAKE THIS DIGIT ASCII
 8841  073620  052703  000040                  BIS     #' ,R3          ;;MAKE ASCII IF NOT ALREADY
 8842  073624  110337  073670                  MOVB    R3,8$           ;;SAVE FOR TYPING
 8843  073630  104401  073670                  TYPE    ,8$             ;;GO TYPE THIS DIGIT
 8844  073634  105337  073672          7$:     DECB    $OCNT           ;;COUNT BY 1
 8845  073640  003347                          BGT     2$              ;;BR IF MORE TO DO
 8846  073642  002402                          BLT     6$              ;;BR IF DONE
 8847  073644  005204                          INC     R4              ;;INSURE LAST DIGIT ISN'T A BLANK
 8848  073646  000744                          BR      2$              ;;GO DO THE LAST DIGIT
 8849  073650  012605                  6$:     MOV     (SP)+,R5        ;;RESTORE R5
 8850  073652  012604                          MOV     (SP)+,R4        ;;RESTORE R4
 8851  073654  012603                          MOV     (SP)+,R3        ;;RESTORE R3
 8852  073656  016666  000002  000004         MOV     2(SP),4(SP)     ;;SET THE STACK FOR RETURNING
 8853  073664  012616                          MOV     (SP)+,(SP)
 8854  073666  000002                          RTI                     ;;RETURN
 8855  073670     000          8$:     .BYTE   0               ;;STORAGE FOR ASCII DIGIT
 8856  073671     000                  .BYTE   0               ;;TERMINATOR FOR TYPE ROUTINE
 8857  073672     000          $OCNT:  .BYTE   0               ;;OCTAL DIGIT COUNTER
 8858  073673     000          $OFILL: .BYTE   0               ;;ZERO FILL SWITCH
 8859  073674  000000          $OMODE: .WORD   0               ;;NUMBER OF DIGITS TO TYPE
```

```
                                .SBTTL  CONVERT BINARY TO DECIMAL AND TYPE ROUTINE

                                ;;*********************************************************************
                                ;*THIS ROUTINE IS USED TO CHANGE A 16-BIT BINARY NUMBER TO A 5-DIGIT
                                ;*SIGNED DECIMAL (ASCII) NUMBER AND TYPE IT. DEPENDING ON WHETHER THE
                                ;*NUMBER IS POSITIVE OR NEGATIVE A SPACE OR A MINUS SIGN WILL BE TYPED
                                ;*BEFORE THE FIRST DIGIT OF THE NUMBER. LEADING ZEROS WILL ALWAYS BE
                                ;*REPLACED WITH SPACES.
                                ;*CALL:
                                ;*      MOV     NUM,-(SP)       ;;PUT THE BINARY NUMBER ON THE STACK
                                ;*      TYPDS                   ;;GO TO THE ROUTINE

073676                          $TYPDS:
073676  010046                         MOV     R0,-(SP)        ;;PUSH R0 ON STACK
073700  010146                         MOV     R1,-(SP)        ;;PUSH R1 ON STACK
073702  010246                         MOV     R2,-(SP)        ;;PUSH R2 ON STACK
073704  010346                         MOV     R3,-(SP)        ;;PUSH R3 ON STACK
073706  010546                         MOV     R5,-(SP)        ;;PUSH R5 ON STACK
073710  012746  020200                 MOV     #20200,-(SP)    ;;SET BLANK SWITCH AND SIGN
073714  016605  000020                 MOV     20(SP),R5       ;;GET THE INPUT NUMBER
073720  100004                         BPL     1$              ;;BR IF INPUT IS POS.
073722  005405                         NEG     R5              ;;MAKE THE BINARY NUMBER POS.
073724  112766  000055  000001         MOVB    #'-,1(SP)       ;;MAKE THE ASCII NUMBER NEG.
073732  005000                 1$:     CLR     R0              ;;ZERO THE CONSTANTS INDEX
073734  012703  074112                 MOV     #$DBLK,R3       ;;SETUP THE OUTPUT POINTER
073740  112723  000040                 MOVB    #' ,(R3)+       ;;SET THE FIRST CHARACTER TO A BLANK
073744  005002                 2$:     CLR     R2              ;;CLEAR THE BCD NUMBER
073746  016001  074102                 MOV     $DTBL(R0),R1    ;;GET THE CONSTANT
073752  160105                 3$:     SUB     R1,R5           ;;FORM THIS BCD DIGIT
073754  002402                         BLT     4$              ;;BR IF DONE
073756  005202                         INC     R2              ;;INCREASE THE BCD DIGIT BY 1
073760  000774                         BR      3$
073762  060105                 4$:     ADD     R1,R5           ;;ADD BACK THE CONSTANT
073764  005702                         TST     R2              ;;CHECK IF BCD DIGIT=0
073766  001002                         BNE     5$              ;;FALL THROUGH IF 0
073770  105716                         TSTB    (SP)            ;;STILL DOING LEADING 0'S?
073772  100407                         BMI     7$              ;;BR IF YES
073774  106316                 5$:     ASLB    (SP)            ;;MSD?
073776  103003                         BCC     6$              ;;BR IF NO
074000  116663  000001  177777         MOVB    1(SP),-1(R3)    ;;YES--SET THE SIGN
074006  052702  000060         6$:     BIS     #'0,R2          ;;MAKE THE BCD DIGIT ASCII
074012  052702  000040         7$:     BIS     #' ,R2          ;;MAKE IT A SPACE IF NOT ALREADY A DIGIT
074016  110223                         MOVB    R2,(R3)+        ;;PUT THIS CHARACTER IN THE OUTPUT BUFFER
074020  005720                         TST     (R0)+           ;;JUST INCREMENTING
074022  020027  000010                 CMP     R0,#10          ;;CHECK THE TABLE INDEX
074026  002746                         BLT     2$              ;;GO DO THE NEXT DIGIT
074030  003002                         BGT     8$              ;;GO TO EXIT
074032  010502                         MOV     R5,R2           ;;GET THE LSD
074034  000764                         BR      6$              ;;GO CHANGE TO ASCII
074036  105726                 8$:     TSTB    (SP)+           ;;WAS THE LSD THE FIRST NON-ZERO?
074040  100003                         BPL     9$              ;;BR IF NO
074042  116663  177777  177776         MOVB    -1(SP),-2(R3)   ;;YES--SET THE SIGN FOR TYPING
074050  105013                 9$:     CLRB    (R3)            ;;SET THE TERMINATOR
074052  012605                         MOV     (SP)+,R5        ;;POP STACK INTO R5
074054  012603                         MOV     (SP)+,R3        ;;POP STACK INTO R3
074056  012602                         MOV     (SP)+,R2        ;;POP STACK INTO R2
```

```
 8916  074060  012601                        MOV     (SP)+,R1        ;;POP STACK INTO R1
 8917  074062  012600                        MOV     (SP)+,R0        ;;POP STACK INTO R0
 8918  074064  104401  074112                TYPE    ,$DBLK          ;;NOW TYPE THE NUMBER
 8919  074070  016666  000002  000004        MOV     2(SP),4(SP)     ;;ADJUST THE STACK
 8920  074076  012616                        MOV     (SP)+,(SP)
 8921  074100  000002                        RTI                     ;;RETURN TO USER
 8922  074102  023420                $DTBL:  10000.
 8923  074104  001750                        1000.
 8924  074106  000144                        100.
 8925  074110  000012                        10.
 8926  074112  000004                $DBLK:  .BLKW   4
```

```
                        .SBTTL  ERROR MESSAGE TYPEOUT ROUTINE

                        ;;**************************************************************
                        ;*THIS ROUTINE USES THE "ITEM CONTROL BYTE" ($ITEMB) TO DETERMINE WHICH
                        ;*ERROR IS TO BE REPORTED. IT THEN OBTAINS, FROM THE "ERROR TABLE" ($ERRTB),
                        ;*AND REPORTS THE APPROPRIATE INFORMATION CONCERNING THE ERROR.

074122                  $ERRTYP:
074122  104401  001223          TYPE    ,$CRLF          ;;"CARRIAGE RETURN" & "LINE FEED"
074126  010046                  MOV     R0,-(SP)        ;;SAVE R0
074130  005000                  CLR     R0              ;;PICKUP THE ITEM INDEX
074132  153700  001114          BISB    @#$ITEMB,R0
074136  001004                  BNE     1$              ;;IF ITEM NUMBER IS ZERO, JUST
                                                        ;;TYPE THE PC OF THE ERROR
074140  013746  001116          MOV     $ERRPC,-(SP)    ;;SAVE $ERRPC FOR TYPEOUT
                                                        ;;ERROR ADDRESS
074144  104402                  TYPOC                   ;;GO TYPE--OCTAL ASCII(ALL DIGITS)
074146  000426                  BR      6$              ;;GET OUT
074150  005300          1$:     DEC     R0              ;;ADJUST THE INDEX SO THAT IT WILL
074152  006300                  ASL     R0              ;;      WORK FOR THE ERROR TABLE
074154  006300                  ASL     R0
074156  006300                  ASL     R0
074160  062700  001226          ADD     #$ERRTB,R0      ;;FORM TABLE POINTER
074164  012037  074174          MOV     (R0)+,2$        ;;PICKUP "ERROR MESSAGE" POINTER
074170  001404                  BEQ     3$              ;;SKIP TYPEOUT IF NO POINTER
074172  104401                  TYPE                    ;;TYPE THE "ERROR MESSAGE"
074174  000000          2$:     .WORD   0               ;;"ERROR MESSAGE" POINTER GOES HERE
074176  104401  001223          TYPE    ,$CRLF          ;;"CARRIAGE RETURN" & "LINE FEED"
074202  012037  074212  3$:     MOV     (R0)+,4$        ;;PICKUP "DATA HEADER" POINTER
074206  001404                  BEQ     5$              ;;SKIP TYPEOUT IF 0
074210  104401                  TYPE                    ;;TYPE THE "DATA HEADER"
074212  000000          4$:     .WORD   0               ;;"DATA HEADER" POINTER GOES HERE
074214  104401  001223          TYPE    ,$CRLF          ;;"CARRIAGE RETURN" & "LINE FEED"
074220  011000          5$:     MOV     (R0),R0         ;;PICKUP "DATA TABLE" POINTER
074222  001004                  BNE     7$              ;;GO TYPE THE DATA
074224  012600          6$:     MOV     (SP)+,R0        ;;RESTORE R0
074226  104401  001223          TYPE    ,$CRLF          ;;"CARRIAGE RETURN" & "LINE FEED"
074232  000207                  RTS     PC              ;;RETURN
074234                  7$:
074234  013046                  MOV     @(R0)+,-(SP)    ;;SAVE @(R0)+ FOR TYPEOUT
074236  104402                  TYPOC                   ;;GO TYPE--OCTAL ASCII(ALL DIGITS)
074240  005710                  TST     (R0)            ;;IS THERE ANOTHER NUMBER?
074242  001770                  BEQ     6$              ;;BR IF NO
074244  104401  074252          TYPE    ,8$             ;;TYPE TWO(2) SPACES
074250  000771                  BR      7$              ;;LOOP
074252  020040     000  8$:     .ASCIZ  /  /            ;;TWO(2) SPACES
074256                          .EVEN
```

```
                                .SBTTL  ERROR HANDLER ROUTINE

                                ;;**********************************************************************
                                ;*THIS ROUTINE WILL INCREMENT THE ERROR FLAG AND THE ERROR COUNT,
                                ;*SAVE THE ERROR ITEM NUMBER AND THE ADDRESS OF THE ERROR CALL
                                ;*AND GO TO TSTNMB ON ERROR
                                ;*THE SWITCH OPTIONS PROVIDED BY THIS ROUTINE ARE:
                                ;*SW15=1         HALT ON ERROR
                                ;*SW13=1         INHIBIT ERROR TYPEOUTS
                                ;*SW10=1         BELL ON ERROR
                                ;*SW09=1         LOOP ON ERROR
                                ;*CALL
                                ;*      ERROR   N       ;;ERROR=EMT AND N=ERROR ITEM NUMBER

 074256                         $ERROR:
 074256  105237  001103         7$:     INCB    $ERFLG          ;;SET THE ERROR FLAG
 074262  001775                         BEQ     7$              ;;DON'T LET THE FLAG GO TO ZERO
 074264  013777  001102  104650         MOV     $TSTNM,@DISPLAY ;;DISPLAY TEST NUMBER AND ERROR FLAG
 074272  032777  002000  104640         BIT     #BIT10,@SWR     ;;BELL ON ERROR?
 074300  001402                         BEQ     1$              ;;NO - SKIP
 074302  104401  001216                 TYPE    ,$BELL          ;;RING BELL
 074306  005237  001112         1$:     INC     $ERTTL          ;;COUNT THE NUMBER OF ERRORS
 074312  011637  001116                 MOV     (SP),$ERRPC     ;;GET ADDRESS OF ERROR INSTRUCTION
 074316  162737  000002  001116         SUB     #2,$ERRPC
 074324  117737  104566  001114         MOVB    @$ERRPC,$ITEMB  ;;STRIP AND SAVE THE ERROR ITEM CODE
 074332  032777  020000  104600         BIT     #BIT13,@SWR     ;;SKIP TYPEOUT IF SET
 074340  001004                         BNE     20$             ;;SKIP TYPEOUTS
 074342  004737  050076                 JSR     PC,TSTNMB       ;;GO TO USER ERROR ROUTINE
 074346  104401  001223                 TYPE    ,$CRLF
 074352                         20$:
 074352  005777  104552         2$:     TST     @SWR            ;;HALT ON ERROR
 074356  100001                         BPL     3$              ;;SKIP IF CONTINUE
 074360  000000                         HALT                    ;;HALT ON ERROR!
 074362  032777  001000  104550 3$:     BIT     #BIT09,@SWR     ;;LOOP ON ERROR SWITCH SET?
 074370  001402                         BEQ     4$              ;;BR IF NO
 074372  013716  001110                 MOV     $LPERR,(SP)     ;;FUDGE RETURN FOR LOOPING
 074376  005737  001214         4$:     TST     $ESCAPE         ;;CHECK FOR AN ESCAPE ADDRESS
 074402  001402                         BEQ     5$              ;;BR IF NONE
 074404  013716  001214                 MOV     $ESCAPE,(SP)    ;;FUDGE RETURN ADDRESS FOR ESCAPE
 074410                         5$:
 074410  000002                         RTI                     ;;RETURN
```

```
                        .SBTTL  TTY INPUT ROUTINE

                        ;;**********************************************************************
                        .ENABL  LSB

                        .DSABL  LSB


                        ;;**********************************************************************
                        ;*THIS ROUTINE WILL INPUT A SINGLE CHARACTER FROM THE TTY
                        ;*CALL:
                        ;*      RDCHR                   ;;INPUT A SINGLE CHARACTER FROM THE TTY
                        ;*      RETURN HERE             ;;CHARACTER IS ON THE STACK
                        ;*                              ;;WITH PARITY BIT STRIPPED OFF
                        ;

074412  011646          $RDCHR: MOV     (SP),-(SP)      ;;PUSH DOWN THE PC
074414  016666  000004  000002  MOV     4(SP),2(SP)     ;;SAVE THE PS
074422  105777  104516  1$:     TSTB    @$TKS           ;;WAIT FOR
074426  100375                  BPL     1$              ;;A CHARACTER
074430  117766  104512  000004  MOVB    @$TKB,4(SP)     ;;READ THE TTY
074436  042766  177600  000004  BIC     #^C<177>,4(SP)  ;;GET RID OF JUNK IF ANY
074444  026627  000004  000023  CMP     4(SP),#23       ;;IS IT A CONTROL-S?
074452  001013                  BNE     3$              ;;BRANCH IF NO
074454  105777  104464  2$:     TSTB    @$TKS           ;;WAIT FOR A CHARACTER
074460  100375                  BPL     2$              ;;LOOP UNTIL ITS THERE
074462  117746  104460          MOVB    @$TKB,-(SP)     ;;GET CHARACTER
074466  042716  177600          BIC     #^C177,(SP)     ;;MAKE IT 7-BIT ASCII
074472  022627  000021          CMP     (SP)+,#21       ;;IS IT A CONTROL-Q?
074476  001366                  BNE     2$              ;;IF NOT DISCARD IT
074500  000750                  BR      1$              ;;YES, RESUME
074502  026627  000004  000140  3$:     CMP     4(SP),#140      ;;IS IT UPPER CASE?
074510  002407                  BLT     4$              ;;BRANCH IF YES
074512  026627  000004  000175          CMP     4(SP),#175      ;;IS IT A SPECIAL CHAR?
074520  003003                  BGT     4$              ;;BRANCH IF YES
074522  042766  000040  000004          BIC     #40,4(SP)       ;;MAKE IT UPPER CASE
074530  000002          4$:     RTI                     ;;GO BACK TO USER
                        ;;**********************************************************************
                        ;*THIS ROUTINE WILL INPUT A STRING FROM THE TTY
                        ;*CALL:
                        ;*      RDLIN                   ;;INPUT A STRING FROM THE TTY
                        ;*      RETURN HERE             ;;ADDRESS OF FIRST CHARACTER WILL BE ON THE STACK
                        ;*                              ;;TERMINATOR WILL BE A BYTE OF ALL 0'S

074532  010346          $RDLIN: MOV     R3,-(SP)        ;;SAVE R3
074534  012703  074640  1$:     MOV     #$TTYIN,R3      ;;GET ADDRESS
074540  022703  074650  2$:     CMP     #$TTYIN+8.,R3   ;;BUFFER FULL?
074544  101405                  BLOS    4$              ;;BR IF YES
074546  104406                  RDCHR                   ;;GO READ ONE CHARACTER FROM THE TTY
074550  112613                  MOVB    (SP)+,(R3)      ;;GET CHARACTER
074552  122713  000177  10$:    CMPB    #177,(R3)       ;;IS IT A RUBOUT
074556  001003                  BNE     3$              ;;SKIP IF NOT
074560  104401  001222  4$:     TYPE    ,$QUES          ;;TYPE A '?'
074564  000763                  BR      1$              ;;CLEAR THE BUFFER AND LOOP
074566  111337  074636  3$:     MOVB    (R3),9$         ;;ECHO THE CHARACTER
074572  104401  074636          TYPE    ,9$
```

```
 9071  074576  122723  000015              CMPB    #15,(R3)+       ;;CHECK FOR RETURN
 9072  074602  001356                      BNE     2$              ;;LOOP IF NOT RETURN
 9073  074604  105063  177777              CLRB    -1(R3)          ;;CLEAR RETURN (THE 15)
 9074  074610  104401  001224              TYPE    ,$LF            ;;TYPE A LINE FEED
 9075  074614  012603                      MOV     (SP)+,R3        ;;RESTORE R3
 9076  074616  011646                      MOV     (SP),-(SP)      ;;ADJUST THE STACK AND PUT ADDRESS OF THE
 9077  074620  016666  000004  000002      MOV     4(SP),2(SP)     ;;      FIRST ASCII CHARACTER ON IT
 9078  074626  012766  074640  000004      MOV     #$TTYIN,4(SP)
 9079  074634  000002                      RTI                     ;;RETURN
 9080  074636     000              9$:     .BYTE   0               ;;STORAGE FOR ASCII CHAR. TO TYPE
 9081  074637     000                      .BYTE   0               ;;TERMINATOR
 9082  074640  000010              $TTYIN: .BLKB   8.              ;;RESERVE 8 BYTES FOR TTY INPUT
 9083  074650  052536  005015  000 $CNTLU: .ASCIZ  /^U/<15><12>    ;;CONTROL 'U'
 9084  074655     136  006507  000012 $CNTLG: .ASCIZ  /^G/<15><12>    ;;CONTROL 'G'
 9085  074662  005015  053523  020122 $MSWR:  .ASCIZ  <15><12>/SWR = /
 9086  074670  020075     000
 9087  074673     040  047040  053505 $MNEW:  .ASCIZ  /  NEW = /
 9088  074700  036440  000040
```

```
                                .SBTTL  READ AN OCTAL NUMBER FROM THE TTY

                                ;;*********************************************************************
                                ;*THIS ROUTINE WILL READ AN OCTAL (ASCII) NUMBER FROM THE TTY AND
                                ;*CHANGE IT TO BINARY.
                                ;*CALL:
                                ;*      RDOCT                   ;;READ AN OCTAL NUMBER
                                ;*      RETURN HERE             ;;LOW ORDER BITS ARE ON TOP OF THE STACK
                                ;*                              ;;HIGH ORDER BITS ARE IN $HIOCT

074704  011646                  $RDOCT: MOV     (SP),-(SP)      ;;PROVIDE SPACE FOR THE
074706  016666  000004  000002          MOV     4(SP),2(SP)     ;;INPUT NUMBER
074714  010046                          MOV     R0,-(SP)        ;;PUSH R0 ON STACK
074716  010146                          MOV     R1,-(SP)        ;;PUSH R1 ON STACK
074720  010246                          MOV     R2,-(SP)        ;;PUSH R2 ON STACK
074722  104407                  1$:     RDLIN                   ;;READ AN ASCIZ LINE
074724  012600                          MOV     (SP)+,R0        ;;GET ADDRESS OF 1ST CHARACTER
074726  005001                          CLR     R1              ;;CLEAR DATA WORD
074730  005002                          CLR     R2
074732  112046                  2$:     MOVB    (R0)+,-(SP)     ;;PICKUP THIS CHARACTER
074734  001412                          BEQ     3$              ;;IF ZERO GET OUT
074736  006301                          ASL     R1              ;;*2
074740  006102                          ROL     R2
074742  006301                          ASL     R1              ;;*4
074744  006102                          ROL     R2
074746  006301                          ASL     R1              ;;*8
074750  006102                          ROL     R2
074752  042716  177770                  BIC     #^C7,(SP)       ;;STRIP THE ASCII JUNK
074756  062601                          ADD     (SP)+,R1        ;;ADD IN THIS DIGIT
074760  000764                          BR      2$              ;;LOOP
074762  005726                  3$:     TST     (SP)+           ;;CLEAN TERMINATOR FROM STACK
074764  010166  000012                  MOV     R1,12(SP)       ;;SAVE THE RESULT
074770  010237  075004                  MOV     R2,$HIOCT
074774  012602                          MOV     (SP)+,R2        ;;POP STACK INTO R2
074776  012601                          MOV     (SP)+,R1        ;;POP STACK INTO R1
075000  012600                          MOV     (SP)+,R0        ;;POP STACK INTO R0
075002  000002                          RTI                     ;;RETURN
075004  000000                  $HIOCT: .WORD   0               ;;HIGH ORDER BITS GO HERE
```

```
                                .SBTTL  TRAP DECODER

                                ;;**********************************************************************
                                ;*THIS ROUTINE WILL PICKUP THE LOWER BYTE OF THE 'TRAP' INSTRUCTION
                                ;*AND USE IT TO INDEX THROUGH THE TRAP TABLE FOR THE STARTING ADDRESS
                                ;*OF THE DESIRED ROUTINE. THEN USING THE ADDRESS OBTAINED IT WILL
                                ;*GO TO THAT ROUTINE.

075006  010046          $TRAP:  MOV     R0,-(SP)        ;;SAVE R0
075010  016600  000002          MOV     2(SP),R0        ;;GET TRAP ADDRESS
075014  005740                  TST     -(R0)           ;;BACKUP BY 2
075016  111000                  MOVB    (R0),R0         ;;GET RIGHT BYTE OF TRAP
075020  006300                  ASL     R0              ;;POSITION FOR INDEXING
075022  016000  075042          MOV     $TRPAD(R0),R0   ;;INDEX TO TABLE
075026  000200                  RTS     R0              ;;GO TO ROUTINE


                                ;;THIS IS USE TO HANDLE THE 'GETPRI' MACRO

075030  011646          $TRAP2: MOV     (SP),-(SP)      ;;MOVE THE PC DOWN
075032  016666  000004  000002  MOV     4(SP),2(SP)     ;;MOVE THE PSW DOWN
075040  000002                  RTI                     ;;RESTORE THE PSW

                                .SBTTL  TRAP TABLE

                                ;*THIS TABLE CONTAINS THE STARTING ADDRESSES OF THE ROUTINES CALLED
                                ;*BY THE 'TRAP' INSTRUCTION.

                                ;       ROUTINE
                                ;       -------
075042  075030          $TRPAD: .WORD   $TRAP2
075044  073230                  $TYPE   ;;CALL=TYPE     TRAP+1(104401)  TTY TYPEOUT ROUTINE
075046  073474                  $TYPOC  ;;CALL=TYPOC    TRAP+2(104402)  TYPE OCTAL NUMBER (WITH LEADING ZEROS)
075050  073450                  $TYPOS  ;;CALL=TYPOS    TRAP+3(104403)  TYPE OCTAL NUMBER (NO LEADING ZEROS)
075052  073510                  $TYPON  ;;CALL=TYPON    TRAP+4(104404)  TYPE OCTAL NUMBER (AS PER LAST CALL)
075054  073676                  $TYPDS  ;;CALL=TYPDS    TRAP+5(104405)  TYPE DECIMAL NUMBER (WITH SIGN)

075056  074412                  $RDCHR  ;;CALL=RDCHR    TRAP+6(104406)  TTY TYPEIN CHARACTER ROUTINE
075060  074532                  $RDLIN  ;;CALL=RDLIN    TRAP+7(104407)  TTY TYPEIN STRING ROUTINE
075062  074704                  $RDOCT  ;;CALL=RDOCT    TRAP+10(104410) READ AN OCTAL NUMBER FROM TTY
        000001          .END
```

```
AB     = 052525          1670#  2518   2659   2791   3165   5436   5718   6000   6282
ABLE     013434          2739   2744   2746   2748#
ADDERR   006336          2008   2014   2018   2021#
ADD1     003320          1609#  1876
ADD2     003322          1610#  1878   1879
ADD3     003324          1611#  1881   1882
ADD4     003326          1612#  1884   1885
AD1ERR   005066          1854   1876#
AD2ERR   005166          1877   1888#
AD3ERR   005206          1880   1892#
AD4ERR   005226          1883   1896#
AHEAD    046044          6524   6527#
ALRIGT   012240          2575   2577#
APE    = 100000          1527#  2089   3111   3253   3358   3555   3660
AROUND   004546          1820   1829#
AS       003412          1651#  2389*  8486
ATA    = 100000          1556#  2113   6409
AT0    = 000001          1586#
AT1    = 000002          1587#
AT2    = 000004          1588#
AT3    = 000010          1589#
AT4    = 000020          1590#
AT5    = 000040          1591#
AT6    - 000100          1592#
AT7    = 000200          1593#
A16    = 000400          1540#  2967   3025   3061   3076   3218   3323   3413   3520   3625   3728   3829   3930
                         6745
A17    - 001000          1541#  3000   3061   3076   3218   3323   3413   3520   3625   3728   3829   3930   6745
BA       003414          1652#  2191*  2240*  2280*  2327*  2465*  2500*  2527*  2551*  2600*  2634*  2637   2640*
                         2662*  2665   2668*  2685*  2688   2692*  2751*  2807*  2846*  2901*  2985*  3080*  3222*
                         3327*  3417*  3524*  3629*  3732*  3833*  3934*  4030*  4095*  4144*  4194*  4244*  4299*
                         4352*  4405*  4458*  4511*  4564*  4617*  4670*  4723*  4776*  4829*  4882*  4935*  4990*
                         5025*  5087*  5127*  5192*  5251*  5327*  5392*  5468*  5533*  5609*  5674*  5750*  5815*
                         5891*  5956*  6032*  6097*  6173*  6238*  6314*  6396*  8472   8490   8492   8494   8500
                         8509
BAE      003416          1653#  2194*  2197*  2243*  2246*  2283*  2286*  2330*  2333*  2387*  2468*  2471*  2503*
                         2506*  2530*  2533*  2554*  2557*  2593*  2596   2603*  2606*  2643*  2646*  2671*  2674*
                         2695*  2698*  2754*  2757*  2810*  2813*  2849*  2852*  2904*  2907*  2988*  2991*  3083*
                         3086*  3225*  3228*  3330*  3333*  3420*  3423*  3527*  3530*  3632*  3635*  3735*  3738*
                         3836*  3839*  3937*  3940*  4033*  4036*  4098*  4101*  4147*  4150*  4197*  4200*  4247*
                         4250*  4302*  4305*  4355*  4358*  4408*  4411*  4461*  4464*  4514*  4517*  4567*  4570*
                         4620*  4623*  4673*  4676*  4726*  4729*  4779*  4782*  4832*  4835*  4885*  4888*  4938*
                         4941*  4993*  4996*  5028*  5031*  5090*  5093*  5130*  5133*  5195*  5198*  5254*  5257*
                         5330*  5333*  5395*  5398*  5471*  5474*  5536*  5539*  5612*  5615*  5677*  5680*  5753*
                         5756*  5818*  5821*  5894*  5897*  5959*  5962*  6035*  6038*  6100*  6103*  6176*  6179*
                         6241*  6244*  6317*  6320*  6399*  6402*  8470   8486   8490   8492   8500   8509
BAETST   012272          2592#  2617
BAI    = 000010          1501#  4336   4389   6750   6765
BAKER    021420          3614   3619   3621   3623#
BATST    012504          2633#  2658
BATSTA   012674          2656   2659#
BEAU     033600          5101   5104#
BEFORE   004122          1754#  2084   2093   2100   2108   2115   3114*  3116*  3256*  3258*  3361*  3363*  3451*
                         3453*  3558*  3560*  3663*  3665*  3766*  3768*  3867*  3869*  3968*  3970*  4053*  4055*
BEGIN    004144           467   1766#
BEGIN1   004176           465   1776#
```

```
BEGIN2  004166          1773#   6586
BEGIN3  004152           469    1769#
BEHIND  046020          6522#   6526
BITCNT  003446          1722#   2313*   2316*   2318*   2321*   2344*   2347*   2349*   2352*   2357*   2360*   2737*   2740*
                        2742*   2745*   2793*   2796*   2798*   2801*   2831*   2834*   2836*   2839*   2887*   2890*   2892*
                        2895*   2971*   2974*   2976*   2979*   3062*   3065*   3067*   3070*   3167*   3170*   3172*   3175*
                        3180*   3181*   3184*   3187*   3189*   3192*   3204*   3207*   3209*   3212*   3310*   3313*   3315*
                        3318*   3507*   3510*   3512*   3515*   3612*   3615*   3617*   3620*   3715*   3718*   3720*   3723*
                        3816*   3819*   3821*   3824*   3917*   3920*   3922*   3925*   4016*   4019*   4021*   4024*   4081*
                        4084*   4086*   4089*   4130*   4133*   4135*   4138*   4180*   4183*   4185*   4188*   4230*   4233*
                        4235*   4238*   4285*   4288*   4290*   4293*   4338*   4341*   4343*   4346*   4391*   4394*   4396*
                        4399*   4444*   4447*   4449*   4452*   4497*   4500*   4502*   4505*   4550*   4553*   4555*   4558*
                        4603*   4606*   4608*   4611*   4656*   4659*   4661*   4664*   4709*   4712*   4714*   4717*   4762*
                        4765*   4767*   4770*   4815*   4818*   4820*   4823*   4868*   4871*   4873*   4876*   4921*   4924*
                        4926*   4929*   4976*   4979*   4981*   4984*   5011*   5014*   5016*   5019*   5073*   5076*   5078*
                        5081*   5105*   5106*   5113*   5116*   5118*   5121*   5178*   5181*   5183*   5186*   5237*   5240*
                        5242*   5245*   5304*   5305*   5306    5313*   5316*   5318*   5321*   5378*   5381*   5383*   5386*
                        5445*   5446*   5447    5454*   5457*   5459*   5462*   5519*   5522*   5524*   5527*   5586*   5587*
                        5588    5595*   5598*   5600*   5603*   5660*   5663*   5665*   5668*   5727*   5728*   5729    5736*
                        5739*   5741*   5744*   5801*   5804*   5806*   5809*   5868*   5869*   5870    5877*   5880*   5882*
                        5885*   5942*   5945*   5947*   5950*   6009*   6010*   6011    6018*   6021*   6023*   6026*   6083*
                        6086*   6088*   6091*   6150*   6151*   6152    6159*   6162*   6164*   6167*   6224*   6227*   6229*
                        6232*   6291*   6292*   6293    6300*   6303*   6305*   6308*   6377*   6380*   6382*   6385*   6600*
                        6613    6615*   6617*   6628    6630*   6635    6639    6723*   6726*   6728*   6731*
BIT0   = 000001          440#   6598
BIT00  = 000001          430#    440
BIT01  = 000002          429#    439
BIT02  = 000004          428#    438
BIT03  = 000010          427#    437
BIT04  = 000020          426#    436
BIT05  = 000040          425#    435
BIT06  = 000100          424#    434
BIT07  = 000200          423#    433
BIT08  = 000400          422#    432    8637
BIT09  = 001000          421#    431    8645    9007
BIT1   = 000002          439#   6371
BIT10  = 002000          420#   8992
BIT11  = 004000          419#   8652
BIT12  = 010000          418#
BIT13  = 020000          417#   8999
BIT14  = 040000          416#   8623
BIT15  = 100000          415#
BIT2   = 000004          438#
BIT3   = 000010          437#
BIT4   = 000020          436#
BIT5   = 000040          435#
BIT6   = 000100          434#
BIT7   = 000200          433#
BIT8   = 000400          432#   6596
BIT9   = 001000          431#
BLIP    044540          6368    6370    6375#
BLITZ   044450          6359#   6440
BLKTST  050326          6365    6823#
BL0    = 000040         1603#
BL1    = 000100         1604#
BL2    - 000200         1605#
```

```
BMD18 = 010000          1582#
BOTTOM  045114          6372    6438    6441#
BPTVEC= 000014           447#
BULL    047672          6725    6730    6732    6734#
BUSH    034100          5145    5150#
CHARLE  022164          3717    3722    3724    3726#
CLEER   006572          2073#   2224    2264    2304    2367    2435    2481    2579    2618    2719    2868    2947    3041
                        3149    3291    3396    3486    3593    3698    3801    3902    4003    4064    4116    4165    4215
                        4265    4320    4373    4426    4479    4532    4585    4638    4691    4744    4797    4850    4903
                        4956    5054    5156    5217    5283    5358    5424    5499    5565    5640    5706    5781    5847
                        5922    5988    6063    6129    6204    6270    6345    6442
CLEVER  045472          6454    6487#
CLR   = 000040          1503#   2073    2169    2188    2237    2277    2356    2443    6750    6765
CORREG  046006          6475    6486    6497    6508    6519    6520#
CPE   = 000010          1561#   2120    3113    3866
CR    = 000015           355#   8773    8783
CRLF  = 000200           356#   8744    8783
CS1     003420          1654#   2189*   2238*   2278*   2325*   2392*   2393    2395    2397*   2463*   2498*   2525*   2549*
                        2598*   2638*   2666*   2690*   2749*   2805*   2844*   2899*   2983*   3078*   3220*   3325*   3415*
                        3522*   3627*   3730*   3831*   3932*   4028*   4093*   4142*   4192*   4242*   4297*   4350*   4403*
                        4456*   4509*   4562*   4615*   4668*   4721*   4774*   4827*   4880*   4933*   4988*   5023*   5085*
                        5125*   5190*   5249*   5325*   5390*   5466*   5531*   5607*   5672*   5748*   5813*   5889*   5954*
                        6030*   6095*   6171*   6236*   6312*   6394*   8494    8496    8498    8505
CS2     003422          1655#   2199*   2248*   2288*   2335*   2473*   2508*   2535*   2559*   2608*   2648*   2676*   2700*
                        2759*   2815*   2854*   2909*   2993*   3074*   3088*   3216*   3230*   3309*   3335*   3425*   3532*
                        3637*   3740*   3841*   3942*   4038*   4103*   4152*   4202*   4252*   4307*   4360*   4413*   4466*
                        4519*   4572*   4625*   4678*   4731*   4784*   4837*   4890*   4943*   4998*   5033*   5095*   5135*
                        5200*   5259*   5335*   5400*   5476*   5541*   5617*   5682*   5758*   5823*   5899*   5964*   6040*
                        6105*   6181*   6246*   6322*   6404*   8476    8478    8496    8500    8505    8513
CS3     003424          1656#   2195*   2198*   2244*   2247*   2284*   2287*   2331*   2334*   2450*   2451    2459*   2469*
                        2472*   2504*   2507*   2531*   2534*   2555*   2558*   2604*   2607*   2644*   2647*   2672*   2675*
                        2696*   2699*   2755*   2758*   2811*   2814*   2850*   2853*   2905*   2908*   2989*   2992*   3084*
                        3087*   3226*   3229*   3331*   3334*   3421*   3424*   3528*   3531*   3633*   3636*   3736*   3739*
                        3837*   3840*   3938*   3941*   4034*   4037*   4099*   4102*   4148*   4151*   4198*   4201*   4248*
                        4251*   4303*   4306*   4356*   4359*   4409*   4412*   4462*   4465*   4515*   4518*   4568*   4571*
                        4621*   4624*   4674*   4677*   4727*   4730*   4780*   4783*   4833*   4836*   4886*   4889*   4939*
                        4942*   4994*   4997*   5029*   5032*   5091*   5094*   5131*   5134*   5196*   5199*   5255*   5258*
                        5331*   5334*   5396*   5399*   5472*   5475*   5537*   5540*   5613*   5616*   5678*   5681*   5754*
                        5757*   5819*   5822*   5895*   5898*   5960*   5963*   6036*   6039*   6101*   6104*   6177*   6180*
                        6242*   6245*   6318*   6321*   6400*   6403*   8500    8509    8511
CS3ERR  050052          2154    6768#
CUTE    047704          6736    6738#
DAYAMS  025734          4258    4261#
DB      003426          1657#   2770*   2772*   2773    2775    2825*   2826    2862*   2863    2865    8474
DBL   = 002000          1522#   4112    4161    4211    4261    4316    4369    4422    4475    4528    4581    4634    4687
                        4740    4793    4846    4899    4952
DBLED   025602          4232    4237    4239    4241#
DBLWDS  025046          4132    4137    4139    4141#
DBMG    010334          2315    2320    2322    2324#
DBMSG   010536          2346    2351    2353    2355#
DBOUT   014002          2795    2800    2802    2804#
DBTST   013360          2736#   2783    2786    2790
DBTSTA  013700          2779    2787#
DDISP = 177570           362#    545    1808
DELTA   015614          3064    3069    3071    3073#
DEVCNT  003376          1634#   6452*   6453    6455    6458    6461    6476*   6537
```

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DEVIC1  003366  1629#  1861*  1876*  1903   1912*  1915  1918  1921  1985  1991  2375  6471  6473
                6478   6483
DEVIC2  003370  1630#  1879*  1888*  1933*  1936   1939  1942  6487  6489  6495
DEVIC3  003372  1631#  1882*  1892*  1954*  1957   1960  1963  6498  6500  6506
DEVIC4  003374  1632#  1885*  1896*  1975*  1978   1982  6509  6511  6517
DEVIC5  003400  1635#  1921*  1942*  1963*  1982*  1985* 1993  2000  6473* 6478* 6489* 6500* 6511*
                6520   6527
DF1     072306   596   1078   1101   8516#
DF105   072362  1116   1121   1137   1142   1148   1296  8536#
DF11    072332   646    831   1176   8526#
DF132   072367  1233   1239   1245   1250   1255   1260  8538#
DF170   072375  1400   8540#
DF172   072400  1031   8541#
DF2     072312   603   1084   1089   8518#
DF3     072316   609   8520#
DF34    072335   823   8527#
DF35    072340   849    858   8528#
DF36    072341   840   1223   8529#
DF4     072322   615   8522#
DF41    072344   868   1444   1449   1454   1459   1464  1469  1474  8530#
DF5     072326   621    628    633    639    653    663   671   680   691   703   710   720   729
                 739    746    756    769    776    784   794   802   813   8524#
DF52    072346   937   8531#
DF71    072353  1041   1050   1058   1066   8533#
DF76    072356  1072   1170   1182   1187   1275   1290  1302  1307  1312  1318  1434  1439  8534#
DH1     067574   594   1076   1099   8262#
DH105   071160  1114   1119   8399#
DH11    070402   644   1174   8331#
DH111   071225  1135   1140   1146   8406#
DH121   071272  1180   1185   1432   1437   8413#
DH130   071330  1221   1226   8418#
DH132   071356  1231   1237   1243   1248   1253  1258  8422#
DH142   071434  1273   1288   8430#
DH146   071472  1294   8435#
DH147   071537  1168   1300   1305   1310   1316  8442#
DH170   071575  1398   8448#
DH171   071623   829   8452#
DH172   071651  1027   8456#
DH2     067714   601   1082   1087   8276#
DH3     070035   607   8290#
DH34    070470   819   8341#
DH35    070545   845    856   8349#
DH36    070550   836   1228   8350#
DH4     070155   613   8304#
DH41    070631   864   1442   1447   1452   1457   1462  1467  1472  8360#
DH5     070275   619    626    631    637    651    661   669   678   689   701   708   718   727
                 737    744    754    767    774    782   792   800   811   8318#
DH52    070655   933   8364#
DH71    070754  8376#
DH72    071033  1037   1047   1056   1064   8384#
DH76    071122  1070   8394#
DISPLA  001142   545#  1808*  1816*  8666*  8991*
DISPRE  000174   462#  1816
DLT   = 100000  1513#  2105   3110   3252   3357   3447  3554  3659  3762  3863  3964  4052  6765
DMD   = 000001  1570#  5296   5303   5308   5309   5310  5311  5437  5444  5449  5450  5451  5452
                5578   5585   5590   5591   5592   5593  5719  5726  5731  5732  5733  5734  5860
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                        5867  5872  5873  5874  5875  6001  6008  6013  6014  6015  6016  6142  6149
                        6154  6155  6156  6157  6283  6290  6295  6296  6297  6298
DN0     - 000001        1597#
DN1     - 000002        1598#
DN2     = 000004        1599#
DOCC    = 000400        1578#
DOIT      007576        2206  2218  2224#
DPCA    = 000040        1575#
DPE     = 000020        1562#  2120  3113  3765  3866
DPEHI   = 040000        1526#  2089  3111  3253  3358  3660
DPELO   = 020000        1525#  2089  3111  3253  3358  3555  3660
DPR     = 000400        1552#  6760
DR        003430        1658#
DRCLR   = 000011        1711#
DRY     - 000200        1551#  6760
DSWR    - 177570         361#   544  1807
DS1       003432        1659#  2200* 2249* 2289* 2336* 2474* 2509* 2536* 2560* 2609* 2649* 2677* 2701*
                        2760*  2816* 2855* 2910* 2994* 3089* 3231* 3336* 3426* 3533* 3638* 3741* 3842*
                        3943*  4039* 4104* 4153* 4203* 4253* 4308* 4361* 4414* 4467* 4520* 4573* 4626*
                        4679*  4732* 4785* 4838* 4891* 4944* 4999* 5034* 5096* 5136* 5201* 5260* 5336*
                        5401*  5477* 5542* 5618* 5683* 5759* 5824* 5900* 5965* 6041* 6106* 6182* 6247*
                        6323*  6405*
DT        003434        1660#  8480
DTE     - 010000        1565#  2120  3113  3765  3866
DTRM    - 000200        1577#
DT1       071742         595  1077  1100  8468#
DT105     072124        1115  1120  8492#
DT11      072024         645  1175  8478#
DT111     072140        1136  1141  1147  8494#
DT121     072154        1181  1186  1433  1438  8496#
DT130     072166        1222  1227  8498#
DT132     072176        1232  1238  1244  1249  1254  1259  8500#
DT142     072214        1274  1289  8503#
DT146     072226        1295  8505#
DT147     072242        1169  1301  1306  1311  1317  8507#
DT170     072254        1399  8509#
DT171     072264         830  8511#
DT172     072274        1029  8513#
DT2       071754         602  1083  1088  8470#
DT3       071766         608  8472#
DT34      072034         821  8480#
DT35      072044         847   857  8482#
DT36      072050         838  8483#
DT4       072000         614  8474#
DT41      072060         866  1443  1448  1453  1458  1463  1468  1473  8485#
DT5       072012         620   627   632   638   652   662   670   679   690   702   709   719   728
                         738   745   755   768   775   783   793   801   812  8476#
DT52      072066         935  8486#
DT71      072102        1039  1049  1057  1065  8488#
DT76      072112        1071  8490#
DUPORT    047616        6373  6722#
DVA     = 004000        1543#  3076  3218  3323  3413  3520  3625  3728  3829  3930  6745
DYNO      020650        3509  3514  3516  3518#
EMTVEC= 000030         450#  1792* 1793*
EM1       055032         592  7262#
EM10      055601         635  7327#
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EM100	060735	1080	7625#
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EM102	061067	1091	7643#
EM103	061120	1096	7648#
EM104	061276	1103	7667#
EM105	061467	1111	7688#
EM106	061534	1118	7695#
EM107	061562	1123	7699#
EM11	055635	641	7332#
EM110	061671	1128	7711#
EM111	061763	1134	7721#
EM112	062036	1139	7729#
EM113	062063	144	7733#
EM114	062160	1150	7744#
EM115	062256	1156	7755#
EM116	062370	1161	7768#
EM117	062422	1166	7773#
EM12	055676	648	7338#
EM120	062520	1172	7784#
EM121	062561	1178	7790#
EM122	062644	1184	7800#
EM123	062676	1189	7805#
EM124	062751	1196	7813#
EM125	063044	1202	7824#
EM126	063140	1208	7835#
EM127	063231	1214	7845#
EM13	055716	656	7341#
EM130	063327	1220	7856#
EM131	063401	1225	7864#
EM132	063433	1230	7869#
EM133	063467	1235	7874#
EM134	063570	1241	7886#
EM135	063651	1247	7895#
EM136	063705	1252	7900#
EM137	063766	1257	7909#
EM14	055765	666	7348#
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EM141	064144	1267	7929#
EM142	064220	1272	7937#
EM143	064272	1277	7944#
EM144	064346	1282	7952#
EM145	064434	1287	7962#
EM146	064501	1292	7969#
EM147	064552	1298	7976#
EM15	056011	674	7352#
EM150	064643	1304	7986#
EM151	064775	1309	8002#
EM152	065077	1314	8014#
EM153	065147	1320	8021#
EM154	065233	1326	8031#
EM155	065324	1332	8041#
EM156	065412	1338	8051#
EM157	065503	1344	8062#
EM16	056035	683	7356#
EM160	065577	1350	8073#
EM161	065666	1356	8083#

EM162	065755	1362	8093#
EM163	066044	1367	8104#
EM164	066122	1373	8113#
EM165	066211	1379	8123#
EM166	066307	1385	8135#
EM167	066366	1391	8144#
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EM171	066465	1402	8155#
EM172	066537	1409	8163#
EM173	066560	1415	8166#
EM174	066644	1421	8175#
EM175	066675	1426	8180#
EM176	066735	1431	8186#
EM177	066770	1436	8191#
EM2	055072	598	7268#
EM20	056124	706	7366#
EM200	067035	1441	8198#
EM201	067117	1446	8207#
EM202	067201	1451	8216#
EM203	067263	1456	8225#
EM204	067343	1461	8234#
EM205	067430	1466	8243#
EM206	067514	1471	8252#
EM207	067540	1476	8257#
EM21	056155	713	7371#
EM22	056204	723	7375#
EM23	056237	732	7380#
EM24	056256	742	7383#
EM25	056307	749	7388#
EM26	056341	759	7393#
EM27	056367	772	7397#
EM3	055132	605	7274#
EM30	056422	779	7402#
EM31	056457	787	7407#
EM32	056516	797	7413#
EM33	056545	805	7417#
EM34	056615	816	7424#
EM35	056665	826	7431#
EM36	056717	834	7436#
EM37	056755	843	7442#
EM4	055206	611	7282#
EM40	057006	852	7447#
EM41	057146	861	7463#
EM42	057251	872	7475#
EM43	057322	880	7482#
EM44	057366	886	7488#
EM45	057460	894	7498#
EM46	057533	901	7506#
EM47	057614	908	7515#
EM5	055246	617	7288#
EM50	057665	915	7522#
EM51	057744	922	7530#
EM52	057775	928	7535#
EM53	060150	940	7555#
EM54	060156	946	7556#
EM55	060163	952	7557#

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EM56    060170          958   7558#
EM57    060176          964   7559#
EM6     055317          623   7295#
EM60    060204          970   7560#
EM61    060211          976   7561#
EM62    060216          982   7562#
EM63    060223          988   7563#
EM64    060231          994   7565#
EM65    060236         1000   7566#
EM66    060244         1006   7567#
EM67    060251         1012   7568#
EM7     055533          630   7320#
EM70    060257         1018   7570#
EM71    060265         1024   7572#
EM72    060354         1034   7582#
EM73    060411         1044   7587#
EM74    060440         1053   7591#
EM75    060466         1061   7595#
EM76    060516         1068   7599#
EM77    060623         1074   7611#
ENDPAS  045132         6452#
ENPS  = 004000         1581#
ERPIP   025474         4212   4215#
ERR   = 040000         1555#  2113   6409
ERRIP   025456         4208   4211#
ERRTST  050202         2056   2162   2175   2225   2265   2305   2368   2434   2480   2577   2619   2720   2869
                       2948   3042   3150   3292   3397   3487   3594   3699   3802   3903   4004   4065   4117
                       4166   4216   4266   4321   4374   4427   4480   4533   4586   4639   4692   4745   4798
                       4851   4904   4957   5055   5157   5218   5284   5359   5425   5500   5566   5641   5707
                       5782   5848   5923   5989   6064   6130   6205   6271   6346   6443   6800#
ERRVEC= 000004          443#  1805   1806*  1817*  1844*  1845*  1877*  1880*  1883*  1886*  1889*  1893*  1897*
                       2007   2008*  2022*  2025*  2028   2029*  2032*  2040   2041*  2046*  2055*  8628   8629*
                       8631*  8634*
ERR1    006546         2053   2056#
ERR10   013246         2687   2707#
ERR11   014424         2864   2868#
ERR2    007232         2126   2148   2162#
ERR29   025752         4262   4265#
ERR3    011116         2380   2384   2396   2434#
ERR30   024446         4056   4061   4064#
ERR4    007274         2173   2175#
ERR5    011404         2461   2480#
ERR6    012152         2545   2565#
ERR7    012464         2615   2618#
ERTIP   034054         5141   5144#
ER1     003436         1661#  2201*  2250*  2290*  2337*  2475*  2510*  2537*  2561*  2610*  2650*  2678*  2702*
                       2761*  2817*  2856*  2911*  2995*  3090*  3232*  3337*  3427*  3534*  3639*  3742*  3843*
                       3944*  4040*  4105*  4154*  4204*  4254*  4309*  4362*  4415*  4468*  4521*  4574*  4627*
                       4680*  4733*  4786*  4839*  4892*  4945*  5000*  5035*  5097*  5137*  5202*  5261*  5337*
                       5402*  5478*  5543*  5619*  5684*  5760*  5825*  5901*  5966*  6042*  6107*  6183*  6248*
                       6324*  6406*
ER1R    025216         4162   4165#
EVENAD  004000         1737#  3810   4077   4128   4178   4228   4281   4334   4387   4493   4652   4758   4864
                       4917   4973   5007*  5008   5070   5071*  5110   5166   5295*  5301   5350   5442   5491
                       5577*  5583   5632   5724   5773   5859*  5865   5914   6006   6055   6141*  6147   6193
                       6196   6288   6334   6337   8503
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FAKE70  006474            2041    2045#
FANG    033330            4970    5056#
FANGIE  021306            3501    3596#
FANGY   034134            5067    5158#
FAST    033116            5013    5018    5020    5022#
FERR  = 000004            1572#
FIND    050002            2149    6758#
FINDIT  047706            2132    6743#
FIT     020524            3410    3489#
FITIT   020060            3409    3411#
FOOEY   025200            4158    4161#
FOUND   050026            2127    6763#
FROG    024124            3914    4005#
GAP   = 000020            1602#
GIGO    005246            1900#   1922    1986    6474    6485
GIGO1   005422            1919    1924#   1943    6490
GIGO2   005562            1940    1945#   1964    6501
GIGO3   005722            1961    1966#   1983    6512
GIGO4   006146            1923    1944    1965    1984    1993#
GIG1    005260            1901    1903#   1917    1920
GIG2    005434            1925    1927#
GIG3    005574            1946    1948#
GIG4    005734            1967    1969#
GI1     005402            1875    1916    1921#
GI2     005542            1937    1942#
GI3     005702            1958    1963#
GI4     006034            1979    1982#
GNS   = ****** U           461    1823    1827    1858    1864    1870    1909    1930    1951    1972    1989    2036    2051
                          2404    6465    6469    6481    6493    6504    6515    6563    6570    6608    6623    6649    6653
                          6661    6676    6680    6688    6697    6704    6711    6808    6814    9158    9159    9160    9161
                          9162    9165    9166    9167
GO    = 000001            1537#   3076    3218    3323    3413    3520    3625    3728    3829    3930    6745
GOOF    012034            2548#
GOOFED  013124            2689#
GO1     005370            1914    1918#
GO2     005530            1935    1939#
GO3     005670            1956    1960#
GO4     006030            1977    1981#
HEADER  072404            6786    8545#
HEDADD  050172            6788*   6791#
HEDDAD  003460            1732#   6786*   6787*   6788
HED1    050334            6829#   8546
HED10   050633            6866#   8553
HED11   050677            6873#   8554
HED12   050730            6878#   8555
HED13   050760            6882#   8556
HED14   051011            6887#   8557
HED15   051041            6892#   8558
HED16   051071            6897#   8559
HED17   051131            6903#   8560
HED2    050374            6835#   8547
HED20   051171            6909#   8561
HED21   051233            6915#   8562
HED22   051275            6921#   8563
HED23   051340            6927#   8564
HED24   051414            6935#   8565
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HED25   051456          6941#   8566
HED26   051520          6947#   8567
HED27   051562          6953#   8568
HED3    050421          6839#   8548
HED30   051624          6959#   8569
HED31   051666          6965#   8570
HED32   051733          6972#   8571
HED33   052013          6981#   8572
HED34   052070          6989#   8573
HED35   052145          6997#   8574
HED36   052223          7005#   8575
HED37   052277          7013#   8576
HED4    050460          6845#   8549
HED40   052371          7023#   8577
HED41   052456          7032#   8578
HED42   052522          7038#   8579
HED43   052573          7045#   8580
HED44   052651          7053#   8581
HED45   052740          7063#   8582
HED46   053003          7069#   8583
HED47   053070          7078#   8584
HED5    050517          6851#   8550
HED50   053147          7086#   8585
HED51   053234          7095#   8586
HED52   053313          7103#   8587
HED53   053372          7111#   8588
HED54   053436          7117#   8589
HED55   053502          7123#   8590
HED56   053541          7129#   8591
HED57   053615          7137#   8592
HED6    050550          6856#   8551
HED60   053664          7144#   8593
HED61   053737          7152#   8594
HED62   054005          7159#   8595
HED63   054060          7167#   8596
HED64   054127          7174#   8597
HED65   054202          7182#   8598
HED66   054250          7189#   8599
HED67   054324          7197#   8600
HED7    050602          6861#   8552
HED70   054373          7204#   8601
HED71   054447          7212#   8602
HED72   054515          7219#   8603
HED73   054571          7227#   8604
HED74   054640          7234#   8605
HED75   054714          7242#   8606
HED76   054762          7249#   8607
HERADD= 177742          1641#   6699
HERE    007326          2188#   2214
HIBYTE  012206          2569    2571#
HT      = 000011         353#   8742    8783
HURTS   010462          2341    2343#
ICPA    = 000010        1573#   4013
IDPA    = 000020        1574#
IE      = 000100        1538#   3076    3218    3323    3413    3520    3625    3728    3829    3930    5173    5174    6375
                        6722    6745
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IETST   034446          5170    5213#
IE3   = 000100          1521#   2030    2042    2457    3555    3660    6770
ILF   = 000001          1559#   2120    3113    3765    3866
IN      044454          6360#   6435
IOTVEC= 000020           448#   1790*   1791*
IPCK0 = 000001          1517#   2030    2042    6770
IPCK1 = 000002          1518#   2030    2042    6770
IPCK2 = 000004          1519#   2030    2042    3502    6770
IPCK3 = 000010          1520#   2030    2042    6770
IR    = 000100          1504#   6750    6765
IS      045702          6460    6509#
ISLK  = 002000          1580#   5860    5867    5872    5873    5874    5875    6001    6008    6013    6014    6015    6016
ITDO    007610          2234#
JUMP    022652          3812    3814#
KIPAR0= 172340           497#
KIPAR1= 172342           498#
KIPAR2= 172344           499#
KIPAR3= 172346           500#
KIPAR4= 172350           501#
KIPAR5= 172352           502#
KIPAR6= 172354           503#
KIPAR7= 172356           504#
KIPDR0= 172300           486#
KIPDR1= 172302           487#
KIPDR2= 172304           488#
KIPDR3= 172306           489#
KIPDR4= 172310           490#
KIPDR5= 172312           491#
KIPDR6= 172314           492#
KIPDR7= 172316           493#
KONG    004644          1853    1855#   1905
LEAGUE  034124          5149    5151    5154    5156#
LEAP    023404          3913    3915#
LEAVE   007230          2124    2147    2161#
LEFOUT  034112          5153#
LERADD= 177740          1640#   6706
LF    = 000012           354#   8777    8783
LOOCNT  003450          1723#   2447*   2455*   2734*   2780    2782*   2784*   2787    2789*   6359*   6430    6432*   6436*
LOOKED  047756          2142    6753#
LOOKFO  047732          2137    6748#
MCLK  = 000002          1571#   5296    5308    5310    5437    5449    5451    5578    5590    5592    5719    5731    5733
                        5860    5872    5874    6001    6013    6015    6142    6154    6156    6283    6295    6297
MCPE  - 020000          1544#   2098    3076    3109    3218    3251    3323    3413    3520    3625    3728    3761    3829
                        3930    4047
MCPET   024224          4018    4023    4025    4027#
MEMERR= 177744          1642#   6713
MINUS   004120          1753#   2567    2573    2709    2715
MITE    032670          4978    4983    4985    4987#
MIXIT   023466          3919    3924    3926    3928#
MMVEC = 000250           475#
MOAR    046524          6610#   6616
MOL   = 010000          1553#   6760
MOOR    046534          6612#   6641
MORE    046670          6627#   6637
MORE2   046660          6625#   6631
MPE   = 000400          1506#   2105    3110    3252    3344    3393    3447    3554    3659    3762    3863    3964    .052
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                    6765
MPETST  024356      4044    4047#
MXF   = 001000      1507#   2105    3110    3252    3357    3447    3554    3659    3749    3798    3863    3916    3918
                    3923    3951    4000    4052    6765
MYSTIC  014244      2843#
NEBL  = 000100      1576#
NED   = 010000      1510#   2105    3110    3252    3357    3447    3554    3646    3695    3762    3863    3964    4052
                    6765
NEDERR  021330      3607    3609#
NEM   = 004000      1509#   2105    3097    3146    3252    3357    3447    3554    3659    3762    3863    3964    4052
                    6765
NEXTST  046556      6605    6614    6617#
NOOP  - 000001      1679#
OAB   = 125252      1671#   2541    2683    2829    3202    5232    5295    5373    5514    5577    5655    5795    5859
                    5936    6077    6141    6218
OABTST  014244      2833    2838    2840    2842#
ODDAD   004002      1738#   4440    4546    4599    4705    4811    5071    5109*   5347    5488    5629    5770    5911
                    6052
OFFSET  003456      1731#   6784*   6785*   6787
OFF11   003402      1639#   1993*   1995    1996*   2000*   2001*   2002    2003*   2004    6520*   6522    6525*   6527*
                    6528*   6529    6530*   6531
ONE   = 000001      1673#   2492    2660    2735    2780    2787    6610    6625
OPI   - 020000      1566#   2120    3113    3765    3866
OR    = 000200      1505#   2314    2319    2340    2345    2350    2358    2362    2768    2794    2799    2820    2832
                    2837    2859    6750    6765
ORSET   013606      2769    2772#
OUTOF   050324      6801    6803    6816#
PARITY  047172      1841    6673#
PASS    003452      1724#   6358*   6369    6437    6439*
PAT   = 000020      1502#   3308    3710    6750    6765
PGE   = 002000      1508#   2105    3110    3252    3357    3447    3554    3659    3762    3850    3899    3964    4052
                    6765
PGETST  022734      3818    3823    3825    3827#
PIP   = 020000      1554#   6760
PIRQ  = 177772       360#
PIRQVE= 000240       454#
PLACE   020544      3500    3502#
PRIBIT  046730      6611    6638#
PRTBIT  046720      6626    6634#
PR0   = 000000       377#
PR1   = 000040       378#
PR2   = 000100       379#
PR3   = 000140       380#
PR4   = 000200       381#
PR5   = 000240       382#
PR6   = 000300       383#
PR7   = 000340       384#
PS    = 177776       357#     358    5171*
PSEL  = 002000      1542#   3076    3218    3323    3413    3520    3625    3728    3829    3930    6425    6722    6745
PSW   = 177776       358#   6357*
PWRVEC= 000024       449#   1796*   1797*   8674*   8675*   8684*   8690*   8702*   8703*
RBUF    004100      1740#   2128*   2133*   2138*   2143*   2150*   2155*   3306    3712    5230    5231*   5269    5271
                    5371    5372*   5410    5412    5512    5513*   5551    5553    5653    5654*   5692    5694    5794
                    5795*   5833    5935    5936*   5974    6076    6077*   6115    6217    6218*   6256    6682*   6683*
                    6684    6690*   6691    6699*   6700    6706*   6707    6713*   6714    8488    8507    8513
RBUF1   004102      1741#
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RBUF2   004104          1742#
RBUF3   004106          1743#
RBUF4   004110          1744#
RBUF5   004112          1745#
RBUF6   004114          1746#
RBUF7   004116          1747#
RDCHR = 104406          9063    9165#
RDLIN = 104407          9104    9166#
RDOCT = 104410          1860    1866    1872    1911    1932    1953    1974    9167#
RDY   = 000200          1539#   2738    2743    2764    2888    2893    2914    2972    2977    3063    3068    3076    3093
                        3168    3173    3185    3190    3196    3205    3210    3218    3235    3311    3316    3323    3340
                        3413    3430    3508    3513    3520    3537    3613    3618    3625    3642    3716    3721    3728
                        3745    3817    3822    3829    3846    3930    3947    4017    4022    4043    4082    4087    4108
                        4131    4136    4157    4181    4186    4207    4231    4236    4257    4286    4291    4312    4339
                        4344    4365    4392    4397    4418    4445    4450    4471    4498    4503    4524    4551    4556
                        4577    4604    4609    4630    4657    4662    4683    4710    4715    4736    4763    4768    4789
                        4816    4821    4842    4869    4874    4895    4922    4927    4948    4977    4982    5003    5012
                        5017    5038    5074    5079    5100    5114    5119    5140    5179    5184    5205    5238    5243
                        5265    5314    5319    5341    5379    5384    5406    5455    5460    5482    5520    5525    5547
                        5596    5601    5623    5661    5666    5688    5737    5742    5764    5802    5807    5829    5878
                        5883    5905    5943    5948    5970    6019    6024    6046    6084    6089    6111    6160    6165
                        6187    6225    6230    6252    6301    6306    6328    6378    6383    6389    6411    6724    6729
                        6735    6745
RDYSET  013566          2765    2768#
READY   034164          5168    5170#
READ0 = 000071          1691#   3061    3307    4284    4655    4708    4867    5236    5443
READ1 = 000072          1692#
READ2 = 000073          1693#   5377    5725
READ3 = 000074          1694#
READ4 = 000075          1695#   5518    6007
READ5 = 000076          1696#
READ6 = 000077          1697#   3076    3218    3323    3413    3520    3625    3728    3829    3930    4761    4814    4920
                        5659    6289    6745
REGEND  003404          1643#   1776*   1873*   1874*   2001    6528
RESTAR  006054          1887    1891    1895    1899    1941    1962    1981    1985#
RESTAT  045366          1938    1959    1980    6462    6476#   6488    6499    6510
RESVEC= 000010           444#
RETAIN  003410          1645#   1922*   1943*   1964*   1983*   1986*   2024    6474*   6485*   6490*   6501*   6512*
RETURN  046712          6620    6629    6632#
RFAIL = 000100          1564#   2120    3113    3765    3866
RHAS    003346          1620#   2389
RHBA    003334          1615#   2191    2234*   2235    2240    2253    2256    2261    2280    2327    2465    2500    2527
                        2551    2600    2633*   2634    2635    2640    2661*   2662    2663    2668    2684*   2685    2686
                        2692    2707    2708*   2710    2714*   2716    2751    2807    2846    2885*   2901    2963*   2985
                        3012    3030    3052*   3055*   3080    3164*   3201*   3222    3306*   3327    3417    3505*   3524
                        3610*   3629    3712*   3732    3810*   3833    3934    4030    4077*   4095    4128*   4144    4178*
                        4194    4228*   4244    4281*   4299    4334*   4352    4387*   4405    4440*   4458    4493*   4511
                        4546*   4564    4599*   4617    4652*   4670    4705*   4723    4758*   4776    4811*   4829    4864*
                        4882    4917*   4935    4973*   4990    5008*   5025    5070*   5087    5110*   5127    5166*   5192
                        5230*   5251    5301*   5327    5347    5371*   5392    5442*   5468    5488    5512*   5533    5583*
                        5609    5629    5653*   5674    5724*   5750    5770    5794*   5815    5865*   5891    5911    5935*
                        5956    6006*   6032    6052    6076*   6097    6147*   6173    6193    6217*   6238    6288*   6314
                        6334    6363*   6396    6414
RHBAE   003360          1625#   1997    2002*   2197    2246    2274*   2275    2286    2293    2296    2301    2333    2379
                        2383    2471    2506    2533    2557    2592*   2593    2594    2606    2646    2674    2698    2757
                        2813    2852    2884*   2907    2962*   2991    3003    3005    3007    3058*   3086    3163*   3228
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		3305*	3333	3423	3504*	3530	3608*	3635	3738	3813*	3839	3940	4036	4078*
		4101	4150	4200	4250	4282*	4305	4335*	4358	4388*	4411	4441*	4464	4494*
		4517	4547*	4570	4600*	4623	4653*	4676	4706*	4729	4759*	4782	4812*	4835
		4865*	4888	4918*	4941	4972*	4996	5031	5093	5133	5169*	5198	5235*	5257
		5300*	5333	5376*	5398	5441*	5474	5517*	5539	5582*	5615	5658*	5680	5723*
		5756	5799*	5821	5864*	5897	5940*	5962	6005*	6038	6081*	6103	6146*	6179
		6222*	6244	6287*	6320	6362*	6402	6523	6529*					
RHCS1	003330	1613#	1994	2005	2010	2095	2098	2133	2189	2238	2278	2325	2392	2463
		2498	2525	2549	2598	2638	2666	2690	2738	2743	2749	2764	2805	2844
		2886*	2888	2893	2899	2914	2967*	2969*	2972	2977	2983	3000	3025	3061*
		3063	3068	3075	3078	3093	3166*	3168	3173	3185	3190	3196	3203*	3205
		3210	3217	3220	3235	3307*	3311	3316	3322	3325	3340	3412	3415	3430
		3506*	3508	3513	3519	3522	3537	3611*	3613	3618	3624	3627	3642	3714*
		3716	3721	3727	3730	3745	3814*	3815*	3817	3822	3828	3831	3846	3929
		3932	3947	4017	4022	4028	4043	4047	4049	4080*	4082	4087	4093	4108
		4129*	4131	4136	4142	4157	4179*	4181	4186	4192	4207	4229*	4231	4236
		4242	4257	4284*	4286	4291	4297	4312	4337*	4339	4344	4350	4365	4390*
		4392	4397	4403	4418	4443*	4445	4450	4456	4471	4496*	4498	4503	4509
		4524	4549*	4551	4556	4562	4577	4602*	4604	4609	4615	4630	4655*	4657
		4662	4668	4683	4708*	4710	4715	4721	4736	4761*	4763	4768	4774	4789
		4814*	4816	4821	4827	4842	4867*	4869	4874	4880	4895	4920*	4922	4927
		4933	4948	4975*	4977	4982	4988	5003	5010*	5012	5017	5023	5038	5072*
		5074	5079	5085	5100	5112*	5114	5119	5125	5140	5173*	5174	5179	5184
		5190	5205	5236*	5238	5243	5249	5265	5302*	5314	5319	5325	5341	5377*
		5379	5384	5390	5406	5443*	5455	5460	5466	5482	5518*	5520	5525	5531
		5547	5584*	5596	5601	5607	5623	5659*	5661	5666	5672	5688	5725*	5737
		5742	5748	5764	5800*	5802	5807	5813	5829	5866*	5878	5883	5889	5905
		5941*	5943	5948	5954	5970	6007*	6019	6024	6030	6046	6082*	6084	6089
		6095	6111	6148*	6160	6165	6171	6187	6223*	6225	6230	6236	6252	6289*
		6301	6306	6312	6328	6375*	6378	6383	6389	6394	6411	6425	6521	6532
		6722*	6724	6729	6735	6744	8483							
RHCS1B	003364	1627#	2005*	2006*	3145*	3287*	3392*	3482*	3589*	3694*	3797*	3898*	3999*	6532*
		6533*												
RHCS2	003340	1617#	2009*	2073*	2074*	2102	2105	2128	2138	2169*	2170*	2188*	2199	2237*
		2248	2277*	2288	2314	2319	2335	2340	2345	2350	2356*	2358	2362	2443*
		2444*	2473	2508	2535	2559	2608	2648	2676	2700	2759	2768	2794	2799
		2815	2820	2832	2837	2854	2859	2881*	2909	2993	3060*	3074	3088	3097
		3146	3160*	3179*	3183*	3216	3230	3239	3288	3301*	3308*	3309	3335	3344
		3393	3407*	3411*	3425	3434	3483	3498*	3532	3541	3590	3605*	3637	3646
		3695	3710*	3740	3749	3798	3809*	3841	3850	3899	3915*	3916*	3918	3923
		3942	3951	4000	4012*	4038	4079*	4103	4152	4202	4252	4283*	4307	4336*
		4360	4389*	4413	4442*	4466	4495*	4519	4548*	4572	4601*	4625	4654*	4678
		4707*	4731	4760*	4784	4813*	4837	4866*	4890	4919*	4943	4971*	4998	5033
		5051	5068*	5095	5104*	5108*	5135	5153	5165*	5200	5228*	5259	5294*	5335
		5369*	5400	5435*	5476	5510*	5541	5576*	5617	5651*	5682	5717*	5758	5792*
		5823	5858*	5899	5933*	5964	5999*	6040	6074*	6105	6140*	6181	6215*	6246
		6281*	6322	6356*	6404	6749	6764							
RHCS3	003362	1626#	2004*	2030*	2042*	2086	2089	2155	2198	2247	2287	2334	2449*	2450
		2452	2458*	2459	2460	2472	2507	2534	2558	2607	2647	2675	2699	2758
		2814	2853	2908	2992	3052	3087	3229	3334	3424	3502*	3531	3636	3739
		3840	3941	4037	4102	4112	4151	4161	4201	4211	4251	4261	4306	4316
		4359	4369	4412	4422	4465	4475	4518	4528	4571	4581	4624	4634	4677
		4687	4730	4740	4783	4793	4836	4846	4889	4899	4942	4952	4997	5032
		5042	5048	5094	5134	5144	5150	5199	5258	5334	5399	5475	5540	5616
		5681	5757	5822	5898	5963	6039	6104	6180	6245	6321	6403	6531*	6769
RHDB	003352	1622#	2312*	2343	2736*	2770	2772	2792*	2823	2825	2830*	2862		

RHDT	003356	1624#	2011	2171	2377	2395								
RHER	003344	1619#	2117	2120	2143	2201	2250	2290	2337	2475	2510	2537	2561	2610
		2650	2678	2702	2761	2817	2856	2911	2995	3090	3232	3337	3427	3534
		3639	3742	3843	3944	4040	4105	4154	4204	4254	4309	4362	4415	4468
		4521	4574	4627	4680	4733	4786	4839	4892	4945	5000	5035	5097	5137
		5202	5261	5337	5402	5478	5543	5619	5684	5760	5825	5901	5966	6042
		6107	6183	6248	6324	6406	6754							
RHMR1	003354	1623#	4013*	5296*	5303*	5308*	5309*	5310*	5311*	5312*	5437*	5444*	5449*	5450*
		5451*	5452*	5453*	5578*	5585*	5590*	5591*	5592*	5593*	5594*	5719*	5726*	5731*
		5732*	5733*	5734*	5735*	5860*	5867*	5872*	5873*	5874*	5875*	5876*	6001*	6008*
		6013*	6014*	6015*	6016*	6017*	6142*	6149*	6154*	6155*	6156*	6157*	6158*	6283*
		6290*	6295*	6296*	6297*	6298*	6299*							
RHMR2	003336	1616#	2015	2075	2203	2252	2292	2339	2477	2512	2539	2563	2612	2652
		2680	2704	2763	2819	2858	2913	2997	3092	3234	3339	3429	3536	3641
		3744	3845	3946	4042	4107	4156	4206	4256	4311	4364	4417	4470	4523
		4576	4629	4682	4735	4788	4841	4894	4947	5002	5037	5099	5139	5204
		5263	5339	5404	5480	5545	5621	5686	5762	5827	5903	5968	6044	6109
		6185	6250	6326	6408	6433*								
RHNINT	044630	6374	6393#	6823										
RHST	003342	1618#	2110	2113	2150	2200	2249	2289	2336	2474	2509	2536	2560	2609
		2649	2677	2701	2760	2816	2855	2910	2994	3089	3231	3336	3426	3533
		3638	3741	3842	3943	4039	4104	4153	4203	4253	4308	4361	4414	4467
		4520	4573	4626	4679	4732	4785	4838	4891	4944	4999	5034	5096	5136
		5201	5260	5336	5401	5477	5542	5618	5683	5759	5824	5900	5965	6041
		6106	6182	6247	6323	6405	6409	6759						
RHTDB	003350	1621#	2202	2251	2291	2338	2476	2511	2538	2562	2611	2651	2679	2703
		2762	2818	2857	2912	2925	2930	2996	3091	3233	3338	3428	3535	3640
		3713*	3743	3844	3945	4014*	4015*	4041	4106	4155	4205	4255	4310	4363
		4416	4469	4522	4575	4628	4681	4734	4787	4840	4893	4946	5001	5036
		5098	5138	5203	5232*	5262	5264	5269	5338	5340	5350	5373*	5403	5405
		5410	5436*	5479	5481	5491	5514*	5544	5543	5551	5620	5622	5632	5655*
		5685	5687	5692	5718*	5761	5763	5773	5796*	5826	5828	5833	5835	5902
		5904	5914	5937*	5967	5969	5974	5976	6000*	6043	6045	6055	6078*	6108
		6110	6115	6117	6184	6186	6196	6219*	6249	6251	6256	6258	6282*	6325
		6327	6337	6407	6417									
RHTEST	006352	2020	2025#											
RHVEC	003316	1484#												
RHWC	003332	1614#	2185*	2186	2190	2204	2207	2210	2216	2220	2239	2279	2326	2464
		2493*	2494	2499	2519*	2520	2521	2526	2542*	2543	2544	2550	2565	2566*
		2568	2572*	2574	2578*	2599	2639	2667	2691	2750	2806	2845	2880*	2900
		2916	2918	2920	2964*	2984	3059*	3079	3159*	3200*	3221	3302*	3326	3416
		3503*	3523	3609*	3628	3711*	3731	3832	3933	4029	4076*	4094	4127*	4143
		4177*	4193	4227*	4243	4280*	4298	4333*	4351	4386*	4404	4439*	4457	4492*
		4510	4545*	4563	4598*	4616	4651*	4669	4704*	4722	4757*	4775	4810*	4828
		4863*	4881	4916*	4934	4974*	4989	5009*	5024	5069*	5086	5111*	5126	5172*
		5191	5229*	5250	5297*	5326	5344	5370*	5391	5438*	5467	5485	5511*	5532
		5579*	5608	5626	5652*	5673	5720*	5749	5767	5793*	5814	5861*	5890	5908
		5934*	5955	6002*	6031	6049	6075*	6096	6143*	6172	6190	6216*	6237	6284*
		6313	6331	6364*	6395	6420								
RHWCA	011606	2515	2518#											
RHWCT	011424	2493#	2517											
RH11	006540	2029	2039	2044	2054#									
RH11BA	006406	2033#												
RH70BA	006502	2047#												
RH70TT	006450	2027	2040#											
RITEON	033274	5043	5048#											

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RITURN  046716          6595    6597    6599    6633#
RMBEX = 000040          1563#   2120    3113    3765    3866
RMR   = 000004          1560#   2120    3113    3765    3866
ROTEEN  045576          6457    6498#
SA200   005274          1904    1906#
SC    = 100000          1547#   2098    3099    3103    3107    3120    3241    3245    3249    3262    3346    3350    3354
                        3367    3436    3440    3444    3457    3543    3547    3551    3564    3648    3652    3656    3669
                        3751    3755    3759    3772    3852    3856    3860    3873    3953    3957    3961    3974    4049
SCLK  = 000010          1600#   6433
SEARCH= 000031          1715#
SKIPIN  004624          1847    1850#
SLEUTH  004640          1852    1854#
SLKM  = 001000          1579#   5578    5585    5590    5591    5592    5593    5719    5726    5731    5732    5733    5734
                        5860    5867    5872    5873    5874    5875    6001    6008    6013    6014    6015    6016
SNAFOO  010566          2359    2362#
SPLIT   034460          5208    5210    5212    5215    5217#
SR0   = 177572           479#
SR1   = 177574           480#
SR2   = 177576           481#
SR3   = 172516           482#
STACK = 000750           348#   1788    1842
START   004214          1768    1772    1781#
STKLMT= 177774           359#
SUPER   033250          5039    5042#
SWR     001140           544#   1786    1807*   1809    1815*   8623    8637    8639    8645    8652    8682    8695*   8992
                        8999    9004    9007
SWREG   000176           463#   1815
SW0   - 000001           412#
SW00  = 000001           402#    412
SW01  = 000002           401#    411
SW02  = 000004           400#    410
SW03  = 000010           399#    409
SW04  - 000020           398#    408
SW05  = 000040           397#    407
SW06  = 000100           396#    406
SW07  = 000200           395#    405
SW08  = 000400           394#    404
SW09  = 001000           393#    403
SW1   = 000002           411#
SW10  = 002000           392#
SW11  = 004000           391#
SW12  = 010000           390#
SW13  = 020000           389#   2400    6594    6780    6802
SW14  = 040000           388#   3141    3283    3388    3478    3585    3690    3793    3894    3995
SW15  = 100000           387#
SW2   = 000004           410#
SW3   = 000010           409#
SW4   = 000020           408#
SW5   = 000040           407#
SW6   = 000100           406#
SW7   = 000200           405#
SW8   = 000400           404#   3141    3283    3388    3478    3585    3690    3793    3894    3995
SW9   = 001000           403#   3141    3283    3388    3478    3585    3690    3793    3894    3995
TBITVE= 000014           445#
TC      003440          1662#   2203*   2252*   2292*   2339*   2477*   2512*   2539*   2563*   2612*   2652*   2680*   2704*
                        2763*   2819*   2858*   2913*   2997*   3092*   3234*   3339*   3429*   3536*   3641*   3744*   3845*
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                    3946*  4042*  4107*  4156*  4206*  4256*  4311*  4364*  4417*  4470*  4523*  4576*  4629*
                    4682*  4735*  4788*  4841*  4894*  4947*  5002*  5037*  5099*  5139*  5204*  5263*  5339*
                    5404*  5480*  5545*  5621*  5686*  5762*  5827*  5903*  5968*  6044*  6109*  6185*  6250*
                    6326*  6408*
TDR       003442    1663#  2202*  2251*  2291*  2338*  2476*  2511*  2538*  2562*  2611*  2651*  2679*  2703*
                    2762*  2818*  2857*  2912*  2996*  3091*  3233*  3338*  3428*  3535*  3640*  3743*  3844*
                    3945*  4041*  4106*  4155*  4205*  4255*  4310*  4363*  4416*  4469*  4522*  4575*  4628*
                    4681*  4734*  4787*  4840*  4893*  4946*  5001*  5036*  5098*  5138*  5203*  5262*  5338*
                    5403*  5479*  5544*  5620*  5685*  5761*  5826*  5902*  5967*  6043*  6108*  6184*  6249*
                    6325*  6407*
THREE     025324    4182   4187   4189   4191#
TIEOUT    046740    1844   1886   1889   1893   1897   6646#
TKVEC  =  000060     452#
TOIT      010020    2254   2259   2263#
TPVEC  =  000064     453#
TRAPED    047610    6694   6716#
TRAPVE=   000034     451#   1794*  1795*
TRE    =  040000    1545#  2098   3099   3101   3107   3118   3241   3243   3249   3260   3346   3348   3354
                    3365   3436   3438   3444   3455   3543   3545   3551   3562   3648   3650   3656   3667
                    3751   3753   3759   3770   3852   3854   3860   3871   3953   3955   3961   3972   4051
TREB   =  000100    1546#  3145   3287   3392   3482   3589   3694   3797   3898   3999
TRTVEC=   000014     446#
TSTADD    006252    2007#  6539
TSTIE     034300    5180   5185   5187   5189#
TSTNM     003454    1730#  6778*  6779*  6784   6804*  6805*  6810   8468   8470   8472   8474   8476   8478
                    8480   8483   8485   8486   8488   8490   8492   8494   8496   8498   8500   8503   8505
                    8507   8511   8513
TSTNMA    050174    6781   6783   6792#
TSTNMB    050076    6778#  9001
TST1      004546    1775   1839#
TST10     010614    2374#
TST11     011126    2442#
TST12     011414    2446   2491#
TST13     012256    2588#
TST14     012474    2590   2630#
TST15     013344    2731#
TST16     014434    2879#
TST17     015020    2957#
TST2      006552    1849   2064#
TST20     015466    3049#
TST21     016260    3158#
TST22     017254    3300#
TST23     020040    3405#
TST24     020524    3496#
TST25     021306    3603#
TST26     022056    3708#
TST27     022622    3808#
TST3      007236    2168#
TST30     023372    3917#
TST31     024124    4011#
TST32     024456    4073#
TST33     024750    4075   4124#
TST34     025226    4126   4174#
TST35     025504    4176   4224#
TST36     025762    4226   4277#
TST37     026254    4279   4330#
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TST4    007300          2183#
TST40   026546          4332    4383#
TST41   027040          4385    4436#
TST42   027332          4438    4489#
TST43   027624          4491    4542#
TST44   030116          4544    4595#
TST45   030410          4597    4648#
TST46   030702          4650    4701#
TST47   031174          4703    4754#
TST5    007606          2233#
TST50   031466          4756    4807#
TST51   031760          4809    4860#
TST52   032252          4862    4913#
TST53   032544          4915    4966#
TST54   033330          5064#
TST55   034134          5164#
TST56   034470          5227#
TST57   035032          5293#
TST6    010030          2271#
TST60   035464          5368#
TST61   036026          5434#
TST62   036460          5509#
TST63   037022          5575#
TST64   037454          5650#
TST65   040016          5716#
TST66   040450          5791#
TST67   041012          5857#
TST7    010256          2273    2311#
TST70   041444          5932#
TST71   042006          5998#
TST72   042440          6073#
TST73   043002          6139#
TST74   043434          6214#
TST75   043776          6280#
TST76   044430          6353#
TST77   045130          6450#
TWANG   033306          5047    5051#
TWANGY  033320          5049    5052    5054#
TWO   = 000002          1674#   1996    2397    2632    6525    6656    6683
TYPDS = 104405          6567    6574    6636    6640    9162#
TYPE  - 104401          1821    1825    1856    1862    1868    1907    1928    1949    1970    1987    2034    2049    2402
                        6463    6467    6479    6491    6502    6513    6561    6568    6575    6606    6621    6632    6647
                        6651    6659    6674    6678    6686    6695    6702    6709    6789    6790    6806    6812    8704
                        8747    8843    8918    8935    8952    8954    8957    8959    8963    8970    8994    9002    9067
                        9070    9074    9158#
TYPOC - 104402          1992    6472    6484    6496    6507    6518    6658    6665    6685    6692    6701    6708    6715
                        6811    8943    8967    9159#
TYPON - 104404          9161#
TYPOS = 104403          9160#
UPE   - 020000          1511#   2105    3110    3252    3357    3411    3434    3483    3541    3590    3659    3762    3863
                        3964    4052    6765
UPETRE  017402          3312    3317    3319    3321#
US1   = 000001          1498#   6750
US2   = 000002          1499#   6750
US4   - 000004          1500#   6750
VECADD  003406          1644#   1777*   1867*   5170*   6365*
```

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VOUS     033022  5004  5007#
WATBIT   046354  2130  2135  2140  2145  2152  2157  2213  2223  2258  2298  2479  2497  2524
                 2547  2597  2654  2682  2706  2777  2828  2867  6594#
WATFIV   010246  2294  2299  2303#
WATFOR   010036  2274#
WC       003444  1664#  2190*  2210*  2212  2216*  2220*  2221  2239*  2279*  2326*  2464*  2496  2499*
                 2520*  2523  2526*  2543*  2546  2550*  2599*  2639*  2667*  2691*  2750*  2806*  2845*
                 2900*  2984*  3079*  3221*  3326*  3416*  3523*  3628*  3731*  3832*  3933*  4029*  4094*
                 4143*  4193*  4243*  4298*  4351*  4404*  4457*  4510*  4563*  4616*  4669*  4722*  4775*
                 4828*  4881*  4934*  4989*  5024*  5086*  5126*  5191*  5250*  5326*  5391*  5467*  5532*
                 5608*  5673*  5749*  5814*  5890*  5955*  6031*  6096*  6172*  6237*  6313*  6395*  8468
                 8492  8494  8505
WCE    = 040000  1512#  2105  3110  3239  3288  3357  3447  3554  3659  3762  3863  3964  4052
                 5051  5153  6765
WCEERR   033722  5115  5120  5122  5124#
WCEHI  = 010000  1524#  2089  3111  3358  3555  3660  5048  5144
WCELO  = 004000  1523#  2089  3111  3358  3555  3660  5042  5150
WCEOWT   033446  5075  5080  5082  5084#
WCERR1   007462  2187  2207#
WCERR2   007546  2205  2219#
WCETRE   016610  3206  3211  3213  3215#
WCETST   016400  3169  3174  3176  3178#
WCTST    016474  3186  3191  3193  3195#
WHYFO    007224  2160#  2366  2767  2924  2946  3010  3015  3018  3096  3115  3125  3129  3134
                 3138  3199  3238  3257  3267  3271  3276  3280  3343  3362  3372  3376  3381
                 3385  3433  3452  3462  3466  3471  3475  3540  3559  3569  3573  3578  3582
                 3645  3664  3674  3678  3683  3687  3748  3767  3777  3781  3786  3790  3849
                 3868  3878  3882  3887  3891  3950  3969  3979  3983  3988  3992  4046  4054
                 4063  4111  4115  4160  4164  4210  4214  4260  4264  4315  4319  4368  4372
                 4421  4425  4474  4478  4527  4531  4580  4584  4633  4637  4686  4690  4739
                 4743  4792  4796  484?  4849  4898  4902  4951  4955  5006  5041  5045  5103
                 5143  5147  5268  5278  5353  5409  5419  5494  5550  5560  5635  5691  5701
                 5776  5832  5842  5917  5973  5983  6058  6114  6124  6199  6255  6265  6340
                 6441
WRCH0  - 000051  1681#  3203  5010  5112
WRCH1  = 000052  1682#
WRCH2  = 000053  1683#
WRCH3  = 000054  1684#
WRCH4  = 000055  1685#
WRCH5  = 000056  1686#
WRCH6  = 000057  1687#
WRITE0 = 000061  1701#  2886  2967  2969  3166  3506  3611  3714  3814  3815  4080  4129  4179
                 4229  4337  4443  4975  5072  5173  5302  5800  6375  6722
WRITE1 = 000062  1702#
WRITE2 = 000063  1703#  5584  5941
WRITE3 = 000064  1704#
WRITE4 = 000065  1705#  5866  6082
WRITE5 = 000066  1706#
WRITE6 = 000067  1707#  4390  4496  4549  4602  6148  6223
ZERO   = 000000  1672#  2566  2572  2578  2708  2714  2884  3163  3305  3504  3605  3608  3658
                 3713  3813  4078  4282  4335  4388  4441  4494  4547  4600  4653  4706  4759
                 4812  4865  4918  4972  5169  5231  5235  5300  5312  5372  5376  5441  5453
                 5513  5517  5582  5594  5654  5658  5723  5735  5796  5799  5864  5876  5937
                 5940  6005  6017  6078  6081  6146  6158  6219  6222  6287  6299  6362  6755
$AUTOB   001134  541#
$BDADR   001122  536#
```

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$BDDAT  001126            538#
$BELL   001216            570#  8994  9015
$CHARC  073444           8749*  8759* 8766  8775* 8780#
$CKSWR= ****** U          9165
$CMTAG  001100            524#  1783  1784  1792  1798  1799
$CM1  = 000006            556#   557#  558#  559#  560#  561#  562#
$CM2  = 000014            556#   557#  558#  559#  560#  561#  562#
$CM3  = 000006            554#   556
$CM4  = 000006            562#   563#  564#  565#  566#  567#  568#
$CNTLG  074655           9084#
$CNTLU  074650           9083#
$CRLF   001223            572#  6575  6632  6789  8748  8783  8935  8954  8959  8963  9002  9015  9083
$CS1    004124           1756#  2095  3109* 3251* 3356* 3446* 3553* 3658* 3761* 3862* 3963* 4051*
$CS2    004126           1757#  2102  3110* 3252* 3357* 3447* 3554* 3659* 3762* 3863* 3964* 4052*
$CS3    004130           1758#  2086  3111* 3253* 3358* 3448* 3555* 3660* 3763* 3864* 3965*
$DBLK   074112           8884   8918  8926#
$DOAGN  046344           6557   6578  6584#
$DTBL   074102           8887   8922#
$ENDAD  046334            513   6580#
$ENDCT  046200           6559#
$ENULL  046350           6587#
$EOP    046144           1902   1926  1947  1968  6538  6549#
$EOPCT  046172           6556#  6560
$ER     004134           1760#  2117  3113* 3255* 3360* 3450* 3557* 3662* 3765* 3866* 3967*
$ERFLG  001103            527#  1913  1934  1955  1976  3143  3285  3390  3480  3587  3692  3795  3896
                         3997   5046  5148  5209  5214  5279  5354  5420  5495  5561  5636  5702  5777
                         5843   5918  5984  6059  6125  6200  6266  6341  6423  6782  6800  8613  8641
                         8643   8649* 8670  8989* 9015
$ERMAX  001115            533#  1800* 8643  8665* 8670
$ERROR  074256           1792   8988#
$ERRPC  001116            534#  8468  8470  8472  8474  8476  8478  8480  8482  8483  8485  8486  8488
                         8490   8492  8494  8496  8498  8500  8503  8505  8507  8511  8513  8941  8996*
                         8997*  8998  9015
$ERRTB  001226            589#  8949
$ERRTY  074122           6792   8934#
$ERTTL  001112            531#  6572  6576* 8995* 9015
$ESCAP  001214            569#  1799* 8664* 9010  9012  9015
$FILLC  001156            552#  8752  8783
$FILLS  001155            551#  8783
$GDADR  001120            535#
$GDDAT  001124            537#
$GET42  046324           6577#
$GTSWR= ****** U          9164
$HD   = 000000             334
$HIOCT  075004           9121*  9126#
$ICNT   001104            528#  8656* 8657  8659* 8669
$ILLUP  073212           8674   8690  8707#
$INTAG  001135            542#
$ITEMB  001114            532#  8938  8998* 9015
$LF     001224            573#  8783  9015  9074  9083
$LPADR  001106            529#  1801* 6666  6716  8647* 8662* 8667  8669
$LPERR  001110            530#  1802* 8647  8663* 8669  9009
$MAIL = ****** U          1819   8662  8736  9004
$MNEW   074673           9087#
$MSWR   074662           9085#
$MXCNT  073050           8660   8669#
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$NULL   001154            550# 8754  8783
$NWTST= 000001           1831# 1833  2057# 2059  2163# 2165  2178# 2180  2226# 2228  2266# 2268  2306#
                         2308  2369# 2371  2437# 2439  2483# 2485  2582# 2584  2622# 2624  2723# 2725
                         2873# 2875  2950# 2952  3044# 3046  3153# 3155  3294# 3296  3399# 3401  3490#
                         3492  3598# 3600  3702# 3704  3803# 3805  3904# 3906  4006# 4008  4067# 4069
                         4118# 4120  4167# 4169  4217# 4219  4269# 4271  4322# 4324  4375# 4377  4428#
                         4430  4481# 4483  4534# 4536  4587# 4589  4640# 4642  4693# 4695  4746# 4748
                         4799# 4801  4852# 4854  4905# 4907  4958# 4960  5057# 5059  5159# 5161  5219#
                         5221  5285# 5287  5360# 5362  5426# 5428  5501# 5503  5567# 5569  5642# 5644
                         5708# 5710  5783# 5785  5849# 5851  5924# 5926  5990# 5992  6065# 6067  6131#
                         6133  6206# 6208  6272# 6274  6347# 6349  6445# 6447
$OCNT   073672           8815* 8844* 8857#
$OMODE  073674           8810* 8814* 8819  8822* 8833* 8859#
$OVER   073034           8624  8640  8648  8658  8666#
$PASS   001100            525# 6553* 6554* 6565  6587  8654  8670
$POWER  073220           8705  8710#
$PWRDN  073052           1796  8674# 8702
$PWRMG  073206           8705#
$PWRUP  073124           8684  8690#
$QUES   001222            571# 8783  9015  9067  9083
$RDCHR  074412           9031# 9165
$RDDEC= ****** U         9168
$RDLIN  074532           9059# 9166
$RDOCT  074704           9099# 9167
$RDSZ = 000010           9052#
$REGAD  001160            554#
$REG0   001162            556# 2209* 2215* 2219* 2255* 2260* 2295* 2300* 2388* 2393  2448* 2449  2452
                         2454* 2457* 2458  2460  2492* 2493  2494  2514  2516* 2518* 2519  2521  2541*
                         2542  2544  2591* 2592  2594  2614  2616* 2632* 2633  2635  2655  2657* 2659*
                         2660* 2661  2663  2683* 2684  2686  2735* 2736  2773  2778  2785* 2791* 2792
                         2823  2829* 2830  2863  2922* 2927* 2935* 3075* 3076* 3099  3101  3103  3107
                         3118  3120  3217* 3218* 3241  3243  3245  3249  3260  3262  3322* 3323* 3346
                         3348  3350  3354  3365  3367  3412* 3413* 3436  3438  3440  3444  3455  3457
                         3505  3519* 3520* 3543  3545  3547  3551  3562  3564  3624* 3625* 3648  3650
                         3652  3656  3667  3669  3727* 3728* 3751  3753  3755  3759  3770  3772  3828*
                         3829* 3852  3854  3856  3860  3871  3873  3929* 3930* 3953  3955  3957  3961
                         3972  3974  4014  4015  5264* 5340* 5405* 5481* 5546* 5622* 5687* 5763* 5828*
                         5904* 5969* 6045* 6110* 6186* 6251* 6327* 6601  6603  6743* 6748* 6753* 6758*
                         6763* 6768* 8468  8470  8472  8474  8476  8486  8503  8507
$REG1   001164            557#
$REG2   001166            558#
$REG3   001170            559#
$REG4   001172            560# 2171* 2172  3164  3165* 3201  3202* 3610
$REG5   001174            561# 1770* 1771* 1851  1855*
$RHBA   004136           1761# 2707* 2709* 2713* 2715*
$RHDB   004140           1762#
$RHWC   004142           1763# 2565* 2567* 2571* 2573*
$RTNAD  046346           6586#
$R2A  = ****** U         9168
$SAVRE= ****** U         9168
$SAVR6  073216           8683* 8691  8692* 8693* 8709#
$SCOPE  072602           1790  8622#
$SETUP= 000017           1782# 1789  1790  1792  1794  1796  1798  1799  1801  6551  8623  8989  9007
                         9014  9020  9089
$SS1  = 000000           1819#
$ST     004132           1759# 2110  3112* 3254* 3359* 3449* 3556* 3661* 3764* 3865* 3966*
```

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$STUP = 177777          1782#
$SVLAD  073006          8632    8661#
$SVPC = 000214           511#    516
$SWR  = 167700           323#    334     338     339     340     341     342     343     344     568     569     570    1798
                        1799    1801    1802    1840    2065    2169    2184    2234    2272    2312    2375    2443    2492
                        2589    2631    2732    2880    2958    3050    3159    3301    3406    3497    3604    3709    3809
                        3912    4012    4074    4125    4175    4225    4278    4331    4384    4437    4490    4543    4596
                        4649    4702    4755    4808    4861    4914    4967    5065    5165    5228    5294    5369    5435
                        5510    5576    5651    5717    5792    5858    5933    5999    6074    6140    6215    6281    6354
                        6451    6546    6552    6579    6585    6587    8614    8615    8616    8617    8618    8623    8635
                        8637    8638    8641    8642    8643    8650    8651    8652    8663    8666    8669    8706    8980
                        8981    8982    8983    8984    8992    8999    9004    9007    9015
$SWRMK= 000000           344     345    8618    8619    8639
$TIMES  001212           568#   1798*   1840*   2065*   2184*   2958*   4967*   6536*   6552*   8650*   8657    8660*   8669
$TKB    001146           547#   9018    9035    9041
$TKS    001144           546#   9018    9033    9039
$TMP0   001176           562#
$TMP1   001200           563#   2212*   2221*   2256*   2261*   2296*   2301*   2451*   2496*   2523*   2546*   2596*   2637*
                        2665*   2688*   2775*   2826*   2865*   6602    6618    6744*   6745*   6749*   6750*   6754*   6755*
                        6759*   6760*   6764*   6765*   6769*   6770*
$TMP2   001202           564#   6601*   6618*   6619    6625    6627*
$TMP3   001204           565#   2885    2925    2930    6602*   6603*   6604    6610    6612*
$TMP4   001206           566#   6655*   6656*   6657    6663*   6664
$TMP5   001210           567#   2066*   2067*   2123    2125*   2146
$TN   = 000100           323#    334    1831    1840#   2057    2065#   2163    2169#   2178    2184#   2226    2234#   2266
                        2272#   2273    2306    2312#   2369    2375#   2437    2443#   2446    2483    2492#   2582    2589#
                        2590    2622    2631#   2723    2732#   2873    2880#   2950    2958#   3044    3050#   3153    3159#
                        3294    3301#   3399    3406#   3490    3497#   3598    3604#   3702    3709#   3803    3809#   3904
                        3912#   4006    4012#   4067    4074#   4075    4118    4125#   4126    4167    4175#   4176    4217
                        4225#   4226    4269    4278#   4279    4322    4331#   4332    4375    4384#   4385    4428    4437#
                        4438    4481    4490#   4491    4534    4543#   4544    4587    4596#   4597    4640    4649#   4650
                        4693    4702#   4703    4746    4755#   4756    4799    4808#   4809    4852    4861#   4862    4905
                        4914#   4915    4958    4967#   5057    5065#   5159    5165#   5219    5228#   5285    5294#   5360
                        5369#   5426    5435#   5501    5510#   5567    5576#   5642    5651#   5708    5717#   5783    5792#
                        5849    5858#   5924    5933#   5990    5999#   6065    6074#   6131    6140#   6206    6215#   6272
                        6281#   6347    6354#   6445    6451#
$TPB    001152           549#   8772*   8783
$TPFLG  001157           553#   8730    8783
$TPS    001150           548#   8770    8783
$TRAP   075006          1794    9135#
$TRAP2  075030          9146#   9157
$TRP  = 000011          9150#   9159#   9160#   9161#   9162#   9163#   9165    9166#   9167#   9168#
$TRPAD  075042          9140    9157#
$TSTNM  001102           526#   6534*   6535*   6551*   6778    6804    8613    8639    8661*   8666    8670    8991    9015
$TTYIN  074640          9060    9061    9078    9082#
$TYPBN= ****** U        9163
$TYPDS  073676          8872#   9162
$TYPE   073230          8730#   9150    9158
$TYPEC  073400          8751    8758    8765    8770#   8771
$TYPEX  073446          8776    8778    8781#
$TYPOC  073474          8813#   9159
$TYPON  073510          8812    8815#   9161
$TYPOS  073450          8808#   9160
$XTSTR  072612          8626#
$$GET4= 000000          6579#
$OFILL  073673          8809*   8813*   8823    8858#
```

```
$40CAT= ****** U          8623    9001
.     = 075064             457#    461#    466#    468#    511     512#    514#    516#    523#    574     1736#   1739#   1787
                          1801    1802    1824#   1828#   1871#   1910#   1931#   1952#   1973#   1990#   2160    2405#   6482#
                          6494#   6505#   6516#   6564#   6587    6588#   6609#   6624#   6698#   6815#   8467#   8669    8670
                          8686    8708    8783    8926#   8973#   9015    9018    9082#   9083    9089
```

```
CLEARS  2436#  6743  6748  6753  6758  6763  6768
COMMEN   455#
DBLTST  4067#  4074  4278  4331  4384  4437  4490  4543  4596  4649  4702  4755  4808  4861  4914
ENDCOM   455#
ERROR    349#  2013  2017  2023  2129  2134  2139  2144  2151  2156  2174  2211  2217  2222  2257
         2262  2297  2302  2342  2364  2390  2407  2409  2411  2413  2415  2417  2419  2421  2423
         2425  2427  2429  2431  2433  2478  2513  2540  2564  2570  2576  2613  2653  2681  2705
         2712  2718  2766  2771  2776  2822  2827  2861  2866  2923  2928  2932  2936  2942  3009
         3014  3017  3020  3023  3027  3032  3036  3039  3095  3105  3122  3124  3128  3133  3137
         3140  3148  3198  3237  3247  3264  3266  3270  3275  3279  3282  3290  3342  3352  3369
         3371  3375  3380  3384  3387  3395  3432  3442  3459  3461  3465  3470  3474  3477  3485
         3539  3549  3566  3568  3572  3577  3581  3584  3592  3644  3654  3671  3673  3677  3682
         3686  3689  3697  3747  3757  3774  3776  3780  3785  3789  3792  3800  3848  3858  3875
         3877  3881  3886  3890  3893  3901  3949  3959  3976  3978  3982  3987  3991  3994  4002
         4045  4057  4062  4110  4114  4159  4163  4209  4213  4259  4263  4314  4318  4367  4371
         4420  4424  4473  4477  4526  4530  4579  4583  4632  4636  4685  4689  4738  4742  4791
         4795  4844  4848  4897  4901  4950  4954  5005  5040  5044  5050  5053  5102  5142  5146
         5152  5155  5176  5207  5211  5216  5267  5273  5276  5281  5282  5343  5346  5349  5352
         5356  5357  5408  5414  5417  5422  5423  5484  5487  5490  5493  5497  5498  5549  5555
         5558  5563  5564  5625  5628  5631  5634  5638  5639  5690  5696  5699  5704  5705  5766
         5769  5772  5775  5779  5780  5831  5837  5840  5845  5846  5907  5910  5913  5916  5920
         5921  5972  5978  5981  5986  5987  6048  6051  6054  6057  6061  6062  6113  6119  6122
         6127  6128  6189  6192  6195  6198  6202  6203  6254  6260  6263  6268  6269  6330  6333
         6336  6339  6343  6344  6391  6392  6413  6416  6419  6422  6427  6428  6429  6737
ESCAPE   455#
GETPRI   455#
GETSWR   455#
MSG     1830#  1833  2057#  2059  2163#  2165  2177#  2180  2226#  2228  2266#  2268  2306#  2308  2369#
         2371  2436#  2439  2482#  2485  2581#  2584  2621#  2624  2722#  2725  2873#  2875  2950#  2952
         3044#  3046  3152#  3155  3294#  3296  3399#  3401  3492  3597#  3600  3701#  3704  3803#  3805
         3904#  3906  4006#  4008  4067#  4069  4118#  4120  4167#  4169  4217#  4219  4268#  4271  4324
         4377  4430  4483  4536  4589  4642  4695  4748  4801  4854  4907  4958#  4960  5057#  5059
         5159#  5161  5219#  5221  5287  5362  5428  5503  5569  5644  5710  5785  5851  5926  5992
         6067  6133  6208  6274  6347#  6349  6445#  6447
MULT     455#
NEWTST   455#  1831  2057  2163  2178  2226  2266  2306  2369  2437  2483  2582  2622  2723  2873
         2950  3044  3153  3294  3399  3490  3598  3702  3803  3904  4006  4067  4118  4167  4217
         4269  4322  4375  4428  4481  4534  4587  4640  4693  4746  4799  4852  4905  4958  5057
         5159  5219  5285  5360  5426  5501  5567  5642  5708  5783  5849  5924  5990  6065  6131
         6206  6272  6347  6445
POP      455#  8695  8696  8913  9122
PUSH     455#  8676  8682  8872  9101
REGCLR  1767#  2234  2274
REPORT   455#
REWR    1767#  5228  5369  5510  5651  5792  5933  6074  6215
SAVE    1767#  2189  2238  2278  2325  2462  2498  2525  2548  2598  2638  2666  2689  2749  2805
         2843  2899  2983  3078  3220  3325  3415  3522  3627  3730  3831  3932  4028  4093  4142
         4192  4242  4297  4350  4403  4456  4509  4562  4615  4668  4721  4774  4827  4880  4933
         4988  5023  5085  5125  5190  5249  5325  5390  5466  5531  5607  5672  5748  5813  5889
         5954  6030  6095  6171  6236  6312  6393
SCOPE    350#  1839  2064  2168  2183  2233  2271  2311  2374  2442  2491  2588  2630  2731  2879
         2957  3049  3158  3300  3405  3496  3603  3708  3808  3911  4011  4073  4124  4174  4224
         4277  4330  4383  4436  4489  4542  4595  4648  4701  4754  4807  4860  4913  4966  5064
         5164  5227  5293  5368  5434  5509  5575  5650  5716  5791  5857  5932  5998  6073  6139
         6214  6280  6353  6450  6550
SETPRI   455#
```

```
SETTRA   9150#  9159  9160  9161  9162  9165  9166  9167
SETUP     455#  1782
SKIP      455#  2273  2446  2590  4075  4126  4176  4226  4279  4332  4385  4438  4491  4544  4597
          4650  4703  4756  4809  4862  4915
SLASH     455#
SPACE     455#
STARS     455#   470   506   509   519   574  1485  1647  1649  1666  1668  1675  1678  1680  1689
          1699  1709  1713  1718  1720  1725  1728  1733  1735  1749  1751  1764  1779  1831  1838
          2057  2063  2068  2072  2077  2081  2163  2167  2178  2182  2226  2232  2266  2270  2306
          2310  2369  2373  2437  2441  2483  2490  2582  2587  2622  2629  2723  2730  2873  2878
          2950  2956  3044  3048  3153  3157  3294  3299  3399  3404  3490  3495  3598  3602  3702
          3707  3803  3807  3904  3910  4006  4010  4067  4072  4118  4123  4167  4173  4217  4223
          4269  4276  4322  4329  4375  4382  4428  4435  4481  4488  4534  4541  4587  4594  4640
          4647  4693  4700  4746  4753  4799  4806  4852  4859  4905  4912  4958  4965  5057  5063
          5159  5163  5219  5226  5285  5292  5360  5367  5426  5433  5501  5508  5567  5574  5642
          5649  5708  5715  5783  5790  5849  5856  5924  5931  5990  5997  6065  6072  6131  6138
          6206  6213  6272  6279  6347  6352  6445  6449  6542  6590  6592  6642  6644  6669  6671
          6719  6721  6739  6741  6774  6776  6795  6798  6818  6821  6825  6827  7257  7259  8544
          8610  8672  8688  8715  8785  8862  8929  8976  9017  9023  9052  9091  9129
SWRSU     455#  1803#
TIME     2057#  2313  2344  2737  2793  2831  2887  2971  3062  3167  3184  3204  3310  3507  3612
          3715  3816  3917  4016  4081  4130  4180  4230  4285  4338  4391  4444  4497  4550  4603
          4656  4709  4762  4815  4868  4921  4976  5011  5073  5113  5178  5237  5313  5378  5454
          5519  5595  5660  5736  5801  5877  5942  6018  6083  6159  6224  6300  6377  6723
TRESC    2872#  3075  3217  3322  3412  3519  3624  3727  3828  3929
TRMTRP   9150#
TYPBIN    455#
TYPDEC    455#  6565  6572  6634  6638
TYPNAM    455#
TYPNUM    455#
TYPOCS    455#
TYPOCT    455#  1991  6471  6483  6495  6506  6517  6657  6664  6684  6691  6700  6707  6714  6810
          8941  8965
TYPTXT    455#  1821  1825  1856  1862  1868  1906  1927  1948  1969  1987  2033  2049  2402  6463
          6467  6479  6491  6502  6513  6561  6568  6606  6621  6646  6651  6659  6673  6678  6686
          6695  6702  6709  6806  6812
XRCYSR   1767#  5294  5435  5576  5717  5858  5999  6140  6281
$$CMRE    517#   556   557   558   559   560   561
$$CMTM    517#   562   563   564   565   566   567
$$ESCA    455#
$$NEWT    455#  1831  2057  2163  2178  2226  2266  2306  2369  2437  2483  2582  2622  2723  2873
          2950  3044  3153  3294  3399  3490  3598  3702  3803  3904  4006  4067  4118  4167  4217
          4269  4322  4375  4428  4481  4534  4587  4640  4693  4746  4799  4852  4905  4958  5057
          5159  5219  5285  5360  5426  5501  5567  5642  5708  5783  5849  5924  5990  6065  6131
          6206  6272  6347  6445
$$SET    9150#  9159  9160  9161  9162  9165  9166  9167
$$SKIP    455#  2273  2446  2590  4075  4126  4176  4226  4279  4332  4385  4438  4491  4544  4597
          4650  4703  4756  4809  4862  4915
.EQUAT    323#   345
.HEADE    323#   324
.KT11     323#   471
.SETUP    323#  1781
.SWRHI    323#   334
.SWRLO    323#  345#
.$ACT1    323#   507
.$CATC    323#   455
```

```
.$CMTA    323#    517
.$EOP     323#   6540
.$ERRO    323#   8974
.$ERRT    323#   8927
.$POWE    323#   8670
.$RDOC    323#   9089
.$READ    323#   9015
.$SCOP    323#   8608
.$TRAP    323#   9127
.$TYPD    323#   8860
.$TYPE    323#   8713
.$TYPO    323#   8783


. ABS.  075064     000


 ERRORS DETECTED:  0

 CZRHBD.BIN,CZRHBD.LST/CRF/SOL/NL:TOC=CZRHBD.P11
 RUN-TIME: 36 30 3 SECONDS
 RUN-TIME RATIO: 501/71=7.0
 CORE USED:  28K  (55 PAGES)
```